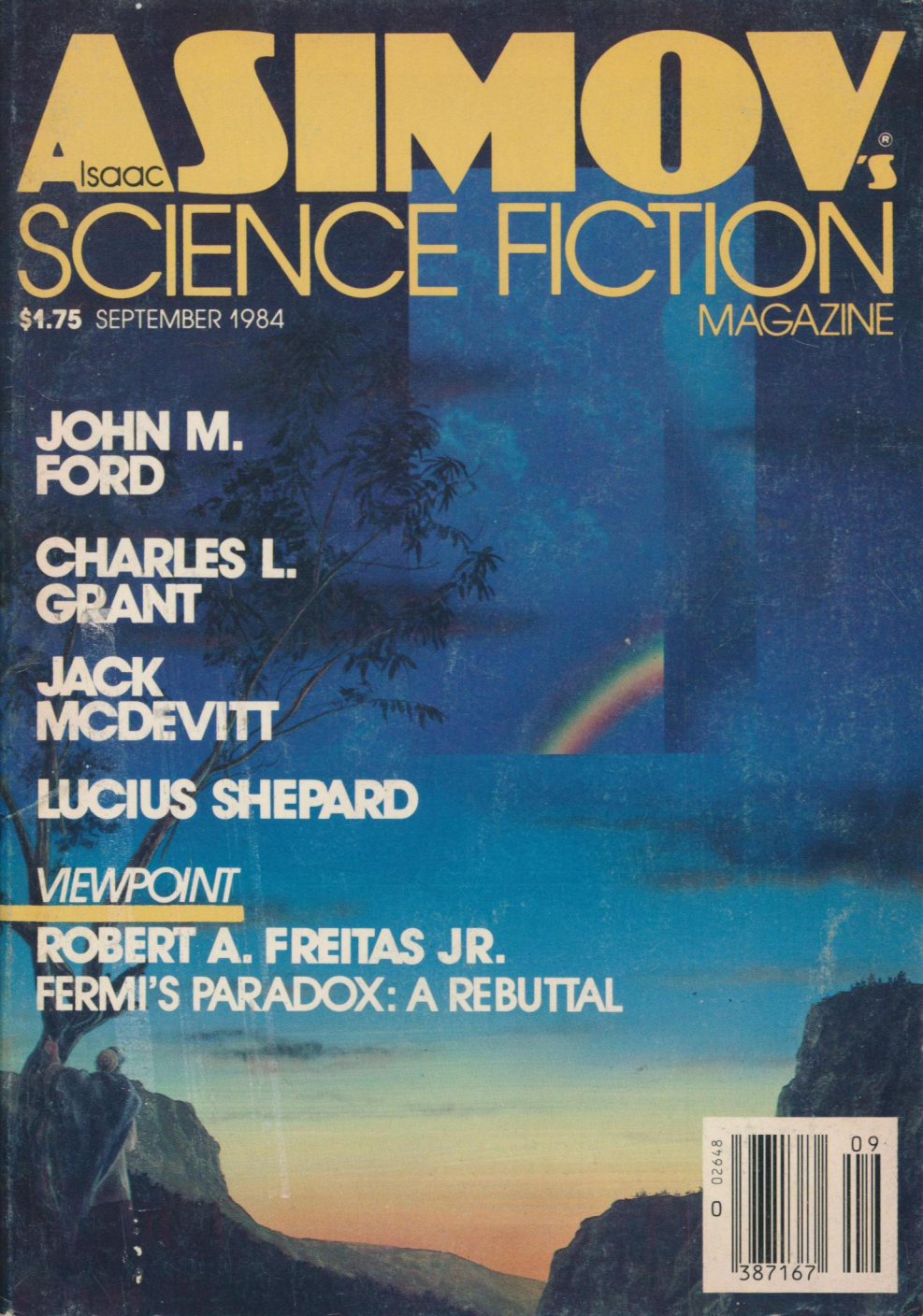
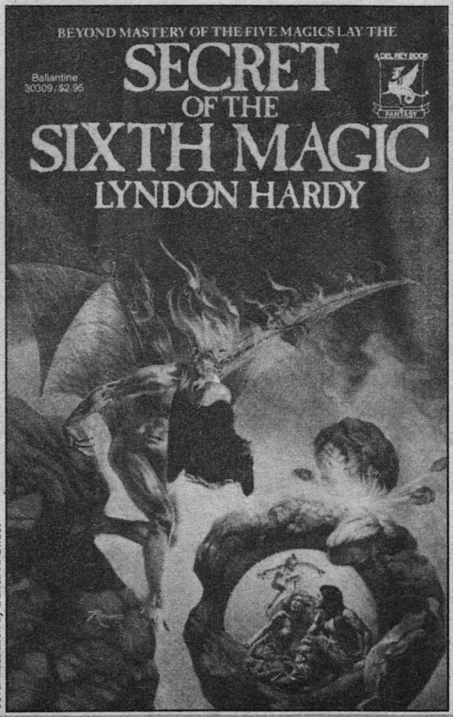

Isaac ASIMOV'S®
SCIENCE FICTION
MAGAZINE
$1.75 SEPTEMBER 1984
JOHN M. FORD
CHARLES L. GRANT
JACK MCDEVITT
LUCIUS SHEPARD
VIEWPOINT
ROBERT A. FREITAS JR.
FERMI'S PARADOX: A REBUTTAL
0 02648 09
387167

The sensational sequel to *Master of the Five Magics* is here!

SECRET OF THE SIXTH MAGIC
Lyndon Hardy

When the laws of the five magics were suddenly voided, Jemidon traced the trouble to Melizar, the strange, cold being who had seemingly appeared from nowhere. Somehow, Melizar could alter or negate the laws that had always existed by using a mysterious metamagic—something which only he understood... and which Jemidon would have to learn if the world was to be saved!



Cover illustration by Darrell K. Sweet

On Sale in September
$2.95

#1 in Science Fiction and Fantasy
Published by Ballantine Books

DEL REY

119

134

46

Isaac ASIMOV's SCIENCE FICTION MAGAZINE

Vol. 8 No. 9 (whole no. 82)
September 1984
Next issue on sale
August 28, 1984

Poem by Michael Bishop

Cover art by Michael Carroll

Joel Davis: President & Publisher **Isaac Asimov:** Editorial Director
Shawna McCarthy: Editor

Published 13 times a year by Davis Publications, Inc. at $1.75 per copy, Jan.-Dec. issues, $1.95 Special Mid-Dec. issue; annual subscription of thirteen issues $19.50 in the United States and U.S. possessions. In all other countries $24.20, payable in advance in U.S. funds. Address for subscriptions and all other correspondence about them, P.O. Box 1933, Marion OH 43305. Address for all editorial matters: Davis Publications, Inc. 380 Lexington Avenue, NY, NY 10017. Isaac Asimov's Science Fiction Magazine® is the registered trademark of Davis Publications, Inc. Second class postage paid at New York, NY, and at additional mailing offices. Canadian third class postage paid at Windsor, Ontario. POSTMASTER, send form 3579 to IAsfm, Box 1933, Marion OH 43306. In Canada return to 625 Monmouth Rd., Windsor, Ontario N8Y3L1. ISSN 0162-2188.

EDITORIAL
OPINION

by Isaac Asimov

I came across a letter, the other week, written by someone who took exception to one of my editorials (the one on autographs) claiming it was not a proper subject for an editorial and questioning whether I knew what an editorial was.

That set me to thinking. What is an editorial? I think I know, but what if I'm wrong? The letter-writer had not been kind enough to tell me the answer, so I was left to my own poor devices. Well, suppose I was asked to write a dictionary definition. What would I write?

Obviously, one way of settling the matter is to look up what is already written in some reputable dictionary, but I didn't want to do that right away. First, I wanted to figure out for myself what *I* thought an editorial was.

Since I have a simple mind, my first attempted definition was: "Editorial: that which I write when I write an editorial for *Asimov's*."

Aha, nice and circular as a definition, and not even original. John Campbell once defined science fiction as "the kind of story bought by a science fiction editor." Damon Knight (I believe) went even farther and said, "Science fiction is what I point to when I say, 'This is science fiction.' "

So I accepted my circular definition and took another step. What do I write when I write an editorial for *Asimov's*? I write on all sorts of things, but in every case, I express my opinions about whatever it is I am writing about. Obviously, then, I think that the definition should read: "Editorial: an essay expressing the opinion of an editor on some subject he believes is, or should be, of interest to his readers."

I then looked up the definition of "editorial" in *The American Heritage Dictionary of the English Language* and it says: "An article in a publication expressing the opinion of its editors or publishers." *Webster's International Dictionary* (2nd edition) says, in part, "An article published as an expression of the views of the editor." *The Random House Dictionary of the English Language* says: "An article in a newspaper or other periodical presenting the opinion of the publisher, editor, or editors."

I am sure that you see we are all in substantial agreement, but I think my definition is clearly the best because it mentions "some subject . . . of interest to his readers." That shows I'm not just writing arbitrarily on any subject at all, but (like the noble person I am) that I have the readers' interests at heart at all times.

To be sure, I don't pretend to omniscience and there's no way I can *know* what is of interest to all the readers, or even a majority of the readers, or even just a substantial minority of the readers. So I have my definition speak of a subject the editor "believes" to be of interest. Nor do I insist that the subject "is" of interest, but merely that, as an alternative, it "should be" of interest.

You'll notice that with those precautions I end up quite able to write about any subject I choose and to defend my definition-right to do so. And to prove that, I will now proceed to talk about the first thing that enters my head—

When I had written "The Caves of Steel" and "The Naked Sun" back in the 1950s (see my editorial "My Projects," October, 1983), I had written the first novel about a planet (Earth) in which human beings far outnumbered robots, and the second about a planet (Solaria) in which robots far outnumbered human beings. I promised a third novel about a planet (Aurora) in which human beings and robots struck a harmonious balance.

I tried to write it and failed. One of the reasons (I now realize in retrospect) was that I had a thoroughly humanoid robot as one of my protagonists in the two books, and if I was to deal with a world in which human beings and robots struck a harmonious balance and where at least some robots were thoroughly humanoid, then I was going to have to deal with the possibility of sexual relations between humans and robots—and I didn't feel up to it.

When I finally returned to the task after a lapse of twenty-five years, I realized I *still* had to deal with that possibility, but now things had changed. First, my writing skills had, in my opinion, improved; second, there was a more permissive attitude as far as dealing with sex in literature was concerned; and, third, I had gained courage as a result of the success of *Foundation's Edge*.

I therefore wrote *The Robots of Dawn* in which sex between robots and human beings (and other kinds of sex, too) is dealt with in straightforward fashion.

I held, however, to my principles. The sex was not clinical, it was not exploitative, it was not thrown in for the sake of sensation or prurience. It was essential to the plot, and it was dealt with only to the point where it was necessary to do so.

I wasn't certain what the results would be. Would people be annoyed with me for dealing with sex at all when, ordinarily, I write (as a charming young nun once noted in an essay she had written on my books) "with decorum," and refuse to buy my books? Or would they be annoyed with me for *still* writing with decorum even about sex and turn me down angrily for being insufficiently exciting?

Actually, they did neither. I am glad to say that *The Robots of Dawn* proved to be my second best-seller and it may possibly do nearly as well as *Foundation's Edge*. What's more, the letters I have so far received from readers have been uniformly favorable.

But *why* did there have to be such sex?

Consider: If you have a robot that is roughly as intelligent as a hu-

man being, and who looks exactly like a human being (either male or female) and has all the functioning parts of a human being, surely your knowledge of how obsessed and inventive human beings are about sex will lead you to the conclusion that there *will* be sex between human beings and robots, and that you will have to deal with the consequences. If there isn't, your novel will be ignoring so obvious and important a part of life, that you will be laughed at. There would be no way the book could be taken seriously.

Ah, but mightn't I have avoided the unpleasant necessity of dealing with such a subject by simply not having thoroughly humanoid robots? No, because all my robot short stories dealt, in one way or another with the antagonism of human beings for robots, and when I wrote *The Caves of Steel* I had to take up the problem of what would happen to this antagonism if the robot was just about indistinguishable from a human being.

One thing inevitably led to another, you see, and any writer worth anything at all, must follow where his art leads. (I'm sorry if that sounds pretentious.)

But then, suppose a writer is dealing with another kind of non-human approximation to the human. What if a non-human animal can be made, in some way, close to human in intelligence? What if this animal is sufficiently creative to carry on an intelligent conversation and even to write a story that is publishable? And what if this animal approximates the human in appearance?

You see that the situation is not

ISAAC ASIMOV:
Editorial Director
SHAWNA McCARTHY:
Editor
SHEILA WILLIAMS:
Associate Editor
AMY STOUT:
Editorial Assistant
RALPH RUBINO:
Corporate Art Director
GERRY HAWKINS:
Associate Art Director
TERRI CZECZKO:
Art Editor
MARIANNE WELDON:
Associate Designer
CARL BARTEE:
Director of Manufacturing
CAROLE DIXON:
Production Manager
LAUREN C. COUNCIL:
Production Assistant
CYNTHIA MANSON:
Subsidiary Rights Manager
BARBARA BAZYN:
Permissions & Contracts Manager
MICHAEL DILLON:
Circulation Director Retail Marketing
PAUL PEARSON:
Newsstand Operations Manager
KATHY TULLY-CESTARO:
Circulation Manager Subscriptions
WILLIAM F. BATTISTA:
Advertising Director
JAMIE FILLON:
Advertising Manager
IRENE BOZOKI:
Classified Advertising Manager

ADVERTISING OFFICES
NEW YORK
(212) 557-9100

CHICAGO
(312) 346-0712

LOS ANGELES
(213) 795-3114

JOEL DAVIS
President and Publisher

LEONARD F. PINTO
Vice President
&
General Manager

LEONARD H. HABAS
Vice President
Circulation

FRED EDINGER
Vice President
Finance

Please do not send us your manuscript until you've gotten a copy of our manuscript guidelines. To obtain this, send us a self-addressed, stamped business-size envelope (what stationery stores call a number 10 envelope), and a note requesting this information. The address for this and for all editorial correspondence is *IAsfm*, Davis Publications, Inc. 380 Lexington Avenue, NY, NY 10017. While we're always looking for new writers, please, in the interest of time-saving, find out what we're looking for, and how to prepare it, before submitting your story.

terribly different from that of a humanoid robot.

I took the easy way out by making a robot so human and so good-looking and so noble and good that love and sex seem to follow almost naturally.

But if the humanity is only approximate and the appearance is definitely sub-human and the character still has much of the animal in it, what then? The situation is a lot harder to deal with.

Suppose you are a male teacher of such a female animal. The teacher-pupil relationship is a close one and sex can rear its inconvenient head. Abelard and Heloise are a classic example of this and there have been others both before and after. Can that relationship cross the gulf of species?

To be more specific, can a male human being who teaches an intelligent female orangutan fall in love with her? And if so, what happens? Suppose further that said orangutan was far superior in both creativity (she's had a book published) and intelligence to her trainer? It isn't a story that I could write, but it isn't so different in concept from *The Robots of Dawn.*

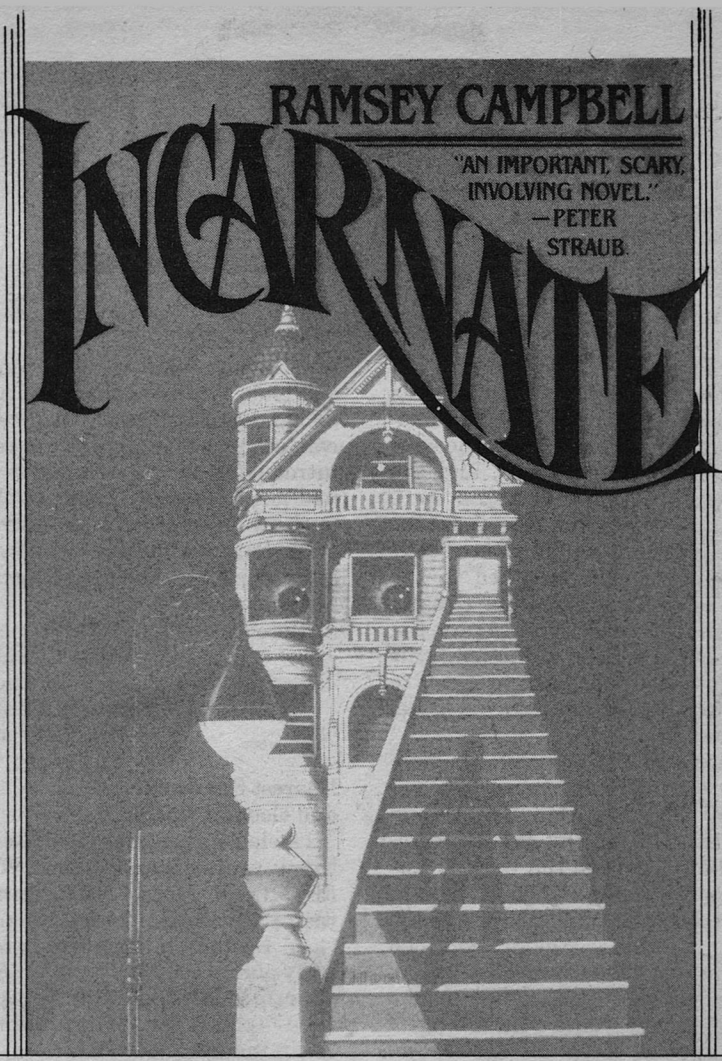
Leigh Kennedy wrote such a story. It was entitled "Her Furry Face" and it appeared in the Mid-December 1983 issue of *Asimov's.*

It was not a pleasant story, and it received flack from a number of readers, but it was our editorial opinion that it was an honest story and an important one, dealing with a legitimate science fictional problem. (It seems that others agree with us, since "Her Furry Face" was nominated for a Nebula award, and it came in second in the short story category of *Science Fiction Chronicle's* Readers' Poll.) The higher apes are being taught sign language and they might end up seeming intelligent in some primitive human sense. If we could just go a little farther somehow—

Well, bestiality *does* exist, and with animals that are not even vaguely human in intelligence.

So think about it. Not pruriently, but just as a possible complication involved in ethological advance.

Isn't that what good science fiction is supposed to do? Make you think? ●



WHEN DREAMS BECOME NIGHTMARES AT NOON...

"Chilling indeed."—*Publishers Weekly*

Pub. date: September 1984 Price: $3.95

Tor Books We're Part of The Future

LETTERS

Dear Readers:

A few months ago, this magazine ran a contest for its Viewpoint section. In the January issue, the winning entry was printed, and the names of three runners-up were also announced. But, woe, the other three were not published. Their writing was not revealed to the light of day, and since there really isn't much market for essays on the state or art of Science Fiction, their entries were sent back to them, to languish in bottom drawers somewhere.

But wait! There is a place where such writings are printed! The National Fantasy Fan Federation publishes a fanzine for its membership, and with the help of *Asimov's* Associate Editor, Sheila Williams, the N3F has contacted the three runners-up and obtained permission to feature all three of their Viewpoints together in one issue! If you would like a copy of this special issue of *Tightbeam*, please send a large self-addressed, stamped envelope (two stamps) to

Owen K. Laurion
6101 Central NE
Albuquerque, NM 87108

Since we're an amateur organization, sending along a couple of sticky quarters to help defray our printing costs would be appreciated, but not necessary. We'll also send along some information on our club, which has been serving SF fandom since 1941, with a special emphasis in recent years on introducing the SF&F reader who has not previously been involved to the wonderful informal network of conventions, fanzines, clubs, and correspondence known collectively as Fandom.

Sincerely,

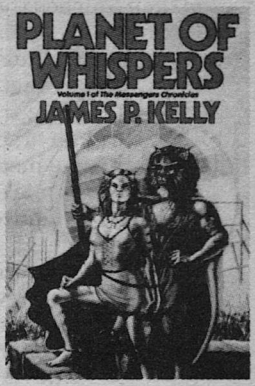
Owen K. Larion
President
National Fantasy
Fan Federation

Dearest Shawna
and Goodest Doctor:

I feeled obligingness to write and thank yourselfs and Connie Willis for "Blued Moon," the funniest read I've haved in years. Even our Good Doctor's hilariousest, groanishly punny contributions to *IAsfm* shortfall "Blued Moon" laughwise—(please don't stop making us moan though, Doctor).

I first readed "Blued Moon" in a public setting. While stopping to chucklingly breathcatch and wipe my mirthteared face, I notetook of looks people's faces shooted me. I knowed thenthere I mistaked, but, committed to the story, I hoped to not be committed somewhere else. I maked sure allbodies looked not about to place disturbance report

THE BEST SF



NEW SERIES

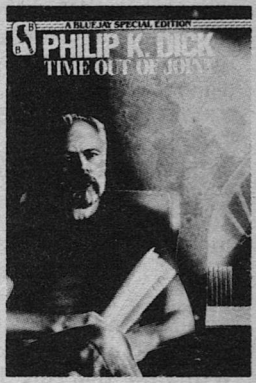
THE PLANET OF WHISPERS
by James P. Kelly

The first novel in "The Messengers Chronicles" is cause for shouting: "great science fiction adventure sure to appeal to fans of Andre Norton and Philip José Farmer!"

• WATCH FOR JAMES P. KELLY • ONE OF F & SF's and ASIMOV'S BEST

$14.95 Hardcover / Jacket illustration: Victoria Poyser

PHILIP K. DICK SPECIAL EDITION



TIME OUT OF JOINT
Afterword by Lou Stathis

Hugo and John Campbell Memorial Award-winner Philip K. Dick, author of **Bladerunner,** is "the greatest of science fiction writers."
—Washington Post-Book World

• A BLUEJAY SPECIAL EDITION—BUILT TO LAST, WITH ACID-FREE PAPER • OTHER PHILIP K. DICK MASTERWORKS: CLANS OF THE ALPHANE MOON and THE PENULTIMATE TRUTH

$6.95 Bluejay Special Edition/Cover illustration: Barclay Shaw

---

ILLUSTRATED CLASSIC

VENUS PLUS X
by Theodore Sturgeon

This novel's vision of utopia sparked a blaze of controversy when it first appeared. Today, it remains one of Sturgeon's greatest novels. **Rowena Morrill's** stunning illustrations are special to this edition.

• OTHER STURGEON IN BLUEJAY EDITIONS: ALIEN CARGO and THE STARS ARE THE STYX

$7.95 Illustrated Trade Paperback

BLUEJAY BOOKS INC.
James Frenkel, Publisher
130 West 42nd Street, Suite 514
New York, New York 10036

and then finished the story, effortly allowing only a half-dozen or so uncontrollably laughingish fits to outburst. Later that eve, homesafe and alone, I controllessly floor-rolled through another reading. Two much enjoyments!!

I thinked Connie's Hugo and two Nebulas to be quite three things accomplishmentally, but "Blued Moon" leaded me to think again: Connie Willis haves justly beginned to collect her awards.

One last personal aside: though my acheish sides are not yet recovered from the splitting Connie induced, I'd like my appreciativest thanks gived to her for curing me of irregularity—I've never feeled gooder before!

Sincereliest yours,

D. Mark Young
Box 4306
Estes Park, CO 80517

A not-bad parody, and a sterling tribute to Connie in content as well.
—Isaac Asimov

Dear Shawna,

Please read this, then pass it on to Connie Willis. I enjoyed "Blued Moon" so much! All alone in my house, I laughed out loud all the way through, sitting, reading in my kitchen. I'm a word freak too, loved the extravagant oddities dropped into the story, the gobbledygook, and the funny incidents and encounters which moved the story quickly along to the inevitable happy ending.

More-more! Now I'll have to search for Willis' previous stories.

It's the first time I have laughed out loud, just reading, since the last time I read James Thurber. How delightful! THANK YOU!

Sincerely,

Phyllis R. Carpenter
Clarendon Hills, IL

One doesn't often laugh out loud, just reading, because humor is a lot harder to write than suspense, horror, mystery, action, and so on. I keep saying that over and over. Obviously, Connie can do it.
—Isaac Asimov

Dear Editorial Staff,

O.K. guys, just how dumb do you think we are? In your Jan. edition the subject of the editorial is pseudonyms, and then your lead story is supposedly written by Connie Willis. No way. As a life long fan of Shakespearean farce, I know that "Blued Moon" must have been written by the Bard himself (how he is still living is for someone else to figure out). The love triangles, the sub-plots, the comic mixups: pure vintage Will, right out of "A Midsummer Night's Dream." Well, whoever wrote it . . . BRAVO, BRAVO, BRAVO! And I am standing up while typing that.

After all these years of enjoying your magazine and wanting to write something, but never getting around to it, as long as I am finally writing, let me ask a question that has been burning a hole in my soul. What is happening on Momus? What is going on at Mallworld? I love these theme stories, and I am not a fan of soaps. I always look forward to the day the mail brings your magazine, but when I see a new story with an old setting it is like greeting an old friend. Are the

authors not writing them, or are you not printing them for some devious communistic plot to sap an American's will to live?

In all seriousness, I have been a subscriber from the beginning, even submitted some "pun" stories to you, and I would like to thank you for the past, and I thank you for all the enjoyment you will bring in the future.

Buck Miller
Hershey, PA

The trouble with story-series in definite settings is that authors sometimes feel constricted and grow weary of them before the readers do. Believe me, I know!

—Isaac Asimov

Dear Ms. McCarthy:

I've come to expect so much of your magazine, not only for entertainment but for scientific objectivity, that I'm sorry to learn that Baird Searles "winces" at "yet another matriarchy." (Review of *When Voiha Dances*, Jan. '84.) Obviously he considers female rule a fantasy.

Let me assure you and Mr. Searles and your readers that a few societies around the world still retain the primordial matriarchal structure, among them our own Navajos, the Macá Indians of Paraguay, the camel-riding Tuaregs of the Sahara, whose men—not women—wear the veil, and the Khasis of India.

The Khasis (pop. 300,000) practice female ultimogeniture; that is, all property is passed to the youngest daughter, who also acts as family priestess. When a man marries he must move in with his wife's family where he then works as a servant on *her* land under the supervision of *her* relatives. When strangers arrive he is the last person to be introduced, and when he dies he is not even buried beside his wife but in a separate location. This information comes from a *current* anthropology encyclopedia. As the great anthropologist Sir James Frazer pointed out when writing of the Khasis, "in such a society a man is a mere begetter."

I pass this along in the interest of *truth*. Besides, I think it will do all your female readers—of whom you have thousands—a favor to let them know that in *some* societies women do have power,

Love your magazine, love Dr. Asimov's avuncular and erudite editorials, and love Mr. Searles — most of the time! I close with a tiny request: may we please have more stories by the clever Scott Sanders?

Lorraine Boschi
Grand Junction, CO

The question is not whether matriarchies exist or not, but whether, in Baird's opinion, there are too many matriarchy stories. *After all, I think there are too many spy novels, but though I may be wrong, the fact that spies really exist is not what makes me wrong.*

—Isaac Asimov

Dear Dr. Asimov
and Ms. McCarthy,

I will admit from the outset that the motivation for writing this letter comes from another story rejection. Although what I have to say may be dismissed as the ramblings of a bruised ego, the subject matter

is important to all beginning writers.

My first concern is the rejection letter itself—a form letter. This is a cop-out. You are well aware that there are few places to which a beginning writer can send manuscripts, and you are one of those places. As such, it seems only fitting that a beginning writer should look forward to a more personal critique. I realize that you receive myriad manuscripts each day, but you could at least utilize a preprinted checklist of mistakes that is then marked according to each particular story. (You used to use this system.) At least this would give the writer an idea of what he/she did wrong. Yes, I have read several "How To" books, but it's just not the same as getting feedback on a particular story.

My second concern is the ever increasing impersonality in the field of writing. Dr. Asimov (whom I deeply respect) is fond of reminiscing about the relationship that he had as a beginning writer with John Campbell. What happened to the days when an editor would take a fledgling writer under his or her wing? The answer is that writing/publishing is big business and is thus subject to the same shortcomings that seem to infect all big-time operations. The truth of the matter is that writing and (to a larger extent) publishing are becoming cutthroat businesses. Competition is intense, especially when it is a buyer's (vs. seller's) market. The beginning writer runs into this dilemma: In order to get published, one needs experience, and in order to get experience, one needs to get published.

Finally, on a more opinionated note, there is my concern that much of today's (i.e. the last several years) SF is watered-down. The emphasis seems to be more on the characters rather than on science being the central element. Editors are fond of saying that a science fiction story is more than a good idea forced into story form. I say that science fiction is more than fiction with a smidgen of science thrown in, which seems to define much of today's "science fiction."

Andrew Poulos
Columbus, OH

Would you like a job sending out personal rejections, even just checking off a list after careful consideration? Work a month without pay and then tell us what you would charge to continue—and I tell you right now we can't afford it. As for the relationship such as that between Campbell and myself—they were few and far between even for Campbell. He knew a good prospect when he saw one. That was his talent. And he didn't make mistakes in such things. That was his genius.

—Isaac Asimov

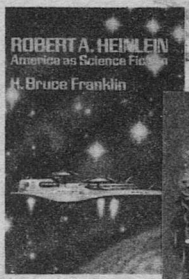
In the days when we used the checklist system, we had some 8 people reading the "slush." We now have one—me. I'm also quite uncertain as to how much help a preprinted, general comment is to any specific writer or story. I do try to put short notes on the rejection slips of stories which show some promise.

—Shawna McCarthy

Dear Isaac:

Alright. Science fiction readers

Discover the Facts Behind the Fiction



Heinlein, Asimov, Stapledon, Wells—what made these great writers produce their astonishing works of fiction? What events in their own lives shaped their visions of the future? What cultural and scientific changes influenced them? And what do their sometimes bizarre tales really have to say?

Now you can gain a deeper appreciation of the work of your favorite authors with the **Science Fiction Writers** series. Find out:

- How a stormy adolescence set against the cataclysmic 1930s caused Isaac Asimov to embark on the *Foundation* series
- How a case of tuberculosis and an ad in *Thrilling Wonder Stories* launched Heinlein's writing career
- How Darwin influenced H.G. Wells
- How Olaf Stapledon's richly inventive but difficult fiction influenced Arthur Clarke, Poul Anderson, Kurt Vonnegut and many others.

Each volume in the **Science Fiction Writers** series treats an author of distinction. Together the volumes do full justice to science fiction as a pervasive force in western culture.

Special Offer!

To: Oxford University Press
Dept. ECAB, 200 Madison Ave., New York, NY 10016

SINCE 1478

Please send me:

Isaac Asimov: The Foundations of Science Fiction by James Gunn
☐ cloth $18.95 ☐ paper $6.95

Robert Heinlein: America as Science Fiction by H. Bruce Franklin
☐ cloth $22.50 ☐ paper $4.95

The Science Fiction of H.G. Wells by Frank McConnell
☐ cloth $22.50 ☐ paper $4.95

Olaf Stapledon: A Man Divided by Leslie Fiedler
☐ $19.95 ☐ paper $7.95

Order 2 or more books and get 20% off list prices

Name _____

Address _____

City _____

State _____ Zip _____

I enclose my check/money order for $_____ *(Please add appropriate sales tax.)*

are, for the most part, intelligent people who can adjust to new situations, due in no small part to the literature they read. But how much do you really expect of us?

I have been in a blue funk ever since puns were eradicated from the magazine. Isaac Asimov's magazine without puns? I wonder that you still put your name on it. And yet, I read on . . .

Whatever happened to the friendly little paragraph at the beginning of the letters column which gave your address and offered a few pages to make the job of writing easier? Don't you want to hear from us anymore? But I grimaced and read on . . .

A xeroxed form letter in response to one of my stories? What happened to the little index cards which cut me to the quick with their generalized criticisms which always pinpointed my problems and left me bleeding? Are you trying to scare off new contributors? But I renewed my subscription . . .

. . . but I'm beginning to feel left out. Where did my family go? You people are getting too professional for me. And still I read on . . .

May I suggest a solution to the postal sticker problem? Just dedicate an editorial to it, explaining that it makes the magazine more valuable somehow. After all, if Dr. Asimov says it, it *must* be true (I'd believe it, anyway).

And finally, if you won't allow Matthew Posner to answer letters for you, can I take over hanging around the office making eyes at Shawna?

I will remain loyal to the end, but, Gee! couldn't you try just a little bit to make me feel more at home with you folks like you used to?

Mike Post
Lakewood, CA

Editors have to be allowed their idiosyncracies. George Scithers was crazy about puns. Shawna is not. I dread to think of the kind of stories I would choose if anyone were crazy enough to let me—so count your blessings.

—Isaac Asimov

Dear Shawna,

I wanted to write to tell you that I think you're doing a fine job as editor. One always wonders what will happen to a magazine when the editor changes, but I think *IAsfm* is at least as good as it was. I appreciate that one of the editor's most difficult tasks is selecting the mix of stories for each issue, and that is the other reason I wrote.

Science fiction is an extraordinarily broad and diverse genre, and I have noticed that you try to keep the magazine rather eclectic and feature stories of diverse styles and types. I love *Analog* and its brand of SF, but I don't expect *IAsfm* to be a twin of it in any way and hope you continue to stretch my horizons.

However, after the January 1984 issue, my horizons were definitely over-stretched. I would easily have recognized McDonald's story as SF, would have accepted Willis's and perhaps Effinger's as SF, but never the other two. I like *IAsfm* because I like science fiction, but that issue hardly even seemed like a SF magazine.

I enjoy one atypical story in an

issue, and can even tolerate two, but please, Shawna, give my horizons a break and keep it under three.

I hope you continue to thrive and enjoy your editorial duties, and don't let Isaac give you a hard time.
Sincerely,

Bill England
La Jolla, CA

It occurs to me that art, too, responds to economics. Fantasies are doing better than SF on the best-seller lists. This may mean that writers bend toward fantasies for obvious reasons and the mix of submissions we get results in what we publish when we choose the best. What do you think, Shawna?—And tell the man I never give you a hard time.

—Isaac Asimov

This is possibly the case, although we all know that writers write only *for art's sake and* never *simply for the call of filthy lucre. Another factor is that there are more markets right now for SF than fantasy, and thus, since we* do *publish fantasy, those writers who are doing it send it to us.*

—Shawna McCarthy

Dear Editor,

I enjoy *IAsfm* very much. I read it cover to cover, especially the book reviews. I feel that a comment made in the mid-December issue by Mr. Searles was quite unjust. He claimed that the love scenes in *An Unkindness of Ravens* deteriorated into "Georgette Heyer-type historical romance . . . which pe-

riodically turns the whole thing to mush."

I doubt that Baird Searles has ever read any Georgette Heyer. If he has, his memory is at fault. Any love-scene in a Heyer romance is tastefully done and NEVER turns "mushy."

Perhaps Mr. Searles has been mislead by Heyer imitators and their publishers who advertise each new experiment as "the best since Georgette Heyer," or "in the tradition of Georgette Heyer." As a devoted Heyer fan, I can tell you that they don't come close!

Perhaps the example quoted by Mr. Searles illustrates the clumsiness of a first novel. However, a little sentiment is a relief in a society that seems to feel that any personal encounters other than rape are "mushy."

Sincerely,

Susan Cromby
Mesa, Az

Dear Susan Cromby

Shawna McCarthy has passed your letter on to me, and I stand corrected. I have fallen into the trap of judging a writer by her imitators, and while I'm sure many of the would-be Georgette Heyers deserve the term mushy, I will take your word that she does not and will keep it in mind in future.

I should add that I wholeheartedly agree that this society does need sentiment and even wholehearted romanticism; I found some of the attempts at that in An Unkindness of Ravens *just too overblown—the kind of thing that gave romanticism a bad name in the first place. But believe me, I welcome it when I find it done well.*

Sincerely,

—Baird Searles

Dear Dr. Asimov,

Although I am not an authority on the subject I am nonetheless going to give you my answer to the question in your editorial in the Jan. 84 issue of *IAsfm*, to wit: what was the reason for the use of "house names" in some of the early pulps?

Publishers, then as now, being businessmen rather than artists, tend often to regard fiction as a commodity rather than as art. It is sometimes an annoyance to publishers that a demand is seen to exist for a particular fictional commodity, yet the author does not produce it, usually for reasons of insufficient time and/or inspiration. I don't have to point out to you the examples of that in your own writing career. With a house name, the product can be produced on demand. If one writer doesn't write the desired material, another will. The readers, it is hoped, won't know the difference. The strategy has enjoyed little success because the readers *do* know the difference. In theory, if your own robot stories had been published under a house name, then when you stopped writing them in order to devote your time to non-fiction, the publisher could have simply gotten someone else to continue writing them in order to satisfy the continued interest on the part of readers. In practice, no one else could have written them as well as you did and so disillusionment would have set in rather quickly.

The best known use of a house name was "Kenneth Robeson" as author of the Doc Savage series. As you probably know, the author of most of the novels in this series was in fact Lester Dent, but a few other authors also contributed and appeared under the same house name. I am certain that this was done simply because the publisher wanted to insure that new Doc Savage novels could continue to be published as long as the readers wanted them, regardless of any limitations on the output of Lester Dent. In spite of this ploy, true fans of Doc Savage consider Lester Dent to be the only authentic chronicler of this character, and the series has not been added to since the death of Lester Dent (not counting the movie).

Sincerely,

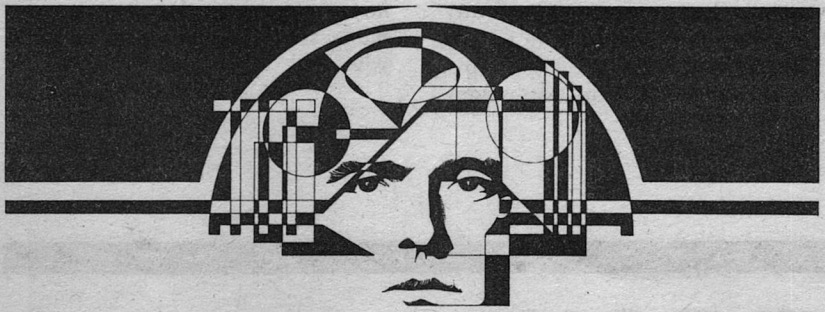
David Palter
1811 Tamarind Ave., Apt. 22
Hollywood, CA 90028

I would have thought there was no possible rational answer, but you make sense to me, David. Thank you.

—Isaac Asimov

MARTIN GARDNER

THE STRIPE ON BARBERPOLIA



Nothing moved . . . but the barbershop striped pole which turned slowly to show its red, white, and then red again, slid up out of nowhere to vanish nowhere, a motion between two mysteries.

—Ray Bradbury, *I Sing the Body Electric.*

The spaceship Bagel was on one of its long exploratory missions. "Good Lord!" a lookout shouted. "What am I seeing? I can't believe it!"

Lieutenant Flarp ambled over to look at the ship's forward telescope screen. On the monitor was what appeared to be a planet in the shape of a perfect right-circular cylinder!

"It must be artificial," said Flarp. "There's no way a planet like that could form as a result of natural gravitational forces. Maybe it's a space station."

"Too big," said the lookout. "Voz [the ship's computer] gives the cylinder's length as 14,400 kilometers. That's longer than the earth's diameter."

"Ask Voz for the circumference."

Voz responded with 8,100 km.

When Flarp enlarged the image on the screen, his eyes bulged and his jaw sagged. Along the cylinder's smooth gray surface was a dark reddish

MARION ZIMMER BRADLEY

The author of the bestselling

MISTS OF AVALON

(OVER 100,000 HARDCOVER COPIES IN PRINT!)

COMES A NOVEL OF DARK MAGIC AND ANCIENT BETRAYAL

Web of Darkness

HER NEXT BESTSELLER— FROM A BRAND-NEW SOURCE!

BAEN BOOKS

The Future Is NOW!

AUGUST
0-671-55898-6 $3.50
27-copy floor display:
0-671-90029-3 $94.50

Distributed by Simon & Schuster
Mass Merchandise Sales Company
1230 Avenue of the Americas.
New York, New York 10020

stripe exactly like the red helix on a barber's pole. (See Figure 1.) Even more incredibly, the cylinder was rotating so rapidly that the reddish bands seemed to move up the cylinder exactly like the bands on a barber pole.

"It certainly isn't a planet," said Flarp. "There's no atmosphere, and the damn thing is spinning so fast that centrifugal force would surely negate any gravity on the surface. I suppose it could be a hollow space station, rotating to generate an interior *g* field."

As the drawing shows, the helical stripe made exactly seven complete circuits around the cylinder's lateral surface.

"Could the stripe be a huge river?" the lookout asked.

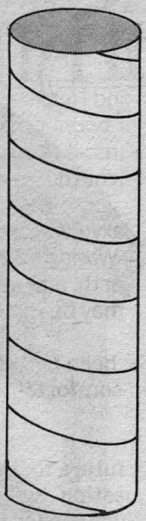


Figure 1

A

Flarp laughed. "I doubt it. You're probably thinking of that old classic, the *Riverworld* series by Philip José Farmer, with its artificial river that winds around a planet from pole to pole. No—I don't think it's a river. But I sure as hell haven't any better ideas!"

The Bagel was soon speeding forward for a closer look, and possibly a landing on what the crew began to call Barberpolia. Your problem is: How long is the stripe?

You may think this a difficult question, but if you have the right *aha!* insight, it's ridiculously easy. All you need to remember is the good old Pythagorean theorem. Try to solve the problem before you look at page 89.

GAMING

by Dana Lombardy

Earth has a sister planet we never see. It's in an orbit diametrically opposed to ours so the sun always remains between us. That unseen planet is called Gor.

Gor, a feudal/medieval-level world, is the setting for a series of 20 SF books by John Norman. The first novel was *The Tarnsmen of Gor* published in the late Sixties. The latest edition is *Players of Gor* (DAW Books). The cover of that book, featured above, shows two men involved in a game that you can now play—*Kaissa.*

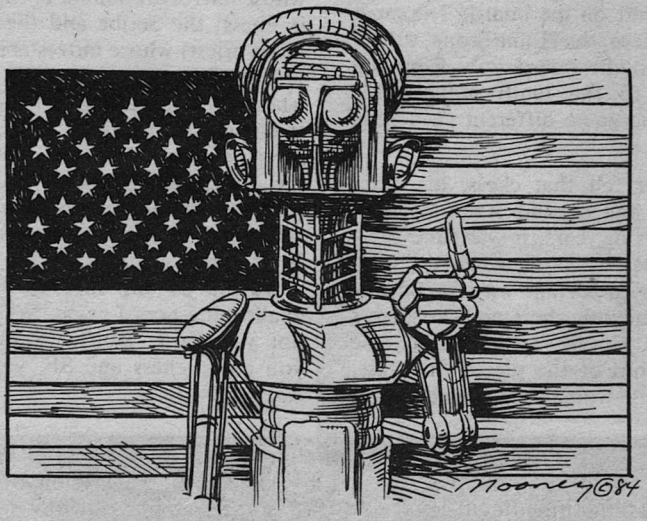
Kaissa (pronounced kī 'ee•suh) means "the game" and its concept was created by Norman in his books. *Kaissa* is not mentioned in all the books, however, and usually appears as embellishment to the main story. It took Gor-enthusiast and designer Jeffrey Shaffer to invent play mechanics and placement of the pieces on the playing board to make *Kaissa* a real game.

Herein lies the paradox between the books about Gor by Norman and the game *Kaissa* by Shaffer. Norman's series is controversial, dealing as they do with bondage and slavery of women, violence in general, and explicit sex. "Gory Gor" is not an unfair description, and may be one of the main reasons why the books are popular.

Shaffer's *Kaissa,* on the other hand, is a chess-like game, intellectual in nature, with none of the elements of bondage or violence described in the version of the game sometimes played with "real" people in the novels.

Kaissa is produced by Port Kar Industries ($15 at your local store, or direct from 19644 South Falcon, Oregon City, OR 97045). It comes in a red and yellow soft-cloth carrying pouch with cloth playing board, 42 red and yellow wooden playing pieces, and short 12-page rules folder. There's also a limited edition with bronze sculptured pieces and an

I'M AS AMERICAN



AS YOU

SPONSORED BY

ROBOTS POLITICAL CAUCUS

"NO CREATION WITHOUT REPRESENTATION"

oak-framed board for $1,500.

On Gor, a caste-society of warriors, merchants, etc., only free people can play *Kaissa,* usually at fairs, tournaments, and whenever the mood strikes them to make a wager on a game. Norman's version of the game has a few different pieces than Shaffer's production model, but the sometimes inconsistent concept from the books is now a real game that anyone can play.

Unlike chess, which is played on a field of eight-by-eight squares, the game board in *Kaissa* is ten-by-ten. Also unlike chess, not all the pieces in *Kaissa* start on the board. The most critical piece, the Home Stone, can be placed on the board only from the seventh to the tenth move. This makes the game different each time you play it.

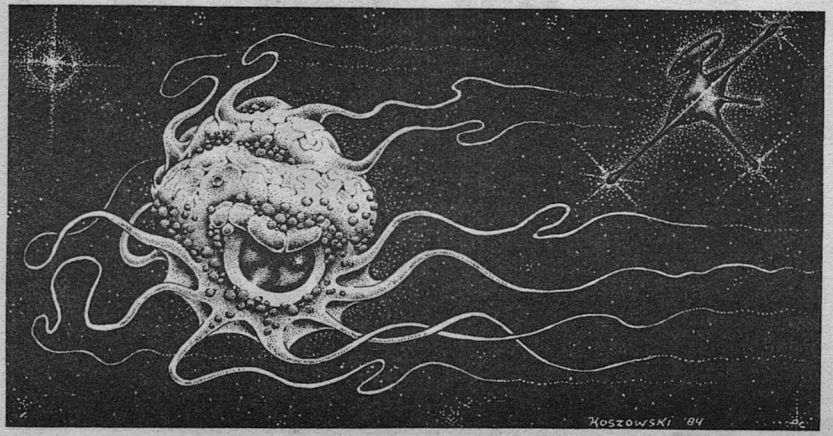
Shaffer felt that chess, his other passion, had become stale. With no new rules in years, it was time for a new game.

A very important way *Kaissa* differs from both chess and Norman's series on Gor is in the male-female relationship of the pieces. In chess, the strong woman (the queen) protects the weaker male (the king). In *Kaissa,* the Ubar (the king) is the strongest piece, and he must work together with his queen, the Ubara, to protect the Home Stone from capture.

The object of *Kaissa* is to take the opponent's Home Stone. With more total pieces per side (21), and more variety in types of pieces (10), *Kaissa* has more depth for sacrifice and maneuver than chess. While the Home Stone can move, it can't capture other pieces.

These other pieces include the Tarnsman (rider of a giant hawk) whose moves are similar to the knight in chess; the Scribe and the Initiate (high priest) whose moves are similar to the bishop in chess; the Builder whose moves are similar to the rook in chess; the Spearman whose moves are similar to a pawn in chess; and the Rider of the High Tharlarion (lizard rider) and Assassin who may move one or two squares, respectively, in any direction.

Kaissa is an interesting and challenging board game. Whether or not you enjoy Norman's books, if you enjoy chess and SF, you'll like *Kaissa.* ●



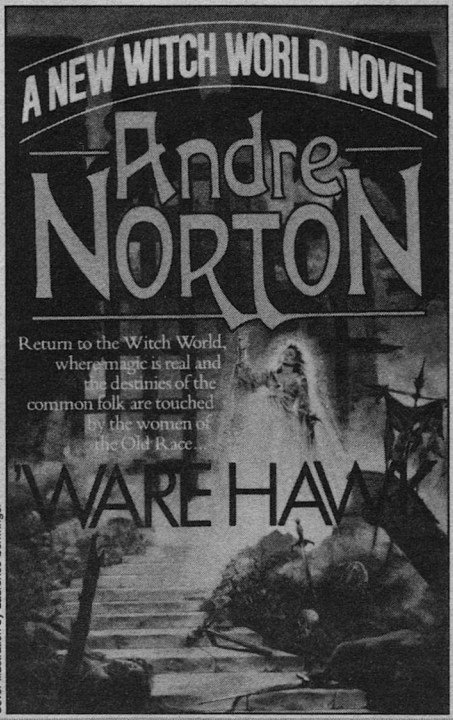
At last, a new Witch World novel!

'WARE HAWK

Andre Norton

Driven by a powerful magic to return to her ancestral home, Tirtha, last of the line of Hawkholme, set out into the twisted, ruined mountains of Estcarp. Her hired guide was a Falconer, a man of an ancient warrior race who was also alone in the world, and falconless.

But a Dark One was determined to foil their mission—and only together could they hope to stand against its awesome powers...

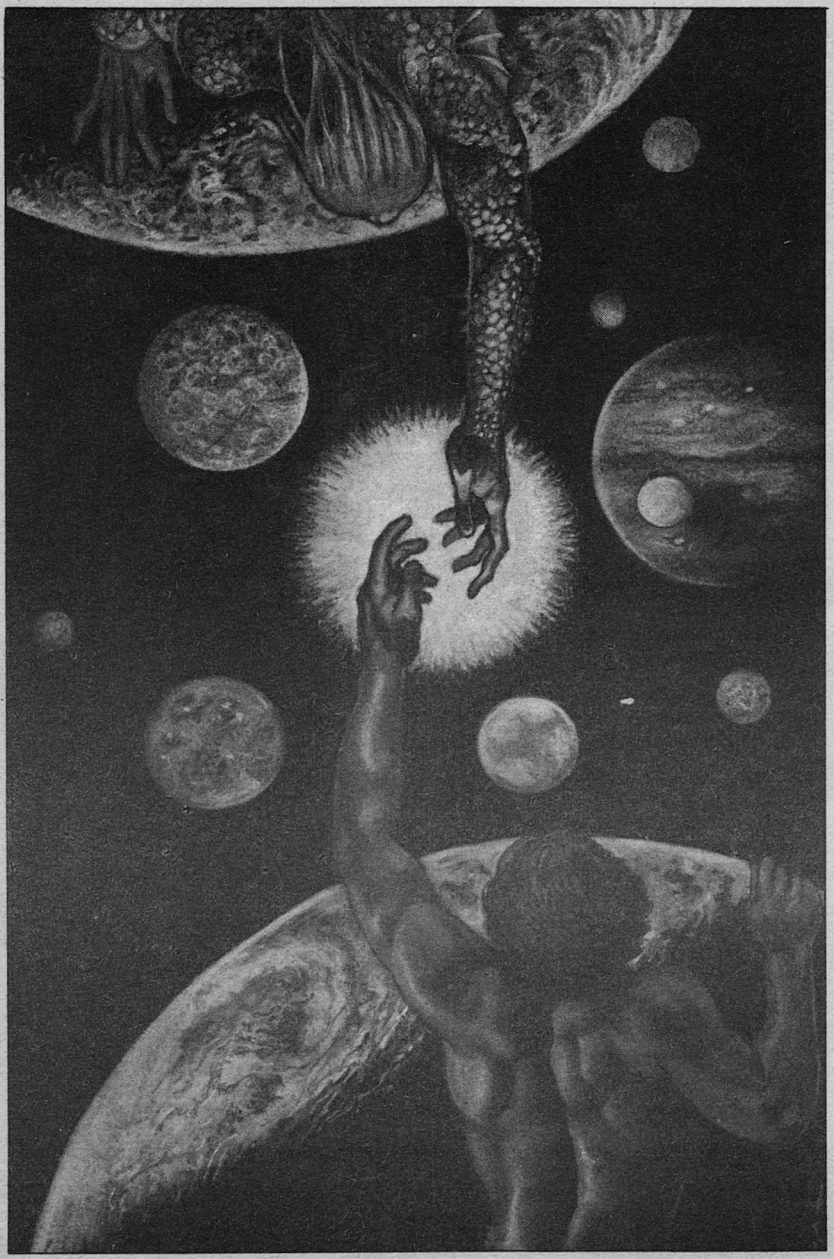


Cover illustration by Laurence Schwinger

On Sale in September
$2.75

#1 in Science Fiction and Fantasy
Published by Ballantine Books

DEL REY



art: Hank Jankus

VIEWPOINT

FERMI'S PARADOX: A REAL HOWLER

by Dr. Robert A. Freitas Jr.

In his Viewpoint article, "The Fermi Paradox," last issue, Stephen L. Gillett argued that the theory of a universe populated by aliens was untenable. This month we present Dr. Robert A. Freitas Jr.'s defense of the right to posit the extraterrestrial's existence.

The author has performed three SETI searches, two of them the first ever to look for interstellar probes in Earth orbit, the third a standard radio search, but at an unusual frequency. He is currently completing a book on extraterrestrial life, called *Xenology*.

VIEWPOINT

Have you ever seen a lemming? I must admit I haven't, at least not in the pelt. I hear they live in the Scandinavian highlands and the North American tundra.

Only problem is—I've just figured out they *can't* exist!

Huh?

Consider: Lemmings multiply fast, about three litters a year, up to eight offspring per litter. While not quite as spectacular as a Tribble, in just 3 years a single breeding pair could produce 134 million new mouths to feed. In just 6.3 years (18 generations), the same couple could parent 100,000,000,000,000,000 offspring—standing room only for them on the surface of planet Earth. By that point the total lemming mass is 20 trillion tons—the same as the entire terrestrial biosphere. Obviously, something has to give, long before.

Something does.

Every three or four years, almost the entire lemming population commits suicide by heading for the nearest sea and drowning itself, a horrible rodent Jonestown. I know, it sounds crazy. Why would any sane creature do that? Beats me. But it says so, right here. . . .

Lemmings are also incredibly feisty animals—restless, courageous, pugnacious, everything a vigorous frontiersman could admire. For instance, when a resting lemming is suddenly disturbed, instead of fleeing it sits up, back staunchly against a rock, hissing and showing fight in a determined manner. The little guys won't take no for an answer. And they're quite the travelers—during each exodus they roam many hundreds of miles, and they've been sighted on arctic ice floes more than 30 miles from land.

Too bad they can't exist! Here's my reasoning:

(1) If lemmings exist, then they should be all around us. Just look how fast they breed, how often and far they travel, their access to all major continents, how indomitable their spirit.

(2) If they are all around us, then we should observe them. Remember—standing room only on planet Earth in 6.3 years?

(3) Fact: I've seen no lemmings. Probably you haven't either. (Why isn't my back yard awash in lemming dung?)

VIEWPOINT

"I could just take the easy way out and claim we don't know if we've been colonized or not. Archeologists and paleontologists have sifted only a minute fraction of Earth's crust for clues to our past. Much has been destroyed by time. Much remains undiscovered. Our chances of having detected an extraterrestrial intervention . . . are nil."

(4) Since we don't observe them, they aren't here.

(5) Since they aren't here, they don't exist. Yet we read about them in zoology books! I call this the Lemming Paradox.

Whatsa matter . . . you don't like my logic?

Okay, let's try passenger pigeons. Birds breed pretty fast, and can fly all over the world. Here's my reasoning again: (1) If passenger pigeons exist, they should be here. (2) If here, we should see them. (3) We don't. (4) Hence they're not here. (5) Hence they don't exist. Well, we can believe that—the last known passenger pigeon died in 1914 at the Cincinnati zoo, and they're now thought to be extinct. But this conclusion *should* bother you just a little, since passenger pigeons *were* around for years and years until humankind killed them all off.

Now let's do extraterrestrial interstellar colonists: (1) If the aliens exist, then They should be here. (2) If They are here, then we should observe Them. (3) We do not observe Them. (4) Hence They are not here. (5) Hence They do not exist. Haven't we heard all this somewhere before?

Come to think of it, maybe I have seen a lemming or two. These are the folks who like to

espouse the above line of reasoning, known as the "Fermi Paradox." It's getting to be quite a popular bandwagon to jump onto, these days. But, like the lemmings' relentless death-march to the sea, it may also be the equivalent of intellectual suicide, for the Paradoxers have committed a very fundamental error.

The error is that the "should" in steps (1) and (2) is not a logical operator at all. "Should" is only a subjective judgement, tainted with assumptions, prejudices, unknowns, hidden agendas and chauvinisms. "Should" is not "must." "Should" is barely maybe. Consequently, the arrow of logical implication cannot validly be reversed, given the fact of null evidence.

So can we really conclude, after hearing out the Fermi Paradoxers, that aliens, like lemmings, cannot exist? Or that aliens, like passenger pigeons, can never have existed? Obviously not.

Scientists can readily explain why my garden isn't crawling with lemmings, even though these rodents exist on this continent and could theoretically get here in numbers rather quickly. And if some were around, but I hadn't looked too hard for them, or didn't know what they looked like exactly, I might not have spotted them at all. Similar notions may explain why extraterrestrials might not be here, or might be unobservable, even if they are around.

Let's think this through. Why might extraterrestrials *not* be here, even though they exist somewhere else in the Galaxy? Perhaps there are billions upon billions of planets teeming with zoologically fascinating, but non-technological, life. We'd never know unless we went there in person to check it out.

Why do *we* migrate, colonize, and settle? Mainly, to seek new opportunities to become rich, to escape tyrannical governments or persecution, to escape crushing population pressures, and so on.

Well, to get richer you need materials, energy, and factories. Advances in robotics will soon make possible totally automated, unmanned factories—which are capable of replicating more factories *ad infinitum*—even here on backwards Earth. If more materials and energy are needed, there are plenty of uninhabitable star systems that can be pillaged. Why exploit life-bearing solar systems, like ours, which is inherently more dangerous, raises

thorny ethical issues, and can't possibly help profits? Most likely They'll keep their distance from us.

One of Gerry O'Neill's strongest selling points for space colonies is the tremendous political and social diversity they can promote. An endless proliferation of special-interest space colonies or interstellar colony-arks is possible. Escape from a tyrant is as close as the airlock. O'Neill-style interstellar ark-dwellers probably also will avoid inhabited systems like ours for the same reasons as the wealth-seekers, and also because they will be well-adapted physically and psychologically to life in deep space. They may feel twinges of astro-claustrophobia upon venturing too far into a solar system, and may be apprehensive of dealing with short-time-horizon "grounders" stuck on planets.

As for overpopulation, there are many ways to deal with it that are far cheaper and easier than shipping people off to the stars. Like birth control pills, for one. Or execution. Or space colonies, for another—if Jupiter's mass is reassembled in 10-kilometer-wide spheres 10 meters thick, the total interior surface living area is about a billion Earths. Arthur Clarke's Diaspar in *The City and the Stars* presents an idea in tune with the modern urge to recycle everything, and there are countless other solutions.

Also, genes are environment-specific survival instructions, so transmission of pure genetic information seems pointless unless the target planet is terraformed as a prelude to colonization. This is unlikely to be done in our system, which is already inhabited, for reasons noted earlier. Interstellar ovum arks, generation ships, and automated bio-regeneration only make new independent competitors for exactly the same limited galactic resources. Where's the profit for the senders?

Like the bottle-babies of Huxley's *Brave New World*, there will be little parental attachment or sense of community with cloned societies whose cultural interaction has 100,000-year information feedback loops. This is comparable to the timescale of speciation. By the time the spurt of human germ plasm has flooded the Galaxy, our distant descendents might have evolved into intelligent raccoons. Or, biological engineering may permit travelers to change genes like jeans to suit the local

THE WHITE HOUSE
WASHINGTON

June 3, 1983

Dear Dan:

It was very kind of you to dedicate your book to me. I appreciate the important work that you and your colleagues have done to prepare the way for a more secure America.

You—and all those who have made the High Frontier project a reality—have rendered our country an invaluable service for which all future generations will be grateful. I value greatly your continuing efforts to help us build a national consensus and to find the difficult answers for the profound strategic problems that face all of us in this nuclear age.

God bless you!

Sincerely,

Ronald Reagan

Lt. General Daniel O. Graham, USA, Ret.
High Frontier

FIRST MASS MARKET EDITION

DAVID WILSON OF THE BOSTON GLOBE, SAYS: "HIGH FRONTIER promises to be the critical strategic, diplomatic, technological and even philosophical issue of the decade."

HIGH FRONTIER

WRITTEN BY A FORMER MAJOR GENERAL IN THE U.S. ARMY AND DEPUTY DIRECTOR OF THE CENTRAL INTELLIGENCE AGENCY!

THERE IS A DEFENSE AGAINST NUCLEAR WAR

GENERAL DANIEL O. GRAHAM

WITH AN INTRODUCTION BY JERRY POURNELLE

TOR BOOKS
WE'RE PART OF THE FUTURE

Pub date: September 1984
pages: 320
price: $3.50

environment at each of many planetfalls. Eventually the "root form"—man—might be forgotten.

Yet—surely out of all the millions of alien races evolving in the Galaxy, at least *one* will become, as physicist Freeman Dyson puts it, "a cancer of purposeless technological exploitation." All it takes is a single rapacious civilization somewhere, anywhere, anytime, and *whoops!*—the whole galaxy (including us) is colonized in a cosmic eyeblink. We don't see this, hence no aliens.

This point is often raised as the *coup-de-grace* by the Fermi Paradoxers. So please bear with me as I carefully expose it for the nonproblem it really is.

First of all, I could just take the easy way out and claim we don't know if we've been colonized or not. Archeologists and paleontologists have sifted only a minute fraction of Earth's crust for clues to our past. Much has been destroyed by time. Much remains undiscovered. Our chances of having detected an extraterrestrial intervention millions (or more) years ago, even by now, are nil.

But instead of copping out, let's take today's null data at face value. Let's just assume there really is no evidence of a massive wave of alien colonization sweeping through our Solar System now or anytime in the past. What does this tell us?

Unfortunately, not much. Science, like Sherlock Holmes, works by excluding various possibilities, one by one, until what remains cannot be ruled out by any known test and so is presumed true. And our null data? All we can say for sure is that large-scale, rapacious civilizations can be excluded. We don't see them, and their rapacity means they *must* be visible, hence they don't exist at this time. But this still leaves (I'm guessing) 99% of all possible civilization types which are *not* rapacious by nature and cannot yet be excluded by the scanty observational evidence.

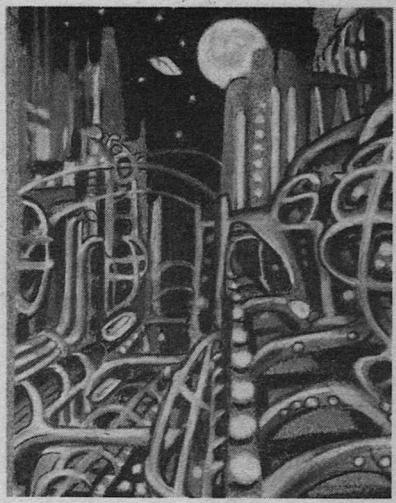
Apparently galactic civilizations which make extensive and exploitative use of highly visible, very advanced technology are rare or nonexistent. Why might this be? Extinction as a natural phenomenon is quite common on Earth, where biological life has a 99.9 percent species-extinction rate. Maybe there can be no interstellar "bad apples," because they self-destruct before damaging any others, or because they have never survived long

enough to complete their galactiforming program and leave any major observable effects. Indeed, social pessimists might argue that the almost instinctual voracity of humans for violence, coupled with our technological capability for self-destruction, may eventually lead to the annihilation of our planetary civilization.

So I have no problem accepting an as-yet unspecified selective mechanism which results in the "cosmic censorship" of those few galactic civilizations who exploit glaringly obvious, rapacious technologies to the utmost. Do you?

Mind you, I'm talking about really *huge* civilizations. Of alien planetary or solar system cultures, or small galactic civilizations that are just starting out, we can know next to nothing about them. We can only see out along the galactic plane a few kiloparsecs because interstellar gas and dust obscure the view. Even the most precise radio telescopes (these can penetrate the haze) cannot resolve a Dyson Sphere the size of Earth's orbit beyond a range of a few kiloparsecs. And no sky searches have yet been made to this extreme resolution, anyway.

High-technology activities by



"Of alien planetary or solar system cultures, or small galactic civilizations we can know next to nothing. We can only see out along the galactic plane a few kiloparsecs because interstellar gas and dust obscure the view. Even the most precise telescopes cannot resolve a Dyson sphere the size of Earth's orbit beyond the range of a few kiloparsecs."

extraterrestrials might not be immediately obvious at interstellar distances. Certainly a major fraction of the Galaxy could have been colonized by generation ships without us being able to observe it. Giant circumsolar factories could be busy chugging away near any but the nearest stars, and we'd see nothing from here.

Dyson claims the Galaxy is still wild, in part because star motions are random. But what benefit is gained by regularizing star motions? Also, the fact that stars are still burning suggests naturalness to Dyson—any really advanced civilization would turn them off and burn the precious hydrogen fuel more efficiently, he says. And I agree.

Well, how do we know this *isn't* happening? Astronomers have found that unless the galaxy is about ten times heavier than it appears, there's not enough gravity to hold it together. If it does hold together, then where is the invisible "missing mass" hiding, perhaps 90% of the total? Could it be dammed-up star-stuff, stored in giant depots near Dyson spheres surrounding the remnants of the vast majority of stars in the Milky Way? At present, we have no way of knowing.

Of course, there are other reasons why extraterrestrials, though nearby, might not be observable by us or might not have contacted us. Maybe they don't want us to find them, or are waiting for us to pass a cosmic entrance exam, or are keeping us isolated in quarantine or in a galactic wilderness preserve or interstellar zoo. Since theirs is the superior technology, we must assume they'll succeed in hiding from us if that's their wish.

There's really no reason why They should *not* keep silent. It is anthropocentric to assume, for example, that alien spacecraft entering the Solar System on a mission of reconnaissance or self-replication will feel the obligation to announce their presence to us or to request permission to proceed. Probes will probably just ignore us and go on about their business. It is entirely conceivable that some extraterrestrials may not particularly care whether we find them or not, or may be interested in communicating with us but are waiting for us to speak up first.

Or, if life isn't especially rare in the universe, then rather than treating us like an endangered species, the aliens may adopt a much more casual approach. They may have tremendous confidence

in their ability to manage first contact events, based on numerous previous successful encounters. In this case, humankind might rate neither ultraconservative wildlife management nor heedless astrophagic exploitation. The most likely response would be careful and unobtrusive observation, with no special effort to conceal the alien presence. Base sites would be chosen for reasons of efficiency, maintainability, and low environmental risk. And if we come knocking on their door, they'll answer.

The Paradoxers are truly up against the wall now. The only extraterrestrials they can positively exclude are rapacious galactic civilizations. Even those vigorous societies that do colonize or exploit may not come here, and, with present-day astronomical equipment we couldn't see much of this activity anyway. Lesser civilizations and nontechnological worlds are entirely invisible, unless they happen to be our next-door neighbors.

Well, just to be sporting, and for the sake of argument, I'll tie both arms firmly behind my back and assume that "should" equals "must" in the Fermi Paradox argument—even though we now know this is not true. Thus, if aliens exist, they *must* be here and we *must* be able to observe them, provided we look.

Well, Freitas, you've thrown it for sure, now. . . . Oooof!

Forgot I could kick, huh?

Don't forget Fermi Paradox step (3): Fact—we don't observe Them in the Solar System. From this the logic of "must" winds us inexorably back to the conclusion that we are alone. So—is there any such "fact"?

Virtually all past and recent discussions of the Fermi Paradox blithely assume that the absence of extraterrestrials or their artifacts on Earth or in the Solar System is an undisputed datum. Totally bogus! Indeed, the vastness of our ignorance in this area is rarely appreciated. For me, it is *this* fact which most nullifies any persuasive force the Fermi Paradox might once have had.

No, I'm not a closet UFOholic. I'm not talking aboutUFOs. In fact, it's just fine with me if we ignore the Earth's surface, Earth's atmosphere, and UFOs altogether for the remainder of this discussion. Fair enough?

What I *am* talking about is an interstellar probe that aliens might have sent here to

reconnoiter our star system and its environs. It's not implausible. Didn't we just send Viking to Mars to search for life? Didn't Pioneer 10 just exit the Solar System? My alien device would be something like our own interstellar probes, the Pioneer and Voyager spacecraft, but a trifle more sophisticated.

A typical alien probe might be 1–10 meters in size—this is large enough to house a microwave antenna to report back to the senders, wherever they are, and to survive micrometeorite impacts for millions of years, but still lightweight enough to cross the interstellar abyss without consuming untold amounts of energy.

Okay, then. Where might it be?

Well, almost . . . anywhere.

Imagine a giant sphere, centered on the Sun, enclosing the orbit of Pluto. *That's* where alien artifacts may be hiding. Roughly 260,000 cubic AU (astronomical units, the mean Sun-Earth distance) of mostly empty interplanetary space, plus 100 billion square kilometers of planetary and asteroidal real estate. To be able to say for sure that there is no extraterrestrial presence in the Solar System, you have to have carefully combed most of this space for artifacts.

Has anyone?

Let's review the facts. The ability of a telescope to detect faint objects is measured by its visual magnitude limit. The unaided eye can see down to sixth magnitude. The sky is exhaustively and repeatedly surveyed by amateurs to, at best, magnitude +14. The Palomar Schmidt Sky Survey extends to +21, but these plates are just snapshots of patches of sky and don't count as a search. The best telescope on Earth reaches only to magnitude +24.

The three latter magnitude limits correspond very roughly to spotting an unmoving, mirror-shiny, optimally-oriented 10-meter object orbiting 0.01, 0.25, and 1 AU from Earth, respectively. An object that's smaller, moving, black, or canted at a different reflection angle is even harder to see.

So we can only scan the nearest cubic AU of space for probes, but we have 260,000 cubic AU to search. Even if Mount Palomar was employed exclusively to look for alien artifacts (don't hold your breath!) it could only scan one-millionth of the necessary volume and would take thousands of years. Orbital space, in other words, is *at least* 99.9999 percent unexplored for 1–10 meter

objects.

How about probes parked on planetary surfaces? Of the 0.1 trillion square kilometers of Solar System territory other than Earth, less than 50 million has been examined to 1–10 meter resolution. So 99.95 percent is still virgin territory as far as a serious search for extraterrestrial artifacts is concerned.

The surfaces of most bodies in the Solar System have only been mapped, if at all, to a resolution of 10 kilometers or worse. Astronomers have difficulty seeing even one-kilometer asteroids flying by unless they pass pretty close to Earth. So who can say if there are 1–100 meter extraterrestrial artifacts lurking about somewhere nearby, quietly performing their mission—or not?

You see? All we know for sure is how ignorant we are.

If objects are buried or floating in a jovian atmosphere, there is zero chance we could have found them yet. Even huge 1–10 kilometer artificial alien habitats lumbering around in the Asteroid Belt could not be distinguished from asteroids by terrestrial observers, and the Belt population itself is poorly catalogued. So it is exceedingly unlikely that we'd have spotted an extraterrestrial artifact anywhere in the Solar System yet, unless it was desperately trying to signal our attention. And why should it bother to do that?

Detecting an operating self-replicating machine system is only marginally easier to observe. Likely sites are the Asteroid Belt and the outer Jovian and Saturnian moons. Recent technical studies suggest individual replicating systems may be 100 meters in diameter, or less, so a factory system for building probes should not exceed 0.1–1 kilometer in size, again well beyond our ability to see it except on the Moon and portions of Mars. Ignition of fusion rockets to propel daughter probes out of the Solar System could be spotted using amateur equipment, but the observation window is very small and of very short duration. Self-reproducing probes should be able to replicate a whole generation in 1000 years or less, and be quickly on their way, so only mining pits and small debris may remain at this late date. Again, probably unobservable.

The total mass of probes needed to explore even the entire Galaxy is astonishingly small. I did a technical study a few years ago which showed that a self-reproducing probe, patterned

after the Daedalus starship (designed by the British Interplanetary Society a few years before) but capable of entering orbit at its destination, could have a fully-fuelled mass of about 10 billion kilograms. If such a device makes 10 replicas and reproduction continues for 11 generations, that's enough to "bug" every star in the Galaxy. This eats up the mass of Ceres, the largest asteroid.

So even if our Solar System played nursery for all 100 billion probes, how would we ever know if one Ceres-size asteroid had once been consumed way out there in the Asteroid Belt?

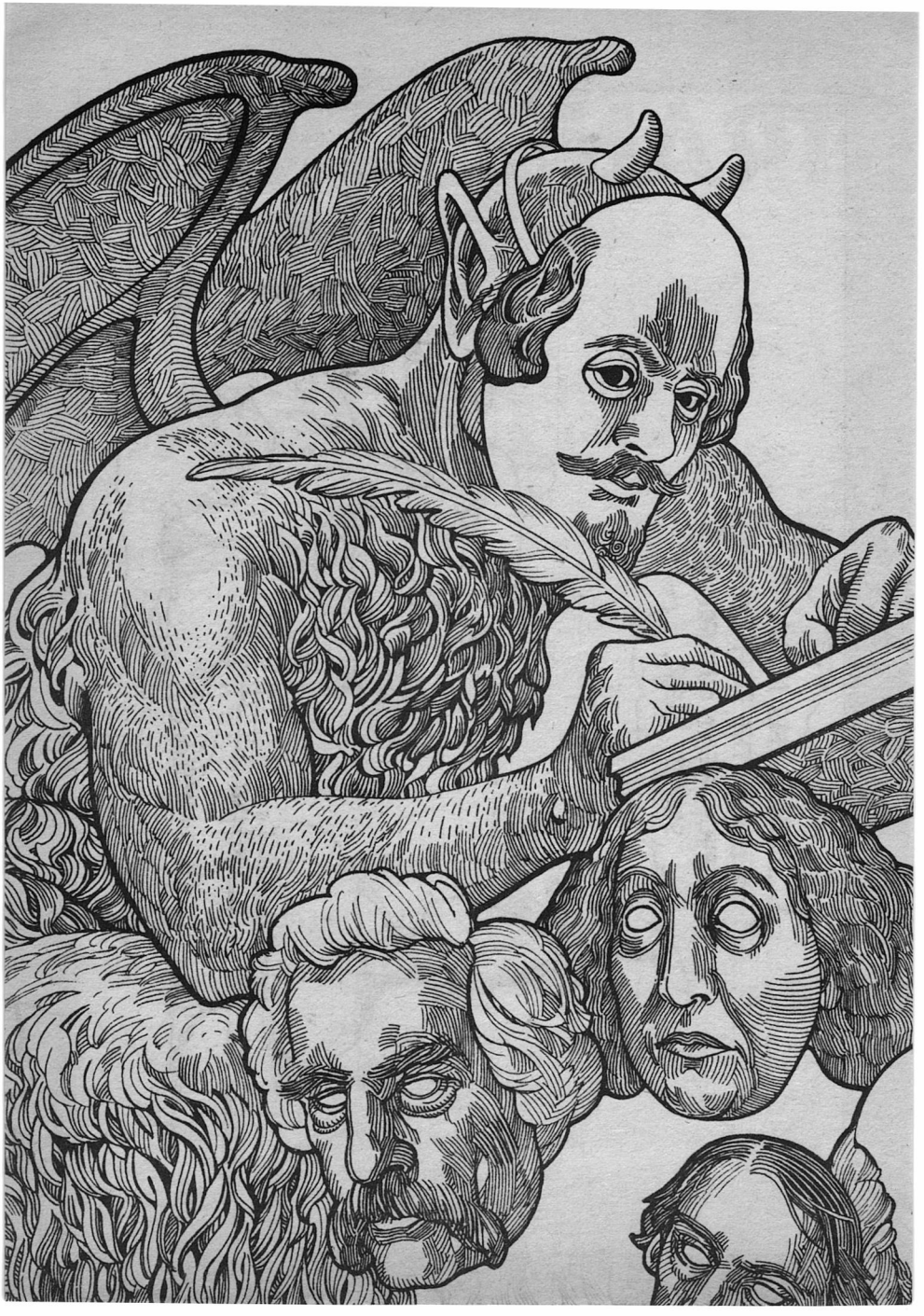
And let's take this argument a step further. Assume that one million extraterrestrial civilizations each pillage the Solar System for materials to build and launch their own million independent spaceprobe spy networks, each covering every star in the Galaxy. The total resource requirement is still only about the mass of Jupiter. I doubt we could say for certain if even this much matter had been stolen away sometime in our remote prehistory. (Is the Asteroid Belt just tailings from some past gigantic alien industrial operation?)

More likely, starfarers won't be so greedy and may require us to supply no more than one new generation of replicants. This is only 100 billion kilograms, enough to fill a one-kilometer crater 40 meters deep or to make one 400-meter-wide asteroid. Probably we'd never notice anything was missing.

Even more likely, the aliens would program their automata to erect self-replicating probe factories only in uninhabitable star systems and just send nonreproducing exploratory probes here to sniff around. Why make the natives restless? No local mass would be missing in this case, and there'd be no telltale surface debris either.

So! The Fermi Paradox is just a toothless tiger. It is all bark and no bite. The Paradoxers can go stew in their sterile universe. There's aliens Out There, yessir, and I, for one, am going hunting for them. We haven't looked nearly hard enough, or long enough, to spot any of them yet. But we will.

And maybe sooner than you think. ●

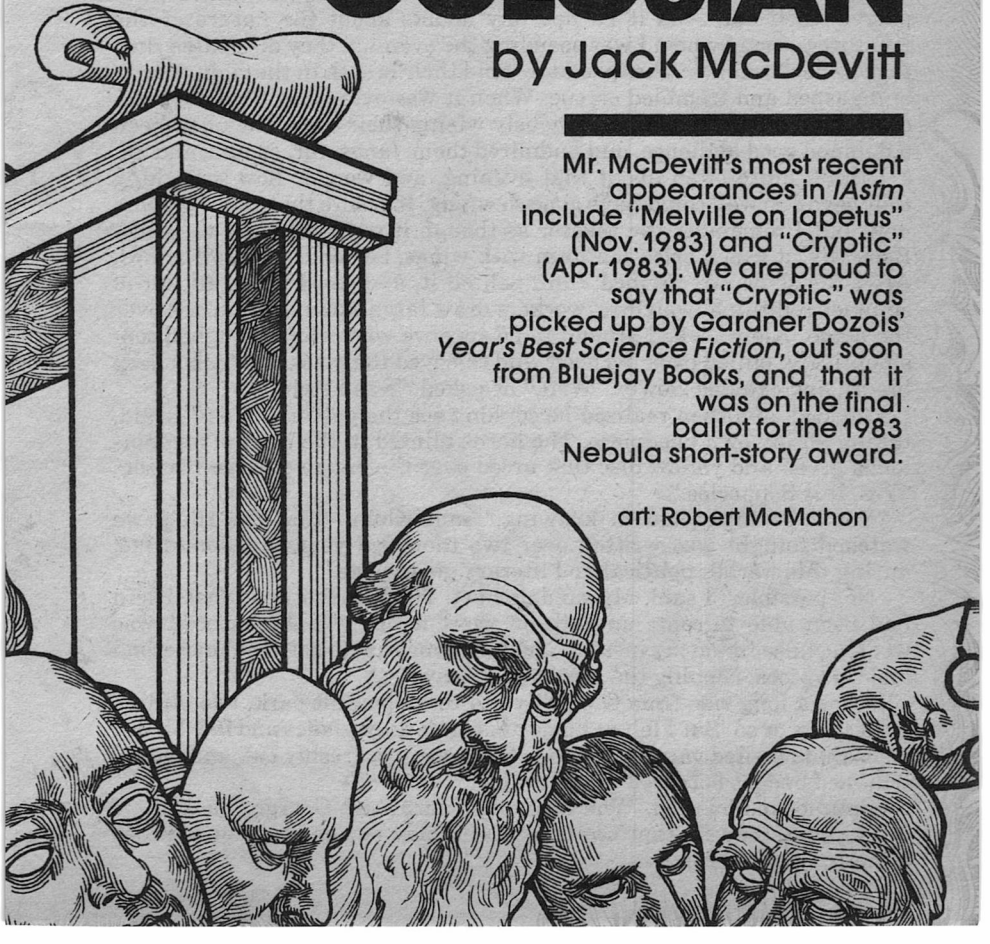


TRANSLATIONS FROM THE COLOSIAN

by Jack McDevitt

Mr. McDevitt's most recent appearances in *IAsfm* include "Melville on Iapetus" (Nov. 1983) and "Cryptic" (Apr. 1983). We are proud to say that "Cryptic" was picked up by Gardner Dozois' *Year's Best Science Fiction,* out soon from Bluejay Books, and that it was on the final ballot for the 1983 Nebula short-story award.

art: Robert McMahon



During the years when the first starships were crawling out from Earth, I sat one night in an open-air theater under strange constellations, watching a performance of *Antigone.*

The title was different, of course. And the characters had different names. I didn't understand the language, the playwright was somebody named Tyr, and Creon had fangs. For that matter, so did Antigone, and the guy sitting immediately to my right. But you can't miss the stark cadence of that desperate drama. I'd have known it in Swahili. The old passions don't change: even there, on that far world, where the Milky Way is only a point of light visible on clear nights; even there, reflected on the faces of a species that would have sent those early Hellenic audiences screaming into the woods, I knew them. Inexorably, while Harvey Klein and I watched through the narrow slits of our masks, the tragedy played itself out. And if I'd had any doubts about the nature of the creatures among whom I was spending the evening, they dissipated during the performance. The spectators held their breath in the right places, and gasped and trembled on cue. When it was over, they filed out thoroughly subdued, some surreptitiously wiping their eyes. They had been a damned good audience, and I admired them, fangs, fur, snouts, and all.

I think quite often about that evening, and wonder how something that began so well could have gone so wrong. It's more than twenty years now: but I remember the theater as though it were only last weekend. Basically, it was a brick platform with wings, balconies, and oil lamps. After the show, we climbed a hill behind it, and stood in the flicker of summer lightning, watching workers draw large squares of canvas over the stage. Klein looked around to be sure we were alone, coughed consumptively, pulled back his hood, and removed the mask. He took a deep breath and exhaled slowly. "Well," he asked, "was I right?"

I nodded, and then realized he couldn't see the gesture. "Yes," I said, taking off my own headpiece. The horns glinted in the light of an enormous green and yellow disc that arced over the entire eastern horizon. "Yes, it *is* Sophocles."

"You'll be interested in knowing," said Klein, "that the thing we watched tonight was written over two thousand years ago, our time, during this world's political and literary golden age."

"Not possible," I said. My sandals hurt. The best footwear that Klein had been able to come up with on short notice was Japanese. I was wearing false fur on my insteps, and the thong ran up between my second and third toes, rubbing the furpiece into my flesh.

It was a long ride from Glen Ellyn to that pleasant park, two million light years or so. But I felt at home among its deep glades and flat-bladed ferns that smelled vaguely of mint. The grass was freshly cut, and neatly trimmed hedges bordered gravel walks.

Klein looked puzzled. "You don't seem surprised, George," he said. "I would have thought that seeing a Greek play out here would come as something of a shock."

That was a laugh. A few hours earlier I'd walked with Klein through the windowless, crooked storeroom nailed to the back of his two-story frame house. We'd entered from the kitchen, and we'd come out *here*.

"Where, precisely, are we?"

"I'm not too sure," he said. "Somewhere in M32, which is one of the Local Group of galaxies. The inhabitants call the place Melchior." A cool breeze blew across the brow of the hill. Klein looked unwell in the torpid light of the monster moon. He'd had a long history of high blood pressure and diabetes, and he occasionally mixed his insulin with rum. "How do you account for it?" he asked. "How does it happen that these people are watching Sophoclean drama?"

"One thing at a time," I said. "How did we get here? What's the point of having starships that take years to go to places like this if we can simply walk across?"

"Oh," he smiled, "no starship will ever come here."

"Why not?"

"We're much too far." He pulled his robe up around his knees and lowered himself awkwardly onto the ocher-colored grass. "How much physics do you know?"

"Not much."

Klein glanced tolerantly toward the dark forest pressing on the far side of the park. "George, it's all a matter of perception. We live in a queer universe, which is both physical and conceptual. Stone and shadow." He picked up a dry branch which lay beside him, and examined it. Then he snapped it in two. "The hill we're sitting on is really here, but our perception holds it in place. Imposes order, as Brooking might say. Or Emerson. That branch is only partly wood. It's also an idea.

"Space is subject to the same laws. It's influenced by the observer."

"How does that connect your back door with this place?"

"Distance is a function of the mind," he said.

I looked at him, trying to understand, wondering whether he was amusing himself at my expense. "Are you trying to say there's no such thing as space? That it doesn't really exist?"

"Of course not, George. What I am saying is that the intelligent observer has a much larger role in ordering things than we ever before realized. We used to think of ourselves as standing outside somewhere inspecting a huge machine. Now we know that we're part of the machine. No: more than that, we're part of the fuel." He glanced at the sky. Most of the stars had begun to fade in the growing light of the rising disc. "It's distance that is an illusion, a convention, a linear measurement of a quality whose reality we establish. Listen, I know that's not easy to understand. It's hard to explain. But it works. You're here."

"Yes, I'm here. But where? In a place where they perform classical drama? How the hell does that happen?"

"I don't know. I wanted you to tell me."

Well, I damn sure had no idea, and I told him so. Having settled that,

I got up to go, but he wasn't anxious to leave. I realized finally that he was ill, and trying to conceal the fact. Curious: Klein could stroll between the galaxies, but he couldn't do a thing about his high blood pressure.

"Can you go *anywhere*?" I asked.

"Hell, I can't even go into Chicago." He laughed. "It's true. I have to take the train down to the Institute. I'm jammed in three mornings a week with all those commuters for three-quarters of an hour." His chin had sunk onto his knees, and he seemed to be losing substance inside the robe. "The truth is, I only seem to be able to come out here. I have access to about a dozen star systems, all in this neighborhood. I don't know why that should be."

We sat awhile. Here and there, below us, lights moved through the gloom. He slapped at a flying insect. We were on a long, diamond-shaped island at the confluence of two broad rivers, one of which was obviously too rough for navigation. A half-dozen shallow-draft vessels were anchored in a small wharf-lined harbor. Several barges floated alongside short piers, piled high with casks and crates. Away from the waterfront area, which was commercial in aspect, were numerous clusters of small homes of a distinctly Bavarian flavor. These were interspersed with brightly illuminated shops and wide courtyards. "Maybe," I said, "the way you get around explains all this. *Antigone*, I mean."

"How's that?"

"Maybe this playwright, what's his name, Tyr, might have understood about, uh, traveling, whatever. Maybe he took his vacations in Athens. You know, go to the theater, see the Olympics. Would he have had the technology? Do you have to have a store room?"

Klein grinned. "Not a store room, George. Just something to use as a funnel." He pulled his robe tightly around himself as protection against the gathering chill. "Aulis Tyr," he continued, "lived in a place called Colosia. It's halfway round the planet and, if my sources are correct, it's only ruins now. But it was the seedbed of this world's ideas about art, ethics, government, and philosophy. They had no real technology in the sense that we understand the term. Oh, some primitive stuff, maybe: they had the harrow, and some timepieces. They understood about pendulums. And they had the printing press. In fact, I don't think Melchior has much more than that now. But no technology is needed to travel. All that's necessary is a grasp of the true nature of matter and timespace." His eyes drifted shut and he shook his head slightly. "But it's difficult to see how anyone, operating without the insights provided by quantum mechanics, could get behind the misperceptions our senses force on us, and arrive at the true state of affairs. But how else could it have happened? Of course," he said, doubtfully, "the chances of a traveler from ancient Colosia finding Earth would be remote. To say the least."

I watched a lamplighter working his way slowly through the waterfront area. "Not necessarily," I said. "He might have the same sort of limitation you do: you come here; he goes there." But no: that made no

sense either. "If somebody had developed that kind of technique, these people wouldn't be living in little pre-Industrial Revolution villages."

"Help me up," said Klein, stretching out a hand. A thin sheen of perspiration dampened his neck, despite the coolness of the night. "How do you lose the secret of the ages?" he asked rhetorically. "The answer is, that anyone smart enough to figure it out knows too much about human nature—or the nature of intelligent creatures—to let them get their hands on it. Or even to let them know it's there."

"Why?"

"Why?" His jaw tightened. "Don't you read anything except poetry?" He held the devil's mask in one hand and turned it slowly round. "Because," he said, suddenly grinning, "the bedrooms of the universe would lie open. Have you considered what you and I could do were we not so high-principled? There'd be no defense, anywhere, against any who possessed the knowledge. Or at least there wouldn't be once we got the damned thing working properly. And while we're on the subject, has it occurred to you that we may not be the first visitors from Earth? Maybe one of your Greeks figured it all out, showed up here, and left some of his reading material in Colosia when he went home."

The huge moon had finally disconnected itself from the horizon. Its northern tip was almost directly overhead: the last few stars had winked out.

"What the hell kind of moon is that?" I asked. It was banded, like Jupiter. And a huge, pale blue disc floated just above the equator.

"That's Encubis," said Klein. "We're the moon." We'd started down the hill, but he looked over his shoulder at the planet. "It's a gas giant, of course. I don't know how big it is, but we're a little too close. This world has the highest tides you've ever seen, and the heaviest weather." He squinted at the thing. "Goddam eyeball in the middle of it is a storm, like the one on Jupiter. Been there as long as people can remember. It's a wonder everyone here isn't a religious fanatic."

Two of the creatures approached along the base of the hill, and passed. Young couple, I thought, judging by the fluidity of their movements, and the proximity they kept. We could smell the river in the night air.

We strolled down toward the trees without saying much, and after a time he looked at me curiously. "What's so funny?"

I hadn't realized my feelings showed. "We have an immortal with feet of clay."

"You're thinking of Aulis Tyr?"

I nodded. He said nothing further until we were back in the store room. Then he closed the storm door and smiled. "The plagiarist," he said, "could just as easily be Sophocles."

Klein provided me with a local copy of the *Antigone*, which is to say that it was a translation from the ancient Colosian into the language currently spoken in that part of Melchior which we'd visited. It was

contained in a collection of eight plays by three major playwrights of the period. He added a dictionary and a grammar, and I set myself to acquiring some degree of facility, and did so within a few weeks.

There were substantial differences between Tyr's *Antigone* and Sophocles' masterpiece, which, naturally, I was familiar with in the original Greek. Nevertheless, tone and nuance, character and plot, were similar beyond any possibility of coincidence.

Two other plays in the collection were credited to Tyr. They were works of subtle power, both (I felt) on a level comparable with the *Antigone*. I recognized neither at first; yet I felt I knew the characters.

The hero of one is a young warrior with a besieging army, who falls in love with the daughter of the enemy king. In an effort to stop the war, he allows himself to be lured into a chapel rendezvous during which he is murdered from ambush by the woman's archer brother.

In the second drama, an old king apparently given to habitual dissembling meets a long-lost son. But neither recognizes the other, and their natural propensity for deceit (the son is not unlike the father) exacerbates the misunderstanding until, ultimately, they meet in combat by the sea. And the son is triumphant:

He found on the shore
The spine of a sea beast
And turned to face the hero. . . .

Death from the sea, and a warrior stricken in a chapel: Odysseus on the beach, and Achilles. Only seven of Sophocles' plays have survived, of more than a hundred known to have existed. Did I possess two more?

I read through each again and again, absorbed in the thrust and delicacy of the language. I was at the time working on an analysis of irregular verbs in Middle English, and the contrast between Tyr's iambs, drenched in sunlight and desire, and my own heavyfooted prose, was painfully evident. It is a terrible thing to have just enough talent to recognize one's own mediocrity.

I had then, as I have now, a quarter-million word novel packed away in three stationery boxes pushed onto a back shelf in the walk-in closet in my bedroom. It was tattered, the edges frayed by repeated mailings, the paper brittle and dry. My father lives in those pages, smoldering, silent, alcoholic; and Charlotte Endicott, whose bright green eyes have not yet entirely faded from my nights. And Kip Williams, who played third base with ferocity, rescued two children from a fire, and died in the war.

A quarter-million words, filled with the passions, and braced with the sensibilities, of a young lifetime. I called it *The Trees of Avignon*. And I knew it was utter trash.

All the years of writing commentary on Byron and Mark Twain, on Virgil and Yeats, had left me with too exquisite a taste not to recognize my own work for what it was. What would I not have given to possess the genius of the creator of *Antigone*?

And that, I knew, was precisely the temptation to which Aulis Tyr had succumbed. "There's just no question," I told Harvey. "It's a clear case of plagiarism."

Klein nodded thoughtfully. We were seated before a wide fireplace in his richly-paneled study, sipping daiquiris. Yes: a creature from a world with a taste for literature had seen an opportunity to *be* Sophocles. And had made it count. "Maybe," mused Klein. "But I think we should withhold our opinion as to who stole what until all the evidence is in."

I drained my glass. "Are you suggesting we go back?"

"We have a mystery, George." The fire was dying, and he stared solemnly into the embers. "Would you like," he asked, "to meet my contact on Melchior?"

"Your contact? You mean you've talked to one of them?"

"Where did you think I get my information? Yes: I know a man runs a bookshop." He angled his watch to read it. "It's getting dark there now. Sun's down, and it'll be a little while before Encubus comes up."

We put on our robes and masks, strolled out into the store room, past stacks of paneling and trim (he was, at the time, repairing his porch), opened the storm door, and stepped onto a blue shale walkway, lined with white bark trees. (It was not the glade into which we'd emerged the first time. "How the hell," I asked, "do you do that?" But he only looked amused.) We were in front of a weaver's shop, a graceful structure of gray stone and glass, illuminated by candles.

Three or four persons (I don't know what else to call them) were seated on a bench across a garden, under an oil street lamp. They looked at us curiously, but continued their conversation. The night sky was overcast: it would remain gloomy even after the planet rose.

Klein took a moment to get his bearings, and then started off briskly. "Don't let anyone get a good look at you," he said. "If they realize you're wearing a mask, they get nervous. I tried showing my face to an elderly citizen on a bench, and he almost had apoplexy. In the end, I gave up and decided to steal what I needed. Chaser caught me at it."

"Chaser? Is that the book dealer?" He nodded. "It's a strange name."

"Those are the third and fourth syllables." Klein strode contentedly along the bush-lined street. "I wanted history books, and a couple of general reference works. I saw some likely prospects through the window of his shop, and tried to appropriate them. He caught me.

"It was a bad moment. He grabbed me by the shoulder. I jumped a foot, the mask came off, and Chaser backed into a stand of cheap novels."

"What happened then?"

"You ever see a fullsize devil, horns, cloven hoofs, and sharp white teeth, fall over a load of books? I started laughing: I couldn't help myself. I mean, if Old Nick has anything, it's supposed to be dignity.

"But he was between me and the door. I'd gone down too, and I was looking at his fangs and ruby eyes through a crosshatch of table legs and struts."

"What did you do?"

"I said hello. And he laughed. It was part snort and part belch, but I know a belly laugh when I hear one."

We'd veered off the walkway, pushed through some ferns, and entered a cul-de-sac. It was a circular courtyard, overgrown with heavy foliage, and ringed with smoking lamps. The bookstore lay directly opposite the entrance to the courtyard: it was a modest, wood frame building, with volumes stacked against a half-dozen windows on two floors. Outside, more books were bunched on tables, under neat handlettered signs identifying their category. "The bargain basement," Harvey remarked.

When the shop had emptied, we went inside. I was too nervous to examine the packed shelves, despite my curiosity. We passed into an interior room, and came face to face with the bookseller.

He sat, or crouched, at a desk of polished stone. One horn was broken, his fur was drab, and he wore heavy steel-rimmed glasses. His eyes were not quite as Klein had described them; rather, they were of a red-flecked gray hue, yet not at all menacing. They rested on us momentarily; his lips rolled back slowly to reveal long, white, gently curving teeth. "Klein," he said, rising, "you shouldn't go walking about like that. Your mask is inadequate; it will attract attention."

Harvey laughed. "Chaser thinks it has an idiot expression."

I removed my own headpiece and looked at it. It would fool nobody in good light, up close. Off the face and away from the eyes, of course, it had no expression at all. "He must mean *you*, Harvey; not the mask."

Chaser understood, clapped my shoulder, gave us all another look at his dental work, and disappeared in back. I heard bolts thrown on doors. Then he returned with a decanter and three glasses.

The drink was alcoholic, a warm wine that suggested macadamia nuts. Chaser raised the glass that Klein had filled for him, and studied Klein with (I thought) genuine affection. "I'm glad you came back, Harvey," he said. He broke the name in half, leaned heavily on the first syllable, and pronounced it with a gurgle.

Klein introduced me. Chaser grunted his pleasure, and clasped my wrist, old-Roman style. "I was unsure whether to believe Harvey," he said, "when he told me there were others like himself." To my surprise, he downed his drink in what appeared to be a salute to the species.

"We saw *Antigone* several weeks ago," said Klein, giving it its Colosian title.

"And did you like it?"

"Yes," I said. "It is a very powerful play."

"I saw it myself on closing night." Chaser's voice was a kind of musical rumble. "The staging was a bit wooden for my taste. They have a director over in Qas Anaba . . ."

While he talked, I was struck by the familiarity of his gestures, and his opinions. I frowned at Klein: an alien culture is supposed to be *alien*, different values, incomprehensible logic, and all that. Chaser emphasized

points by jabbing the air with his index finger, cupped his chin in one palm while he pondered questions of literary merit, and sighed helplessly in the face of views which he considered irredeemably wrongheaded.

Klein raised an eyebrow, and said, "I have yet to find a thoughtful being who would not have appreciated *Antigone*, who would not have understood its point." Chaser nodded. "Maybe," he continued, "we have fewer options than we think. Things that make sense, probably make sense everywhere."

"Chaser," I said, "tell me about Aulis Tyr."

The bookdealer stared moodily at his drink. "He is the first of playwrights, George. His work has been equaled by one or two, but never surpassed. Even now, after so many centuries, he remains extremely popular. The summer theaters here and at Qas Anaba each do one of his plays every year. People come from quite far away to see the performances."

"Your theater group," I said, "is quite accomplished."

"Thank you."

"Of course, they would have to be to handle that kind of drama."

"I agree," he said. "Tyr is quite demanding of an actor. And a director. But the result, when it is done properly, is quite moving."

From a shelf in an adjoining room, he produced two large leather volumes. "Unfortunately, we've lost most of his work. Two centuries after his death, the Colosians were overrun by barbarians. The idiots burned everything. . . ." He passed me the books and turned to Klein: "Do you have a dramatist of similar stature?"

Harvey needed no thought for that one. "Shakespeare," he said, almost offhandedly. That's what happens when you ask a physicist a significant question.

"Shakespeare." Chaser tasted the name, and shrugged. "George, you may keep the books."

"Thank you."

"And whatever else you can carry." His eyes narrowed. "But I know you will wish to repay me in kind."

"How?"

"I would like very much to read your Shakespeare. And I know you would find considerable pleasure in giving so fine a gift."

"Okay," I said. "And maybe I'll throw in Neil Simon while I'm at it."

Chaser's interest, which was already intense, deepened still more. "Who is Neil Simon? Another Shakespeare?"

"Oh, yes," said Klein. I couldn't tell whether he was serious.

"Excellent." Chaser rubbed his hands; his tongue flicked across his lips. It was forked.

We went through several bottles while Chaser, with our encouragement, talked about the Colosians. We toasted Aulis Tyr and Will Shakespeare and Neil Simon. And, along toward midnight, the bookseller's eyes misted. "Let us," he said, "raise a glass to Aalish."

Solemnly, we drank. "Who," I asked, "is Aalish?"

Chaser looked at me with barely concealed astonishment. "I wouldn't have believed, George, that any country could be so remote. . . . But perhaps I've drunk too much. It's not likely that you would know her, if you did not know Tyr. She also was Colosian, a contemporary of his, and, according to tradition, his lover."

"As good a reason as any to remember the young lady," muttered Klein, who had become entangled in his robe.

"No," said Chaser, "you do not understand. Aalish was the first to use prose as an art form. At least, she is the first that we can recall. She was an essayist."

"It's hard to believe," I said, "that prose could develop so early in a culture. We may have to rethink a few things."

"These are people who love books," observed Klein. His eyes were closed. "They have a passion for all the literary forms. Maybe it explains why their sciences never got off the ground."

Chaser sniffed, but otherwise ignored the remark. "That was also the age," he said, with cool condescension, "of Sesily Endine—" He paused to allow us to respond. When we did not, he added, quietly, "—the first great novelist."

The two Tyr volumes were expensive editions, bound in tooled leather, with several woodcuts in each. Chaser argued good-naturedly with Klein about the state of Melchior's science while I paged through them. There was a portrait of the great dramatist himself, in three-quarter profile. He had penetrating eyes, a round, almost hairless, skull, and the unmistakable stamp of genius.

There was also a schema for a Colosian theater, which was more or less in the round, and not at all like the one in the park; some lines of original text; and a broken column with an inscription. Everything was apparently in the ancient Colosian which, of course, I could not read.

"His memorial," Chaser said, when I asked about the column. "It's still there, but so are the barbarians. You would need an armed party to visit it."

"What does the inscription say?"

The bookseller lowered himself stiffly into a worn upholstered chair. "The Colosians," he said, "were alone in a world of savages: slave empires north and south, fierce mounted tribesmen on their flank. They were under constant military pressure, and had been defending their borders for three generations when, for a time, their enemies finally succeeded in resolving their own quarrels, and combined forces. The barbarians attacked by sea, landing a huge army in the heart of Colosian territory, and struck toward the capital. The defenders fought a series of brilliant delaying actions, and then unexpectedly counterattacked on the beach at Ananai." Chaser paused for dramatic effect. "For six hours the issue was in doubt. But in the end, the Colosian navy sealed the area off, and

the invaders were pushed into the sea. It bought security for almost a century. Tyr was a foot soldier in that battle. . . ."

"Wait," I said, suddenly chilled. "The inscription: it says nothing of his reputation as a playwright. It says only that he fought at Ananai, with the Colosians."

Chaser stared at me. "You've heard the story before? They felt it was the highest honor they could bestow."

"Yes," I said. "I've heard the story before."

When we were back in the store room, Klein asked me to explain. Each of us was somewhat wobbly by then, and I led the way into the kitchen, and pointed to the coffee pot. "Aeschylus' tomb had the same inscription: 'He fought at Marathon with the Athenians.' "

Klein shook his head. "More plagiarism. And we still don't really know who's guilty."

"Yes, we do. On a world full of booklovers, the historians should be fairly accurate. If so, Aeschylus died about the time Tyr was born. So that, I think, pins it down."

"Well," said Klein, "I'm glad your faith has been rewarded."

I said goodnight and hurried home through a light rainfall. But I couldn't sleep, and ended the evening on my front porch, listening to the wind beat against the windows, and the water rattle through the drains.

Tyr had apparently been a scientist in a society devoted to the arts. I wondered if he'd envied Aalish in the way that I envied Klein. (Living next door to genius can be painful.) Somehow, he'd learned to travel, and had visited Athens, probably during the time of Pericles. He would eventually have been drawn to the theater, although disguise must have been difficult. Maybe he hid in a tree. Hell, if he could walk between galaxies, maybe he could make himself invisible. And one evening he'd seen his first Sophoclean drama.

He must have returned to Colosia with a collection of plays (and an admiration for Aeschylus' tomb), selected one, and released it as his own. My God, how he must have savored that moment! I wondered which it had been, that first night? *Oedipus*? *Electra*? Do you start with a blockbuster? Or work up to it gradually? I tried to imagine how it would feel to sit in the audience as the creator of a timeless masterpiece, watching it play the first time, and knowing, really *knowing*, the significance of the moment.

I returned to Melchior one more time, to deliver an *Oxford Shakespeare*, a *Webster's Unabridged*, and my own translation of *Lear* into Chaser's language. The bookdealer could not conceal his joy. He pounded my back, pumped my hand, poured wine, and gave me three of Endine's novels, some poetry, and a collection of the surviving essays of Aalish. We talked and drank, and at one point during the evening, Klein predicted that rational cultures will turn out to be quite alike in their essence. "There will be trivial differences in the ways that we greet one another," he

said, "or in the manner that we conduct business, or in our views on clothing and entertainment. But in the qualities that define civilization, we will agree. The proprietors of secondhand bookstores," and his eyes locked with Chaser's, "will be found to be everywhere the same."

He could not have been more wrong.

Two months later, Klein was dead. He was stricken in the middle of the night, and died in an ambulance. I was, at the time, lecturing on Horace at the University of North Dakota.

When I got home, ten days later, the store room had been taken down. I offered my condolences to his daughter, and inquired, as diplomatically as I could, what care was being taken to preserve his papers. At her father's direction, she said, they'd been gathered and burnt the day after the funeral. She cried a little, and I thought about the bedrooms of the universe, and walked around to the rear of Klein's house and looked at the pile of lumber, which had not yet been hauled away. After making the discovery of the ages, he'd elected to let the credit slide, and had gone silently to his grave.

And I? I was left with some newly-discovered Sophoclean plays, and some alien masterpieces, none of which I could account for.

I tried to lose myself in my work, but my classes were tedious, and I grew weary of the long struggles with semiliterate undergraduates.

I read extensively from Chaser's books: Endine's dark novels were Dostoievskian in scope and character. They left me drained, and depressed me even more.

I was glad to retreat from those bleak tales to Aalish. She must have lived near a coastline: the distant roar of the tide is somehow present throughout her work. One has a sense of the author alone among rocks and breakers and stranded sea creatures, the universe itself reflected on deep water. But her vitality and her laughter (it is difficult to believe that she is not somewhere still alive) reduce the cosmos to a human scale: it is a thing, like an old shell found on the beach, that she turns and examines in her hands.

Her essays maintain everywhere a spirited wit, and an unbending optimism, a sense that, if it all ends in a dark plunge, there is meantime starlight, good wine, good books, good friends.

No wonder Tyr loved her.

And there came, finally, a snowswept evening when I confronted my obligation to share her with the world. But how to do it? What explanation could I possibly give?

I don't argue that the course I took was the correct one, but I did not know of an alternative, nor can I conceive of one now. I translated one of her more delicate efforts, a treatise on a neglected architectural design, which shaded subtly into an unbearably poignant rumination on the nature of time.

And I put my own name on it.

It appeared in the April issue of *Greenstreet's*. I felt guilty about it, of course. There was clearly a delicate moral problem involved. But I felt that compromising myself was not too great a sacrifice to give these magnificent essays to the world. There was, of course, little immediate response. But the editors were pleased, and my colleagues offered their congratulations. (I didn't miss the envy in some of their kudos.)

And I: I knew that George Thorne's name would one day live alongside those of Montaigne and Lamb and Mark Twain. It was exhilarating.

My second effort was "Sea Star," which has since become one of the most loved of the entire series. That was also one of the more obvious coastal pieces, and prompted my move to Rockland, Maine, in order to carry off the image.

I rationed the essays carefully, publishing only five or six a year. At one point, I took a two-year hiatus and faked writer's block. But I've pretty well worked my way through Aalish now, and I'd begun wondering whether I didn't owe the world a few great novels too.

Then the *Lenin* came back from Lalande 8760, its belly full of photos, artifacts, and tapes, detailed studies of distant worlds, and the history and literature of a nearby (but previously unknown) civilization. Lalande is only about eight light-years from Earth; in the neighborhood, as Klein would have said.

Perhaps I should not have been surprised. But it had not yet occurred to me that Athens might have been only a single stop in Tyr's itinerary. Or that he might not have traveled alone.

The *Lenin* brought back three novels that, in translation, I recognized as the work of Sesily Endine. I read them carefully, and concluded reluctantly that, once again, there could be no doubt. At first I was puzzled how such a thing could be. But I think I know: Tyr and Endine traveled together. They went to Athens, and to Lalande, and probably to everywhere else they could reach. And if Tyr yearned to be a playwright, Endine must have wanted to create novels.

Fortunately, the Lalande mission came back before I'd used any of the novels myself. Now I have a good idea why Chaser was so anxious to have the Shakespeare collection. Chaser's *Hamlet*: it should play well in the theater in the park, and eventually around his world. And his sonnets should do well too.

But that's not what concerns me. Sometimes, in the deepest hours of the night, I think about Aalish, and I cannot make myself believe that the two men would not have taken her along.

I wonder who actually wrote the exquisite essays that now bear my name? Four more expeditions are due back over the next three years, and I suspect I will soon have the exact coordinates of the immortal seacoast from which the great essayist stood toe to toe with the universe. And smiled. ●

A VOICE NOT HEARD

by Charles L. Grant

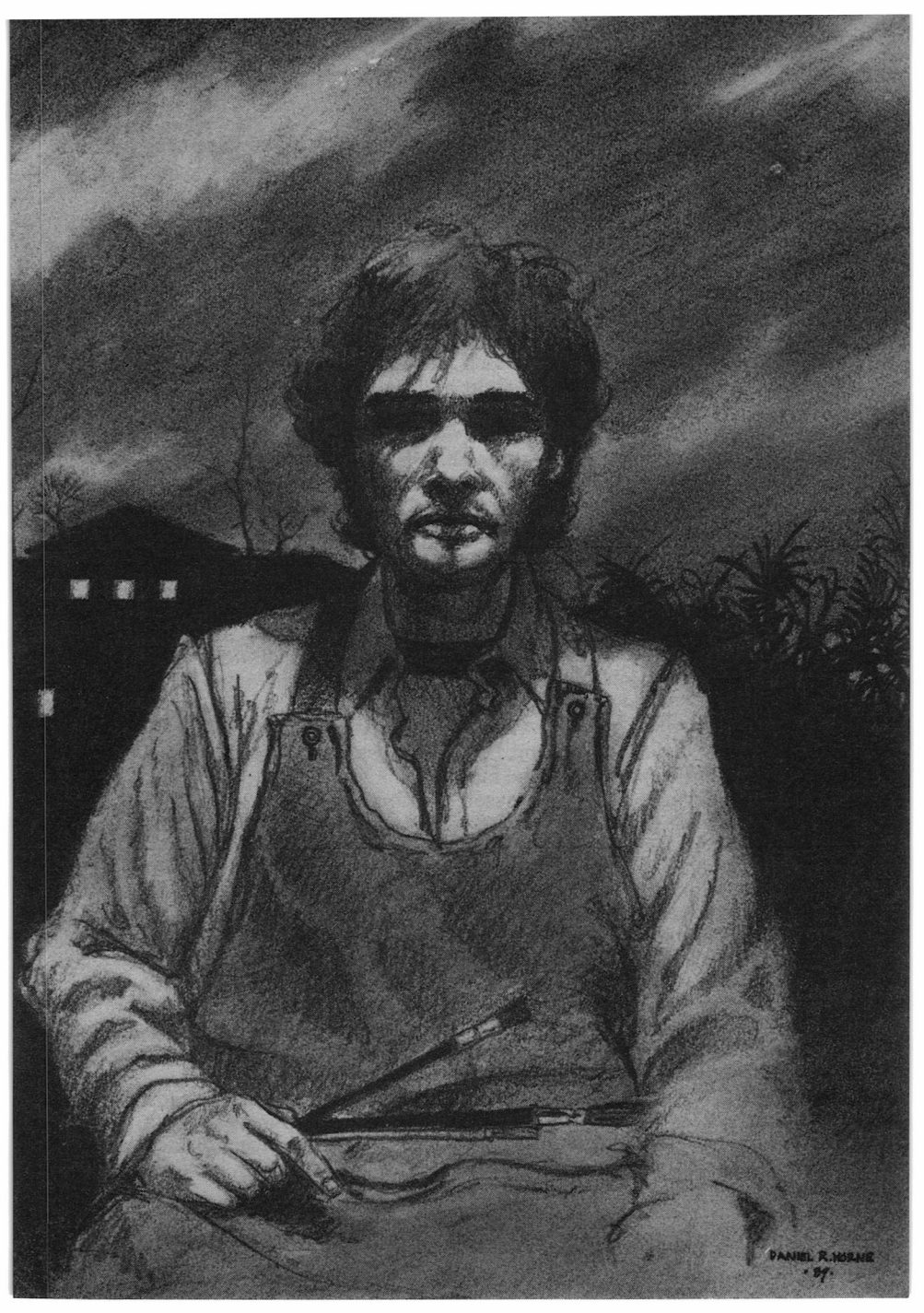
art: Daniel Horn

The author recently swept away with three of the 1983 World Fantasy Awards. His story, "Confess the Seasons" tied for Best Novella; *Nightmare Seasons,* which he edited, won for Best Anthology/Collection; and he also received a Special Award for best publisher. We are pleased to be publishing his work in *IAsfm.*

Sleeping (or the attempting to) (or the elaborate feigning of) is the universal method of an artist's procrastination. And it is, frankly, the most joyless of all deceptions: that while lying there waiting for the onset of your dreams, your mind is able to free-associate itself onto the paths of solutions for all the problems which beleaguer it. Form thus couples with substance, hue with shade, subject with ability. There's a genius at work behind those closed lids, not a man who locks out daylight because he fears the sun . . . as I do here in Starburst, admitting from the beginning that I wonder now why I've bothered waking at all.

I didn't know, you see—though I honestly thought I did—and in not knowing, was not prepared for what I learned. Not about Theobald Harper and the others, not that . . . but about how terribly close I am to playing God with myself.

Theo, so he claimed, came to Starburst because he had understood it tolerated eccentricity more than most, and set no pressures on those who claimed not only to follow a different drummer but a different parade entirely. He wasn't nearly as massive as his ego, nor as tall as his self-esteem, but he had this way of holding his head and jutting his squared chin so you'd swear he was looking down at you, not from condescension but from sheer physical height. It was only when he danced that you


DANIEL R. HORNE
'89

finally knew the truth—assuming, that is, you could take your eyes off his usual partner.

And that partner was most unusual indeed. Her name was Lynn Riggan, a brunette by repute and a long-haired blond by exhibition. As tall as Theo and younger by a decade of hard years, with a soft-planed face that never stayed the same in the same light. Shadows softened high cheeks, flares widened or rounded her sea-green eyes; with a careless toss of her head her ears would vanish, her jawline shorten, her lips gleam or not as the occasion demanded. She was not extraordinarily beautiful, but she was vibrant—much like a high electric wire that hums insistently when the weather is right and the wind is soughing and the clouds overhead feint storms at your senses.

There were a half-dozen of us who used to gather at uncertain times on uneven days at my studio up on the Slope above town, overlooking Nova Bay. My home was small, but commodious for any and all friends, situated just below the permanent mistline that cat-crawled around the peaks above the quarter-moon valley.

And it was on just such an occasion late in September when I escaped the house into the tiny backyard. I was, to put it mildly, dispirited. For weeks I'd been attempting to recapture something of canvas art, a form nearly everyone had already derided as impossibly Romantic, stultifying, or—in moments of absolute condemnation—limiting. And the more they tried to badger or cajole me into Harmonics or holos, the more I dug in my low-rounded heels and refused them their victory.

I walked across the grass toward a stand of trees at the back, swinging a stick at the blades and hoping I'd catch myself on the calf; the pain, I figured, would be perfect for the mood.

The trouble was, when I saw myself walking—head down, muttering, my hair catching the gentle wind Byronic and billowing off my shoulders—I grinned. I made a lousy martyr; I never did have the nerve for all that stoning.

But it was familiar, and comfortable. Like everything else, up until about six months ago it was . . . comfortable.

I heard footsteps then, and I turned. Lynn was trailing after me, her hair caught in a fist over one shoulder, a silver shawl shimmering down to a fringed V at the base of her spine. I looked behind her, but Theo wasn't around. That surprised me. He wasn't jealous of me, because I had no designs, artistic or otherwise, on the woman he professed to love, but he couldn't help panting after her. Lust need not apply; the man was a pet begging to be used.

I leaned against the nearest bole and waited patiently, and amused. When she finally reached me, her gaze took hold of mine and wouldn't let go. She believed that one never looked away from either friend or enemy; the only people who did not deserve her full attention were those she had decided belonged on the moon.

She also didn't believe in preliminaries. "He wants you to help him. He's nearly done with Warner."

I shook my head emphatically. "Not a chance. I can't take that much time off." I looked away to the house. "I really can't explain it, but I can feel things stirring out there. I'm about to make a move, some kind of move, and I don't want to be away and miss the opportunity."

She closed one eye, as if two dimensions were better for scolding than three. "That, Tony, does not make sense."

"Of course it does."

She shrugged; if it didn't make sense to her, it didn't exist.

"Listen," I said, tossing the stick behind me, "I haven't sold a thing in seven months. My savings are just about gone, my credits from the Council are down to the last draw, and I do not particularly care if Theo can't do it himself this time. I need to be ready, Lynn, don't you get it? I've been getting nibbles from all over the place, folks are finally giving my stuff more than a passing glance. One break," I said, holding up a finger. "One break, and the logjam goes."

She stood beside me and looked back toward the house. I don't know what she was seeing, but I spotted Theo at the window, his back to us, one arm raised in a point-making gesture. From the angle of his head I guessed he was talking to Stephen Palgreaves, who was two heads taller and weighed just about the same.

And that, I knew, was a definite lost cause.

Stephen was a writer, yet for all his supposed sympathies for those of us toiling in the visual arts I don't think he understood for a minute how Theo worked. For that matter, I scarcely did myself. Perhaps it was for that reason, then, that ever since I'd made a Council tour of Europe, I'd been wondering if people would accept taking a skill like mine and putting it back on canvas rather than carving niches in walls where Yar's holos contorted, Kingston's glassines squatted, or . . . well, where Theo's Harmonics shifted with a whisper. Niches, in Theo's case, proofed against extraneous sound, carefully lighted so the half- and grace-notes set into the bases would not be interfered with as they affected the spectrum and gave form to invisible substance.

"What are you afraid of, Tony? That he'll steal your soul?"

I blinked and looked at her. Not only was that statement stupid on the face of it, it also told me how affected she had become by Theo's impassioned rhetoric.

"For heaven's sake, Tony, Hank did it last spring, and Warner's doing it now. I kind of thought—I don't know—I kind of thought it would be an honor to be asked."

"He's my friend," I said flatly, almost angrily. "We don't honor each other; we do favors without expecting repayment."

Again she shrugged, barely lifting her shoulders. "However you want to put it, he still wants to know."

"He wants to know that bad he can ask me himself."

"Tony, dammit!"

"Dammit yourself," I said without heat. Then I looked at her carefully.

"Have you seen Hank lately?" When she didn't answer, I pressed her. "Come on, Lynn, have you seen him?"

"No," she admitted quietly.

"Then do. See him, then come back and ask me again."

"I've heard the rumors." She was defiant, and stubborn. "Oh come on, go ahead and do it, Tony. For me? As a favor to me?"

I was tempted, but I wasn't moved. "No," I insisted. "I'm not going to do it. I can't stand there for weeks on end while he fiddles around and monitors my heart, my lungs, my liver, every damned time I have to piss and cough."

I looked away quickly because she knew I was exaggerating, an exaggeration based on hearsay, malicious gossip, and a great deal of confusion. Actually, Theo kept his final process a fairly decent secret. The preliminaries, however, dealt with recording the timbre of the subject's voice, the photographing of characteristic gestures and poses, and throughout, a lengthy series of conversations during which he would opt for mining the subliminal rather than the overt. Had he a degree and a shingle to hang out he would have made a fortune. As it was, he took all the information and synthesized the seeming disparities, assigning light and tone values to each until he had a contained sculpture of laser and subtonic portraiture. One never recognized a face in a Harmonic, but the person was unmistakable—you heard, you saw, you felt, and if you knew the subject well enough the effect was quite simply unnerving.

When I looked back, Lynn was smiling.

"See? You think he'll take your precious soul away."

"Bullshit!" The denial heated because she was too close to the mark.

"Anthony," she said, disbelief evident in the song she made of my name.

I looked to the house; Theo was gone.

"All right." I hesitated. "But it's not my soul, nothing like that."

She scowled and—there's no other word for it—flounced away, twitching her hips once with a salacious promise not meant to be kept, fresh salt for the wound she thought she'd inflicted.

Good lord, I thought wearily, save me from true believers and lovers.

Ten minutes later, Warner Killough joined me. He was robust, blond, his slightly slanted eyes a true sparkling blue. With a thick blunted finger he poked at my chest, at my stomach, stepped back and examined me with all the care of a butcher facing a difficult leg of lamb.

"So?" I said.

"So you look none the worse for wear."

Lynn had apparently proclaimed my refusal to the company. I grinned. "I managed to withstand."

He laughed. "You're a better man than I, Gunga Morris. Right after she nailed Hank, she was on my doorstep and panting through the keyhole. Unfortunately, I had no wax for my ears."

"An agent at heart," I said, and immediately regretted it. Warner,

whose work was in glass and crystal, had been through a dozen agents in the last four years, and the better he got the more they stole from him. Now he was on his own, and I'd never seen him happier.

"She will keep after you, you know," he said.

I dismissed it with a shrug. "How's Theo keeping you?"

He frowned then, and looked hard at the ground. "It's interesting. He's . . . it's interesting, Tony. Fascinating to see how he does it, and . . . interesting."

I leaned closer, somehow feeling I had to whisper. "Are you all right?"

"Never better." But there was no force there, no conviction. "Tired, that's all. He's a taskmaster from the old school, you might say."

"*You* might say," I countered. "I'm not saying a thing."

He laughed dutifully and slapped my shoulder. "We must talk, my friend." He gestured vaguely at the house. "When all the animals are back in their stables."

I nodded, said nothing, and a moment later he stalked back over the grass and vanished inside. He was one of the few in the circle who did not feel the need to rag me constantly about what Hank had once called my latest affliction. Warner was willing to see what I could do before he slipped in the knife. And for that small pardon I was quietly grateful.

I stayed outside until everyone left before returning to my studio where I checked a new canvas. I'd had a difficult time convincing my Council supervisor that oils were really and honestly, send me to the moon if you don't believe me, what I needed. But if nothing else in my saleman repertoire I have a pretty good smile, if I don't show my teeth. So I got the oils, a canvas stretcher, easel, and all the stuff I thought I had to have before I made the plunge.

Then came the first lesson.

Long before this, long before I came to Starburst, I had made a modest success in sculpting glass. Nice stuff. Commercial. Every so often pleasing myself silly in orgy-like fashion with something I really thought resembled Truth, Beauty, or Universal Sufferance. The former pieces sold quickly and at a modest price, the latter hardly at all. Unsurprising. Disappointing, but unsurprising.

Then (and it seems now as if it had been overnight), my Grant Council came to me and said I wasn't putting enough credits in the bank to make my name worthwhile for government rolls. I had seen the bills, of course, but in the manner of those who cared more for their work than their living, I had merely done the old toe-and-heel shuffle: toe that pile of envelopes over there for payment over the next month or so, heel this stuff in here for payment now so my body wouldn't be repossessed. It had been going on for so long I had forgotten how to live normally.

I hadn't realized there'd been a time limit on the grant.

The way it worked was rather simple: you made enough money annually and for a fixed period of years so the government thought you

were really and truly making a contribution to society. So grateful it was for that contribution that it forgave you your taxes and placed a small amount in an account for you, touchable only when, as the odds predicted, you suffered a bad year or two. But when those bad years added up, the government did too.

So I got the oils and all that went with them, learned that I really didn't know how to draw, took lessons, discovered I could draw after all, and got myself started.

Failure, then, regrouping and trying again. And again. And damnit again. Fighting off depressions with bouts of righteous anger, cooling off, working, depressions, anger simmering up to rage. A hell of a roller coaster, halted only when I decided to leave the city five years ago and take a place in Starburst. No overt pressures here, no gawking, no snickering and the attending pointing fingers. Artists have miserable times in the best of times; Starburst, at least, managed to localized the bruising.

And by Christ, I was beginning to make some headway.

Enter Theobald Harper and his Harmonics.

Two weeks later I was working on something near to Constable out of Turner when the vione chimed at me from the front room. I considered ignoring it, changed my mind when everything suddenly went flat and colorless, and strode angrily to the screen to demand to know who it was who had ruined my masterpiece.

Within ten minutes I was down at the beach. Warner was sitting with his back to one of those boulders that dot the sand for no particular reason. He was smiling, wearing his good clothes, and he was dead.

He looked as if he'd not eaten since we last talked.

Theo was there, and Stephen, a few others. We watched silently as the ambulance attendants covered the body and carried it away. Then we moved to a small bar near the Gambling Hall. An hour passed, and Theo, Stephen, and I were alone.

"Suicide," Theo said, and shuddered, a thatch of gray-black hair drooping into his eyes. He yanked it back impatiently. "What a waste, Anthony."

"It is not beyond the realm of possibility," said Stephen, "that he had reached the peak of his powers, or believed he had, and felt he could contribute no more." His voice was sombre, appropriate enough for the occasion, though it always managed to sound that way. I think he faked it, but I've never been able to catch him off-guard. "It wouldn't be the first time a man did away with himself because age had betrayed his youthful ability."

"Crap," I said, though without much feeling. "He was too scared to die, much less do it himself. He wouldn't even drive a car, for god's sake. Was never in a plane in his life."

"But it *was* suicide," Stephen persisted.

I granted him that with a nod. "Not for your reasons, though."

"Gentlemen," Theo said, oil on waters barely troubled, "no matter the reason, it is a goddamned waste."

I leaned back in the red leather booth, stared for a time at the barkeep in the wall and counted the lights. They made me dizzy. I looked back at Harper. "You didn't like him much," I said finally. "You kept after his throat, figuratively speaking."

"I sounded him, didn't I?" he answered quickly, as though excepting the accusation. "Well, didn't I?"

"Yes. . . ."

"And if he'd kept on, who knows what he might have done with his talent."

"But he didn't," Stephen pointed out rather unnecessarily. He stroked his chin pensively, a habit left over from the days when he had a beard that put to shame all species of bearskin. "It's as I say, the more I think about it, he was—"

"Oh, just drop it," Theo said flatly, and slid out of the booth. "At least he isn't totally lost to us. I did sound him, you'll remember."

I said nothing for several minutes after he'd left. Stephen drank steadily, swiftly, and I soon found myself wondering what had gotten into him. Admittedly, Warner's death had shaken me too, but I knew I wasn't going to find solace in a stupor. I had too much work to do, and I did not need pity for the departed to cramp me just when (as I told Lynn) there were stirrings.

Two weeks into October Hank was found up in the mist by some late climbers. He was hanging from a tree, looking over the bay.

I went to the funeral with Lynn. Stephen was so drunk we had to leave him in the car.

"I don't believe it," I said afterward, when she and I took to the beach, heading slowly north across the gray sand toward the marina and the backdrop of trees dying brilliantly in the sunshine. "He's been like that since Warner died. How does he expect to get any work done?"

"He will. Eventually."

I was puzzled. She didn't seem very disheartened by Stephen's condition. Nor, in fact, had she been distraught at Warner's burial. I suppose it was loyalty—anyone who came within a shade of touching Theo's success was looked upon as a potential rival. And that, too, was curious since Theo had it head and shoulders above all of us, including Palgreaves.

She slipped a hand around my waist and said no more. I decided that all the dying had finally gotten to her—she and Hank had once been very close—but I couldn't help thinking (and in thinking, could not help echoing Theo in a different context) what a waste Stephen was making of himself. He was promising. More. He was on his way beyond survival to something that meant a great deal to him. Just as I had, the night before, suddenly looked at a partially finished canvas and realized with a shudder that made me shout that, by god there was something there!

In the swirls, in the slashes, the semblance of things real and things imagined. Dammit, I had found something. I didn't know what it was, could not define it, and had dropped onto my bed to think about it. Analysis was necessary, I had thought at the time, and I had to know before I went any further. I couldn't; I fell asleep, and woke to the vione telling me not to be late for my colleague's funeral.

I laughed. Lynn pulled away, frowning, the wind taking her hair and weaving a veil over her eyes. I shook my head, still laughing. "I'm sorry," I said weakly.

"I know," and laughed all the more. We had come to a boulder, and I leaned against it, letting the tears come, washing aside the light and the water and the ocean lurking beyond. "It's a plot, don't you know that?" I said, rubbing at my chest where the ache had taken root. "Warner, Hank . . ." I lowered my voice. "Who," I intoned, "shall be the next victim of this heinous killer?" I straightened. "It's a critic, of course, no question about it. They've seen the exhibitions and they're out to purge the art world of its impurities. My god, I'd better go home and bolt my doors!"

She hit me.

It wasn't a slap and it wasn't a hard shove. Lynn curled her hand into a fist, looked at it for a second, and took it directly to my jaw. My head snapped back and struck the rock, and there was a light-stained darkness and a roaring that did not leave until I'd dropped to my knees and waited it out. When I could see again, she was gone, and though I felt truly remorseful for making her think I was somehow mocking the dead, I was much more relieved that my own grief had at last been put to rein.

On the other hand (to be truthful), I was getting nervous.

All that gibbering nonsense about a plot wouldn't be the first time—in point of fact or fiction—that a self-styled avenger had taken it upon himself to rid the world of a certain class or configuration of society. Whores, preachers, doctors . . . why not artists? The only problem there was, neither I nor the police believed those deaths to be anything but suicide.

But that in itself was frightening enough.

It is a living dream we have in the community of the creative: that we are somehow different from everyone else, given license to become strangers because we're strange. Different. Seeking alternate wavelengths to listen to the voices that run the universe and depict them in any form possible so that the rest of mankind can glean something of . . . not truth, exactly, but alternatives.

Actually, I think it's a lie. Yet live the lie long enough, so the cliché goes, and living becomes truth enough to get away with . . . something. And one of these days I'll figure that part of it out.

But knowing all that did not make me any less apprehensive for the rest of the day.

That night Lynn came for me.

I was napping after dinner, still working out what was happening on my canvas, and I was more than a little embarrassed to be found on the couch instead of at my easel. She said nothing, though—not of her punch or my exposure. She only told me Theo wanted me to come visit for a while.

I rose awkwardly. "Why? He isn't going to try to talk me into posing, is he?"

She merely smiled. A beautiful smile. Guileless, beatific, and I couldn't help but laugh because we both knew she was a sham.

"All right," I said, chuckling and shaking my head. I pulled on a sweater, switched off the lights, and took her hand as if nothing at all had happened on the beach. For my part, it hadn't. She had a hell of a wallop, but I couldn't take it seriously, and that, I suppose, had been my trouble with her from the start.

It was cool outside in a way only October can touch the air, and the mist behind the houses caught the mellow jewels from porchlights and streetlamps. A few leaves had already fallen to the gutters, and they followed us in explosive gusts, tripped over each other, drifting out into the street and back again like children on the hunt for a target of their teasing. Through the foliage the jigsaw moon was grey and wan, the shadows it cast hardly worth the effort.

The walk was disorienting, a feeling I'd had before while taking to the streets that were halves of concentric circles each beginning and ending at the town's main road. Outside, beyond the mountains, the world took to the planets, spoke in images over vione screens, built androids for the rich, computers for the poor, and weapons for those with nothing better to do. Here, outside a small house where those same conveniences were, it could have been just about any time, almost any place . . . and it was always, for me, a mild shock when I had to go inside, away from the dark.

As in Theo's—a ramshackle structure added to and subtracted from as owners' whims collided with needs. Theo himself had doubled its length with a single room whose peaked roof lifted redly above the rest of the house. It was a dizzying place, canted here and padded there, buffed, roughed, all serving to establish the sort of acoustics he needed to create his Harmonics, and to entrap the subtle lights that would give them visibility.

I don't like to watch him work. I don't understand it, it's as simple as that. I could tell you easily enough that this shade of green and that tint of yellow would, when placed together, clash instead of complement; but add a black here or a russet there and all would be well. I could do that. The only thing is, I couldn't tell you why.

Theo could. He knew physics the way I knew Lynn—without all the emotion that clouds reason (and sometimes a shell).

Perhaps that's why he was successful and I was still working toward it. On the other hand, I was of the firm belief that if I knew all there

was to know about the oils I used, I would be doing nothing more than exercises in a text.

And that, I think, is why Theo didn't understand me.

He was waiting at the studio entrance, nervously wiping his hands on a dark-stained cloth tucked into his belt. His hair was unkempt, his tongue moved constantly to moisten his lips. I wondered if he'd been drinking and needed talking to get sober; or if he'd been down at the Gambling Hall and had lost another month's commissions, and thus needed reassurance. Both seemed to be my primary role in his life, and frankly, I didn't mind it. It gave me a chance to get away from my own work and view it at a distance while giving Theo back his sanity. Or so, in terms of the latter, he always told me.

He greeted me with a handshake, ushered Lynn in ahead of us, and blocked my way when I made to follow. "You were at the funeral."

"I had to go," I said. "Hardly anyone else knew him."

He nodded. "I couldn't, Tony."

"Sometimes you can't," I said. If all he wanted was some sort of absolution, I could do that too. "Some people would rather avoid things like that and remember—"

"No," he said. "I was working. I didn't. . . ." He shook his head as if to clear it. "They sat for me, you know. Both of them. They sat for me."

I nodded. I waited.

He took a deep breath and trapped it in puffed cheeks. "Like Palgreaves is now."

Well, I'll be damned, I thought. But I said, "Yeah, so?"

He stared at me intently, then grabbed my arm and pulled me inside. Immediately over the threshold is a small gallery of sorts where his latest work was laid out as he wanted it for whoever was making the purchase. If the customer could not provide the proper background, the exact mechanics, he terminated negotiations. It wasn't all that risky; he always had people waiting in line with coin.

He took me past a few minor pieces he dismissed with a disgusted wave when I asked about them, hurried me around a cork partition to Lynn, who was standing against the wall, arms folded loosely under her breasts. I stopped and pulled my arm free. When he wouldn't look at me, I grabbed his shoulder to keep him from moving away.

In the center of this space were two freestanding alcoves, designs for the Harmonics set within.

Try, if you can, to describe a Turner, a Frankenthaler, a . . . a Theobald Harper. The hackwork, maybe, but not the *real* work.

Like these.

The hairs on the back of my neck and hands tingled, a subtle series of vibrations were triggered behind my ears; darkpulses, a frieze of lightning, visible thunder . . . God and graveyards and mausoleums and seatrenches and avalanches and. . . .

Warner was on the left, Hank on the right.

I couldn't stay. I left without a word, walked to the parlor and dropped onto a couch where I waited for Theo to bring me a drink. Lynn did, and held my hand, whispering words I couldn't hear, didn't want to hear, could not avoid.

"Think of it, Anthony. If Theo can do that for them—and they weren't all that great, admit it—think of what he can do for you. My god, Anthony, you'd be immortal!"

It took me a while to find speech and thought. "Maybe I would," I said after clearing my throat, "but not like that, thank you."

I knew I'd been right in avoiding Harper all this time, but I hadn't really known why until just now. Warner and Hank—stripped of everything they were, frozen in time, for all time. Naked. Christ, it was obscene.

I said as much to Theo when he finally joined us, and despite Lynn's rage at my playing the Philistine, he agreed.

"But there's beauty in that, don't you see it?" he said earnestly, almost pleading. "Nothing in or out of this world is ugly; everything has its virtues, even evil, even obscenity. You can't deny that, Tony. I know you can't deny that."

"I don't," I told him. "But how could I look at"—I nodded once toward the back—"that *thing* in there, if it were me, if it were mine, and not be affected? How could. . . ." I faltered. "Warner—"

"No," he said firmly. "Once they were done sitting, I locked them out. Nobody sees a portrait of himself when I'm done."

"What? You've never done that before."

"I know. It's a rule I made when I got here." He tried to light a cigarette, failed, let Lynn do it for him. She enjoyed it, I could see that. Enjoyed it to the point of kissing him lovingly on the forehead while she glanced at me and grinned.

"Why did I have to see them?" I asked when the tableau was broken.

"Approval," she said instantly. "He needs to know if you'd mind him showing them. And selling them."

"Mind?" I was confused. "Why should the hell I mind? It's his living."

"But you knew them, Warner and Hank."

"I'm not going to visit them, you know, not on a bet. They're magnificent, and I don't like them and . . . I'm sorry, but I don't get it."

I realized then we'd been excluding Theo, and I had to force myself to turn back to him. "Theo," I said softly, "don't ever ask me to judge something of yours again in that way."

"But you had to see them," he persisted, his nervousness vanished. "You had to, Anthony, so you could see what I could make of you. Of you, my friend." He rose and paced the room, hands clasped behind his back. "I won't take no for an answer."

"No," I said, and he grinned over his shoulder.

"Ah, but you will, you will, my friend. Lynn thinks so, and so do all the others in our little family." He stopped in front of me and leaned

close. "You need a boost, my friend. You're stuck. You think you're on to something with those new/old methods of yours. But you've reached a plateau and you can't find a way to climb any higher. This would do it! By examining yourself with me, you would reveal yourself; by getting in touch with what we laughingly call the Muse, you'll break loose and . . ." He placed his hands together and shook them lightly. "The world, Tony. Think of the whole damned world coming to your door!"

"No room," I said. I stood and patted his cheek. "You're a hell of an artist, Theo, but you don't know me at all. Maybe that's why I like you so much."

I blew Lynn a kiss while she pointedly ignored, and left. As I took the walk to the pavement, she threw open the door and ran after me, whispered that I should ask Stephen, he'd tell me, and then she ran back. I laughed, waved, and managed to get to the end of the block before I stopped. Looked back. Bolted across the street and down the Slope.

I was in no shape for anything, much less running full tilt like that, and by the time I reached Stephen's place I was fighting my quivering legs for one more step, my lungs for a breath that didn't feel like a knifing. I pounded on the door, tried the knob, finally fought my way through the shrubbery to the small studio shed he'd built in back. The single window showed a dim light. The door was ajar.

"Stephen?"

It pushed open, and I found him lying beside his desk.

There was no last message, no cryptic clue. An empty bottle lay by his left hand, a blade—one he'd taken from my house—by his right. I did my best to avoid all the blood.

They called it suicide. I knew it was murder, and no one would believe me.

But when the depositions were taken back at Harper's and the investigators were gone, I told Theo what I believed and that I'd been right from the start. He laughed. He laughed so hard he nearly choked on his own blood when my fist split his lips twice and knocked out several front teeth. Lynn tended to him, and I stuck around just long enough to tell him what I thought of him. Then I went home, lay down, and an hour later got up when the front door was open.

Lynn was standing at the threshold.

"Please, Tony?" She smiled sweetly.

I almost screamed at her to leave me the hell alone. Almost. But I didn't because I knew right then I'd accused the wrong person.

Theo had been blind, was still blind to what was happening around him. He believed in his work, while Lynn had discovered a way of using it to eliminate real and potential competition. She knew, as I did, that a man who looks on his soul no matter how portrayed will go deaf. Not to the storm, or to friends, or to the whispers of the seasons, but deaf to those things which matter even more—the voices within that encourage

him, berate him, allow him self-pity and allow him rage. He goes deaf to them because he now knows what he is, what he pretends to be, what he cannot be no matter how hard he tries.

And that is the murder—an artist who stops believing he can grow simply stops living.

Without Theo knowing, Lynn had been the siren who showed them the Harmonics they weren't supposed to see, showed them their limitations, and they knew, dear god, they knew.

She left me ranting in the middle of the room, telling me how sorry I would be. Two days later I heard she and Theo had been married and were leaving for . . . hell, who cares. As long as there isn't a rival for his fame, who the hell cares.

It's dumb.

Damnit, I care.

Because out of all that disgust, that loathing, I've discovered another voice. A new one. One that lets me see as well as hear. And after a number of false starts, I've finally found a way to let other people see it. On canvas. As I'd hoped. Success is with me, and I don't mind admitting that I love it.

But I don't sleep well. Not at all.

I'm frightened.

A few weeks ago, after reading about one of Theo's shows that had the critics virtually speechless with adulation, I lay down in the middle of the day and began to consider: Warner and Hank and Stephen are all famous now; their work brings in a hundred times what it did when they were alive, and people are lining up to demand that their own portraits be sounded.

And there I was, wondering how it would be if I could do it to myself.

After all, I'm much stronger now, much more secure. I can handle things, things like seeing myself as no one else does, not even dear Theo. And . . . let's face it . . . I don't have to actually *see* it. That was the others' mistake—they couldn't resist the temptation.

But I don't have to see it.

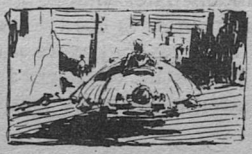
There's one thing, though, that's stopping me from going—I have these voices, these voices within that guide me and teach me and help me to be what I am. Suppose, however, just suppose there's one I haven't heard yet. Suppose that one is more vain, or more confident. . . .

I'm strong, dammit!

I can handle it.

I'll have to sleep on it, I guess. A quick nap to work it out.

Then, maybe I'll call Lynn. Why not. Why . . . not? ●



art: Linda Burr

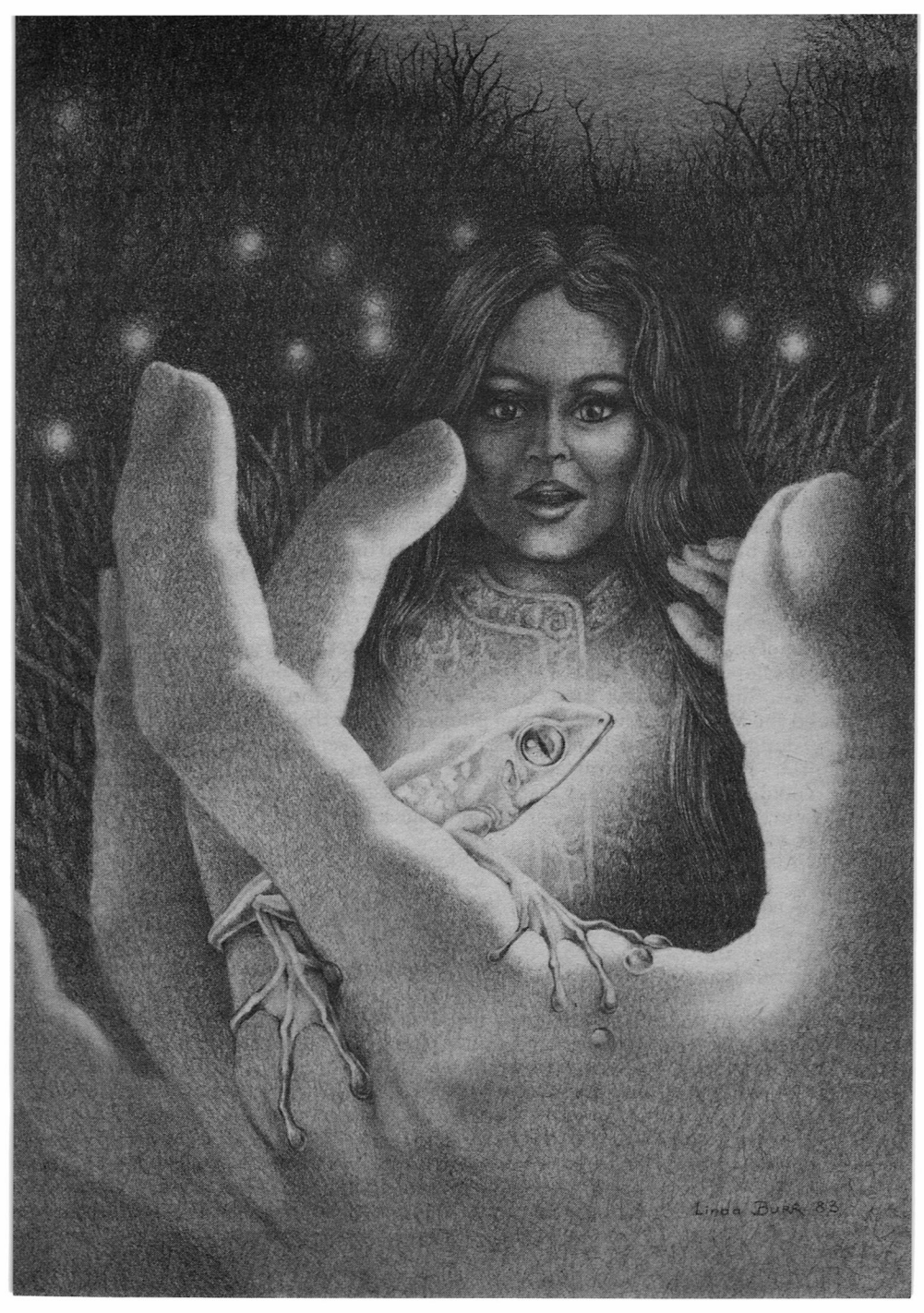
THE AMBER FROG

by Stephanie Smith

"The Amber Frog" is the author's second appearance in *IAsfm*, the first being in November, 1982. The story was finished during one of those rough spots in life that we all hit now and then, and the author would like to thank her housemates for reading the draft more times than anyone should have to.

At the edge of the farewell party, the twelve somber teachers of Court Elizabeth stood together in a cluster. They spoke among themselves and watched the children of their hosts begin a game of steelring. As more children joined in, the game grew fierce and loud with shouting. The humid wind tossed a few thin birch leaves across the lawn and made the tablecloths flap, as the gaggle of youngsters threw their steelrings overhead. The metal flashed in the low light and the rings spun, whistled, and linked mid-air.

One of the teachers laughed gently and then all twelve moved away from the gaming and off toward a table of sliced fruits. They did not notice the girl who had abandoned her cousins' game to follow after them. Unseen, she had been edging closer to the twelve courtsingers all afternoon. They fascinated her because they were muni, just as her mother had once been. Dressed in their stiff, unadorned black jackets and blue, pleated trousers, they appeared to the girl's eyes both serene and severe;


Linda Burr 83

just as she remembered her mother to have been. She wanted to talk to them and ask if she could go with them when they returned to court.

"It's a risk," she thought, "but I will try asking." She sidled past the muni and walked up to the table behind her Aunt Shulane, who was busy arranging the fruit. Quietly, unnoticed by her aunt, she took a plate and filled it with peeled orange sections.

One of the muni asked Shulane a question which the girl could not hear and her aunt responded, "Oh, truly, yes, a shame to us." She poured a bowl of water for the muni who had spoken. "A shame. We were displeased with my sister, very much so, yes. After all, she was a Giden and a teacher. If we had known, when she left Court Eleanor carrying child, that the father was sokke, we would have done something long before that child came to being."

The girl froze, her gaze locked on her plate of fruit. Juice dripped over her fingers. She wondered whether to leave before more was said, but did not. Her face flushed. She ate a section of orange as calmly as she could and then slowly forced herself to look up. Her aunt still had not seen her, but one of the severe teachers did; staring levelly over Shulane's shoulder at the girl, the teacher said, "Your sister did bear her child?"

"Yes, yes, a girl."

"And where is the child living now—here?"

"No, of course not. She lives in the sokke quarter, where she belongs, with a friend of her father's. He died not long after he took the child on, you see. She is learning his trade, as she should." Shulane paused, adjusted the neckline of her shirt, and glanced over at the gaming children. "My daughter invited her tonight, but I don't see Alinia at the moment . . . I thought she was playing steelring, but . . ."

"You did not present your niece at court?" asked the muni.

"Court?" Shulane plucked an apple from a basket and laughed. "A sokke at court?"

Alinia hastily put down her plate. She wiped her hands on the tablecloth.

The courtsinger said, "If this child's mother was teaching at Eleanor, then she might be entitled to a presentation. Did you not send her to Eleanor at all?"

Shulane stepped back and bit her apple twice before she answered. Staring at the exposed core, she said, "As far as the Gidens are concerned, my sister had no child. Lilasi chose to disgrace herself by taking a sokke as a lover, yes. But after her death, the family decided that she would not be allowed to continue to disgrace us.

"How is that?" asked another teacher. He tilted his head and folded his arms across his narrow chest, drumming his fingers against his sides. "There is no shame in being sokke."

"But the Gidens are muni," said Shulane. "We have always been. Sokke have their place—in their quarter and in their work. Not in ours. My sister was foolish. She could have been a fine teacher, yes. But she chose folly instead."

"Perhaps," murmured the first teacher. She took a step forward, and glanced past Shulane to smile warmly at the girl.

Shulane turned around.

For a moment, in a silence broken only by the steelring clash and jingle, aunt and niece stared at one another. Alinia tried to speak, to say something, anything, to say, "why?" She had to speak, had to, could not. The silence and her pallor spoke for her.

Shulane's face paled also. Then she blushed, put out her hand to her niece, and said, "Alinia, I—"

Alinia fled. She ran past the tables, knocking a platter to the ground, spraying juice. She ran away from the party, from the smiles changed to fishmouth surprise at her flight, away from her aunt, calling, away from the steelring and her cousins and into the cool birch grove.

Leaves crunched under her feet as she darted past slender trunks, across a slight, bald ravine and toward a pond. She ran until she reached the muddy bank of the pond and there, out of breath, she sat down on a buried stone, wrapped her arms around her legs and listened for the sound of pursuit.

But no one came after her. The steelrings began to whine again and after a few minutes, she leaned back and wriggled her hand into her hip pocket. It took some tugging, but she finally pulled out a tiny, amber frog. She set the frog on the shelf of a stone that rose above the steaming pond water.

As the sun began to sink, day dusking, Alinia watched the frog as it watched the nightflies dance. Except to blink its black-flecked, golden eyes, the frog did not move.

Alinia wiped away tears and stretched herself out flat on the damp earth, rested chin on hands and whispered,

"Loren was right. They don't care about me."

The frog blinked. A thin leaf drifted down from the trees to land in the hot pool, floated, clung to the stone. The air was still. Easy laughter traveled across the grove and brought tears back to the girl's dark eyes. She listened instead to the nightflies' hum and promised herself that she would leave the party in a minute. As soon as she felt able, she would get up, march back, tell Shulane she was leaving, not cry and go. "Loren was right, after all," she thought. "I was foolish to come here. I am not a child anymore and this is not my home."

The frog hopped closer to Alinia. She picked it up, closed her hand over it gently, and hummed a riff of chords. The music lifted and fell. She sat up, hitched the cuff of her trousers to her knee and dangled one leg in the hot-spring's water. She sang.

The song ended on a high, full note.

She opened her clenched hand.

Now, instead of a live, blinking frog, she held an amber ring, shaped as a frog, a hard, glittering jewel carved into a ring. Turning it over, she made the gem hold the fading sunlight. It glowed.

"I am a live-amber cutter," she said aloud. "I am sokke." She scratched her shoulder. "And I am muni, too. I don't care if I am not supposed to be both. I am." She slipped the ring onto a middle finger and then swung her long hair forward to let it drift and ripple on the surface like the tawny grasses that grew along the banks of the nearby stream. She brushed a sliver of the grass off the frog's back and caught her fingernail on the pin-sized rough spot near the frog's head where her polishing brush had not reached. Rubbing the spot, she bit her lip, remembering how her teacher, Sheld Loren, had found the flaw instantly. Loren had glanced up at her apprentice—"Alinia, this piece caused you trouble."

"Is it such a noticeable flaw?"

"No, no." Loren rolled the amber around on her palm. "But whoever asked you to make this gave you too small a nugget for the detail you have done." She leaned back into three cushions piled against the wall of her study. "Which of your relatives commissioned this totem?"

"It isn't too small, really," said Alinia. "The jouberry amber is alive. I mean, even though the ring is tiny, the frog is alive. It moves."

"Does it?" Loren nodded. Her curly gray and blond hair fell forward. To Alinia, she seemed a formidable person, all angles in face and form. She was highly respected in the sokke quarter for her skill as master gem-cutter. All six courts—Rebecca, Elizabeth, Eleanor, Victoria, Francine, and Marcia—had, at one time or another, commissioned amber totems from her workshop. Alinia feared Loren's censure and longed for her approval. She edged closer to her master to peer at the frog that sat quietly, ring-bound, in Loren's brown, lined palm. She knew it was a good piece. Perhaps even great.

The woman set the frog down on the lacquered table where it remained motionless among the inlaid lilies, bathed in a pool of morning light. She sat forward, smoothed out a fold of her gray workshirt, and said, "I ask you again, child. Which of your relations commissioned this ring? The frog is the Giden family totem; which of them wanted it made? Shulane? Or her daughter, Tulian? Tell me."

Alinia glanced at a vase of cattails, using her thick hair as a veil. "Was that man at Court Victoria pleased with the eagle I made for him?"

Loren did not answer and so Alinia kept her gaze upon the vase. A fly buzzed and landed in the cattail fluff.

Loren said, "Of course. I am a good teacher, you are a good student. You made no error. I expected none."

Alinia whispered, "Thank you."

"The truth is the truth." Loren tapped her finger on the table beside the frog. "Who moves this totem, Alinia?"

"I do."

"Y-you?" Loren caught her breath. "I—show me."

Her heart pounding, the girl knelt and then laid her hand upon the table. Her palms itched. The lacquer felt cool. She leaned over and sang a riff of chords. The strange music fell and lifted.

The frog uncoiled. It squatted on a green, inlaid stem, then hopped into Alinia's palm, leaving a beaded trail of water.

Loren's eyes looked a darker shade than their usual gentle brown. The corners of her mouth tightened. She said, "How. You're sokke. You can't . . ."

"Before my mother died," said Alinia, as she let the gold frog crawl over her hands, "she taught me a few of the amber songs. Not all. But as I was making that eagle for Victoria, I wondered whether or not I knew enough songs to move a totem. So, I carved this frog for myself and tried singing and it moves, as you see. Mother told me that I was muni. She wanted me to serve Court Eleanor, as she had."

Loren moistened her lips. "All these years and all the beautiful totems I have made, never knowing how the amber song of the muni made them live . . ." She blinked. "Teach me. Please."

Alinia tried. During that summer, all summer, she tried to teach her master amber song—how to pitch the voice, how to make the riffs rise and fall. Yet nothing came of it. For Loren, the little frog would not move.

One evening, as master and apprentice walked together in the quarter's central gardens, Loren at last admitted that she would never learn amber song. But, she said, she was not saddened much. She was, after all—"An artisan. A sokke. For me, in many ways, the making and the carving is still enough. But you—you have the skills of both maker and singer, sokke and muni. I don't know of any artisan who has also had the gift of singing."

"No one?"

Loren shook her head. A huge yellow moon's light touched her shoulders. She said, "This is theft, child, you know that? For you to own the ring . . . because jouberry live-amber belongs to the muni. I know you must have saved a shard from that eagle you did for Court Victoria, and if you should be caught—"

"I am muni." Alinia stepped up beside the garden's drinking pool. "I am entitled to serve court and to learn the rule of the totem game. To have a jouberry totem. By my mother's name, I am . . ."

"No." Loren leaned against the stone pool's chipped rim. The perfume of summer wax lilies touched the humid air. Nightflies, just hatched from their crysali, hovered in a tiny, whining storm near the flowers. Loren broke off one of the lilies and turned the limp, white bell in her hand. "Your mother was a Giden and a muni, but she is gone, child. Her sisters decided against giving you a home or a name. Understand—you are not a Giden anymore." She touched Alinia's cheek and brushed back the girl's thick hair. "I'm sorry. But your father was a gem-cutter and since your aunts gave you his name, you must be a gem-cutter, too. That is custom; it is law. You can't change it."

"I will. I will have my name back."

The master stepped away from the pool and said firmly, "You are a

sokke, Alinia. And from this moment onward, you are no longer an apprentice—I am freeing you, because this ring you have made shows great skill. I think you ought to be proud of this talent that you can nurture, instead of wishing after a name you can never have. Your father would have been proud. Learn to be proud of him."

Was she proud of him? Sitting at the edge of the hot spring, remembering her father's knotted hands and creaky laughter, Alinia touched the water's warm surface. She murmured, "Yes, I am proud of him. I am. But I won't forget what mother taught me."

The metallic crash of linking steel interrupted her thoughts. She glanced back toward the party and saw the flash of flung rings, the darting, bright players, and she frowned. Once she, too, had played the rings. Everyday, with her cousins, in the years before her mother died. She listened to the jingling with clenched hands. Sokke did not learn games. They had no time for games.

"If only," she thought, "Mother had not been so ill. She could have taught me more songs—presented me to court herself." Alinia stared off beyond the forest of ghost trees, remembering her mother, yet barely remembering . . . a scent of lily oil and a soaring, soprano voice, a young, ailing woman who had made Alinia practice amber song over and over, though the child's range could not reach the higher tones, nor follow the more complex rhythms.

Linking steel jingled loudly nearby. Alinia stood.

"Catch!" Tulian Giden's voice was piercing high and unmistakable. Alinia winced. The frog on her finger squirmed. Surprised, she rubbed the ring and sang a few notes to quiet it. Then she looked in the direction of her cousin's shout. She did not wish to be found yet, especially not by Shulane's daughter.

"Come on, Gerrar. I've got a steelring!" cried Tulian. "You'll not finish the game without me."

Alinia hastily stuffed the frog back into her pocket. Then she waited, expecting her two cousins to appear.

But no one came. A bird rustled in a tree's dying leaves and a squirrel soared deftly by. After a few moments, the cold jingle of the steelring game resumed. Alinia sat back down, shook out the wet tips of her hair and turned over onto her stomach. Resting her elbows in the moss at the pond's lip, she watched the golden fish in the hot water. She changed focus and watched her reflection waver.

Two faces.

Two faces, alike and young, wavering on the water's surface; her own and Tulian's, both washed green by the pondweed at the bottom of the pool. Alinia tried to sit up, but before she could move, her cousin straddled her.

"Tulian—"

The taller girl responded by sitting down in the small of her cousin's back. She leaned over and said, "What?"

The young gem-cutter tried to speak, but the press of the added weight made her gasp instead. She whispered, "You're heavy." She found herself gazing at the evergreen cuff of Tulian's trouser leg. The fabric was a brocade, embossed with tiny, leaping frogs.

"Speak louder," said Tulian. She shifted her body a little. "I can't hear you."

"You're heavy."

"Oh? Do you think I should not sit on your back?"

"Please . . ."

"Well."

"Please, please, I can't breathe—and you're going to tear my shirt if you stay there."

"Petulance, petulance! I'll move when I am ready to move." After another minute, Tulian rolled away. "I was only teasing."

Alinia sat. Once again the clink-clink of the steelrings stopped to leave only the hum of the nightflies and a scattering of laughter in the wind. Tulian looked up. Her face was sharp and flushed in stippled patches, her eyes light and blue and her hair as long as Alinia's, but thicker, darker and rich with red highlights. She stood.

The two girls heard their cousin Gerrar say, "Well? Where is she? Where did she go with that ring?" He sounded as if he were nearby. Alinia cupped her hands to shout back to him, when Tulian caught her elbow.

"Shh . . ." she said. "I'm going to hide. Don't tell." She ran away.

Alinia nodded reluctantly and dipped her bare feet back into the pool. She brushed off her shirt. The front pocket was moss stained. She stared at the green smudges and remembered how long it had taken her to sew the shirt. The stains would not go away. She wanted to throttle Tulian. She swallowed, trying to swallow back the knot of anger in her throat.

Someone walked through the fallen leaves behind her and a twig cracked. She disciplined the uneasy frown that bowed her lips and said, "Hello, Gerrar."

"Alinia!" He sat down next to her, juggling a steelring from hand to hand. He was a large-boned boy and not yet grown past clumsiness.

She pulled her hair around her face in two thick falls, played with the wet ends and waited for him to speak. She did not wish to lie to him, but . . . she glanced toward the forest where the taller girl had run.

He said, "Have you seen Tulian?"

"I thought . . . I thought she was playing with you and the others." In Alinia's pocket, the frog squirmed again. She put her hand over it, hoping that Gerrar had not seen the movement. "Why is it wriggling?" she wondered. "I sang a sleeping song. It should not move at all."

He said, "Tulian was playing with us, but she ran off with one of the rings. We can't finish without it." He sighed. "Spoiled. She is a spoiled child."

Alinia laughed nervously and glanced over her shoulder. "But, Gerrar,

you talk as if you were an old man. She's not a child, no more than you or me. She's been selected to attend Court Elizabeth and—"

"Oh, yes, I know." His smile faded. "She shouldn't be serving at any court."

"What?"

"She wasn't chosen, not really. Her parents have arranged it. Everyone knows." He shrugged. "I'm glad I won't be serving Elizabeth. I've been studying at Eleanor, did you know? I was selected there." He tossed the ring. It whistled, spun, landed. He picked it up.

"You have? But no one told—"

"I wanted it that way. I didn't want a party." He nodded toward the house beyond the grove. "One's enough."

"But . . . it's wonderful. You should have celebrated!"

"Going to court on my own talent is celebration enough." He looked up at the clouding sky, silver-threaded, and then across the pond at the fenced pasture. "During the last totem game, Tulian was refused by all the courts. Her parents spoke to teacher after teacher until, finally, those at Elizabeth agreed to take her. Even so, she isn't happy about it, despite the party."

"Why?"

"Because the rules at Elizabeth are the strictest of all. The muni there, they know, you can't hide who you are or who you think you are from them."

Alinia whispered, "But who does Tulian think she is, if not Tulian? I don't understand."

"Better. She thinks she's better than anyone else." He put his hand lightly on Alinia's knee. "I'm glad you could come today."

"Tulian invited me." She pulled her leg away from his touch.

"Yes, I know she did, but she . . . I . . . she's selfish. She invited you because she heard that you were a gem-cutter. She wants a totem from you."

Alinia fingered the quieted ring through the loose fabric of her pocket. "I will cut her one, if she wants—"

"No!" He gripped her kneecap and she jerked away from him. "You don't understand, Alinia. The teachers at Elizabeth have forbidden her a totem, until and if she passes her third term. She's furious, so she thought she'd get you to do it without telling you it was forbidden. Anyway, I wanted to warn you. Because totems sung to life by an untrained muni are dangerous."

"What do you mean?" said Alinia sharply.

He glanced around. "I'm not supposed—"

"Please."

He sighed. "A totem is bound to its singer, when it is first sung to life. My totem will not move for any singer besides myself because it was my soul that was sung into it first. And yet, the totems remain creatures, wild creatures. And after awhile, if they are not properly controlled, they

can develop a will of their own." He laughed softly. "Now, if I could not control my frog, it couldn't go off and hurt someone or fetch me something that I wanted, being that it's only a frog. But suppose Giden totem were a bear, like the Moven family's? Do you see what I mean? A totem, or so I've been told, slowly develops the ability to sense what the singer loves—or hates. A muni must learn strict control of their song. The court teaches us that control. And I think that Tulian doesn't have the discipline to learn. Perhaps a frog could not harm anyone, should she lose it—and then again, perhaps it could." He shook his head. Then he leaned close to Alinia and said in a rush, "I want you to know that I don't agree with my mother and Aunt Shulane—they think you are sokke—"

Surprised, Alinia backed away from him a bit and said, "I am." As she waited for her cousin's reaction, she thought about the ring in her pocket. Had she lost control? Was that why it was moving? She tensed and then relaxed. A frog couldn't hurt anything . . .

Gerrar said slowly, "Are you? Are you sokke?"

"Yes."

He nodded. "So be it. I once thought your mother was training you to be muni, but . . ." He shrugged. "I still want you to know that when I have my own household, you will be welcome to live in it, as a Giden. If you choose."

Her throat tightened so much she had to cough before she could say, "Thank you, Gerrar."

"I've missed you, cousin. Most of us have—except Tulian. She's spoiled, spiteful, just like her mother—"

"Oh, come. After all, she did invite me." Alinia gave him a slight push. "I won't believe what you say about her—she's strong and bright. Did you never think the courts might fear her? There is nothing wrong in wanting—"

He put his hand on her shoulder and shook his head. "Some of us don't shove others aside to get what we want. I know you're fond of her, Alinia, but—be careful. She'll hurt you." He pushed himself to his feet and flipped the steelring from one hand to another, staring at the bright flash. "Are you sure she didn't come out here?"

"I'm sure. Maybe she went into the house?"

"I saw her come out this way."

"She could have run back. Did you look in the house? She might be hiding there."

"No, I didn't look. If you see her, tell her to return the ring. We want to finish." He gave her shoulder another squeeze and then walked off toward the house.

Soon after he was gone, Tulian returned, pulling leaves out of her hair. "What did he say? I was too far away to hear."

Alinia frowned. "Well, I . . . I think you ought to return the ring."

Tulian giggled. "I lied. I don't have one. I never took it. Besides, Gerrar doesn't play fairly."

"But he does! I've played with him."

"That was a long time ago."

Alinia glanced down at the water. The fish had all fled. "Not so long."

"Long enough. We aren't children anymore." The dark cousin sat down on a stone. "When you left the game earlier, you said you'd only be gone a few minutes—then you go running off! What are you doing out here? This is my day. I want to have you with me. And don't think I didn't have to fight my mother for your invitation."

Alinia stared at her cousin. Did Tulian know how Shulane felt, or not? Did she know what her mother had said about doing "something long before that child came to being?" With her heart thumping, Alinia asked, "Why did you invite me today?"

"You are my cousin and I've missed you. Besides, Mama can't tell me who is mine and who is not. Why did you leave the party?"

"I—I had to do something."

"What could you possibly have to do out here? Wait, don't say anything, let me guess—you were watching the fish? Hmm. I'm surprised I didn't find Gerrar out here, watching the fish with you. He's been talking about you all day."

Alinia nodded and said, "Yes."

Tulian leaned over and playfully flicked some water into Alinia's face. "So, what should you and I do with the rest of the day? Any ideas? Maybe we should ask Gerrar?"

"No—"

"Well, then, why don't we visit the sokke quarter? I've never been there. You could introduce me to this teacher you've praised so much today—what's her name? I might decide to commission my totem from her."

Alinia glanced over at her cousin. Had Gerrar been right about her?

Tulian smiled. "Well? Do you want to take a walk and show me where you live?"

"No. I mean, your party is here. Everyone came to see you, to congratulate you. We shouldn't leave."

"True. Besides, the houses in the sokke quarter are all so small—that's what Mama has said, anyway. How can you stand it?"

Alinia peered through the grove at her first home, her childhood home. Tulian's house, now. It was large and long, with an airy facade and white walls. The building was shaped like a crescent moon and the whole was surrounded by garden. She said guardedly, "Do I have a choice? Did your mother give me a name? I stand it because I have to."

"Oh, but how could Mama give you a name, Alinia? Being sokke, where did you expect to live? You must follow your father, as I follow my parents. I don't see—"

"My mother served Court Eleanor."

Tulian stood and walked away from the water, curling her toes in the dead leaves. "Court is for muni. You are not—"

"What? What am I not? How do you know? I've never been presented, never tried, and I am still the same Alinia you promised to go to court with—remember how we said we would go together? This party should be mine, too. I did not change when my mother died."

"But . . . you did," murmured Tulian. "When your mother died, your father came here, for you and he was . . ." Her voice became low and sibilant. "Sokke."

Quietly, Alinia said, "I am me." And saying this, she felt her heart stop jumping and choking off her breath. She closed her eyes, thinking, "I am me. I am me." She whispered, "Never mind. It doesn't matter."

"I think," said Tulian coldly, "that I will go finish the steelring game—give Gerrar his last match. He will have found out by now that I didn't take the ring." She took a step and then she made an odd pounce. Alinia flinched away. Tulian jumped again into the mossy earth by the pond, turned around and pointed, saying, "What's that—there, look, what is it?"

The golden frog had crawled or fallen out of Alinia's pocket and was hopping in the lacy green, heading for the water. She snatched it up.

"Show me," said Tulian. She grabbed her cousin's shoulder. "What is it?"

Alinia whipped her hands behind her back. Her cheeks burned and her palms sweated . . . she did not want Tulian to see the totem.

"Show me! Now."

The frog wriggled, attempting to nudge and slither its way between Alinia's fingers. She thought, "What can I do?" and decided to try to make a game out of the whole thing. She held out two fists. "Which hand?"

Tulian laughed. She grabbed her cousin's wrist and forced her fingers to uncurl.

The frog sat quiet, rigid, smooth: a ring.

Alinia started—had she been imagining that it moved?

"A ring!" cried Tulian. "No, wait . . . a ring made to look like a frog. Clever, very. The back flippers bend around in a ring to touch the front feet—it's beautiful." She reached to pick it up; hesitated, and then closed her hand mid-air. She looked at the frog closely. "Is it . . . live amber?"

"No—"

"Don't lie. I saw it move."

"It . . . do you like it?"

Tulian's eyes widened. "Who wouldn't? It's very fine. Is it Gerrar's?"

"No."

"Whose?"

Alinia pulled her cousin's hand level with her own. "Watch." And then, though she knew she should not, she could not resist singing.

The frog uncoiled itself, blinking round, amber-gold eyes. It trilled and hopped wetly over to Tulian's hand. It curled tightly on her forefinger.

"No." Tulian twisted the frog around and around, trying to get it off. "How can you?"

"I'm sokke, a gem-cutter, I made—"

"You sang! You can't—"

Alinia ran the edge of her cousin's brocaded jacket across her fingertips. "I can. Mother taught me."

Tulian tugged at the ring. She spoke through clenched teeth. "You are not a Giden. Not muni."

"I don't care."

"Sokke—" Tulian's hand jerked and the ring sprang away, dropping into the pool. Both cousins watched it sink amid the ripples.

Tulian shaded her eyes. "Can you see where it landed? The pond's not deep."

"I'll go in after it."

"You won't find it. The pondweed is too thick."

"I'll find it. It comes to me, when I sing."

"Under water?"

Alinia shrugged; she did not know whether it would come to her under water, but she would not lose it. She took off her shirt and pants without a word. She waded into the pool. The sandy bottom ran downward and vanished. Her chest muscles contracted and her breath came short, but she pushed on toward the center of the pond, floating.

"Oh," said Tulian. "I didn't know the water was that deep." She leaned out from the bank. "You look like a fish. Can you see it yet?"

"No." Alinia's hair trailed gold behind her as she drifted. She scanned the water. The heat made her drowsy and too slow. She took a deep breath and dove.

On her second dive, she found the frog. It was jammed between two rocks. Fine silt puffed up from the bottom as she worked to free it. The tiny frog suddenly wriggled, its fat forearms and long hind legs helpless, its small body pinched tight by the rocks. Alinia pulled her hand away and thought, "How can it move like that, without my song?" Gingerly, she touched it again and managed, at last, to roll aside one rock.

The frog shot away, swimming toward the air.

Out of breath herself, she followed. Breaking the surface, she trod water and tilted her head back, gasping. Her hair, like a wide, yellow lily pad, floated out all around her. Part of it covered her eyes like a net of gold wire. "Tulian?" she said as she tried to claw the wet hair away from her face. "Tulian? Come help me. The water's hot, too hot."

Her cousin stood still on the bank. She folded her arms. "Did you find the ring?"

"Yes—it's probably at your feet somewhere. Help me out and I'll get it."

Tulian looked down at the moss. "I can't. I can't swim."

"Please—" Alinia tried to float toward the bank. She peered through the mess of her hair at her cousin. "Please."

"It isn't far. Come on."

"Tulian!"

"I can't."

Alinia slipped and went under. When she came up, she saw an empty bank. Spitting water, she called, "Tulian?"

No one answered.

Alinia's heart pounded slower, slower. She let herself drift and sink again. When she opened her eyes, sputtering another mouthful of tepid water, she saw the frog directly before her. She reached for it and it swam off. She reached for it again. Little by little, it drew her toward the pond's edge. Sand scraped her feet and knees. With a smothered cry, she crawled naked into the moss and stayed there, steam rising from her reddened skin.

Soon she felt well enough to sit. Dragging her clothes to her, she looked for the frog.

It had saved her life. It was gone.

Dressed, she searched the moss and grasses. "Where are you?" She sang to it, calling to it over and over, but it did not come. Exhausted from the heat and her ebbing fright, frustrated, she stood and walked toward the house. She was hurt and shaken. The frog was lost.

"There must be so much more," she thought, "that I need to learn. So many more songs. Gerrar said discipline." She shook her head. "I'll find Tulian, tell her I am all right. Then I will look for the frog again and I will not leave here until it comes to me. Perhaps . . . perhaps I should ask the muni of Court Elizabeth for help?" The idea made her nod. She would ask that teacher who had smiled at her earlier. She would tell the muni about the totem and say that her mother had taught her some amber song . . . she knew that the frog might be taken away from her, but she knew she had to learn more about it.

The forest and pond were quiet in Alinia's wake. A yellow leaf and then another drifted down from a birch and landed in the green water.

Startled by footsteps, a bird shot out from a bush. It scolded and flew away. Tulian appeared. She knelt in the wet moss and ran her fingers over the soft, short fronds. She peered between the tawny grass hillocks and crept to the water's edge.

A tiny splash at her elbow made her look up.

"There you are," she said. She leaned over the water. "There you are, little amber." She stretched her hand out toward the ring. It regarded her with its huge, bright eyes and floated, turning in an eddy.

"You're mine," she said. "You belong to a Giden. Alinia made you, but I'll see to it she never does so again. Sokke." She smiled. "And I will have you, my totem, despite what those teachers say." Pulling up her trouser legs, she waded in the water to her hips until she was close to the frog.

It sprang away.

She lurched forward after it and staggered headlong into the deepest part of the pond. Floundering, she beat at the water as if the pool had grown dark, unseen hands that clutched her.

Without a sound and swiftly, she sank. Her clothes billowed. She struggled to get her jacket off, but its weight and her entangling hair made it difficult. Impossible.

Moments passed. As a third yellow leaf floated down from the trees, Tulian's hands rose over her head gently. One hand uncurled, drifting open as if to caress the pondweed.

The amber frog slipped off the girl's finger and rested for a second on her bruised knuckle. Then it swam against the current. The girl's body floated toward the stream and the frog landed on the bank. Yellow translucence and amber bright eyes, it sat hidden in the mossy thatch, blinking and watching the nightflies dance, as the distant steelring game ended.

At last it leapt into the darkness of the birch grove, making a slow but stubborn path toward the sound of Alinia's worried voice. ●

(G)ASTRONOMICAL SONG FOR SENTIENCE

When the Big Bang
Peppered star stuff
Into the bland
Circumference
Of its elastic bowl,
A fiery paprika
Of galaxies
Salted the slag monsoon
Of the primal stew.

Though no one heard
The God-Chef hurl
Into that vast,
Cold consommé
A hurricane blast of light,
Today the tang
Of cosmic seas
Still ties the tongues
Of us bemused and hungry few.

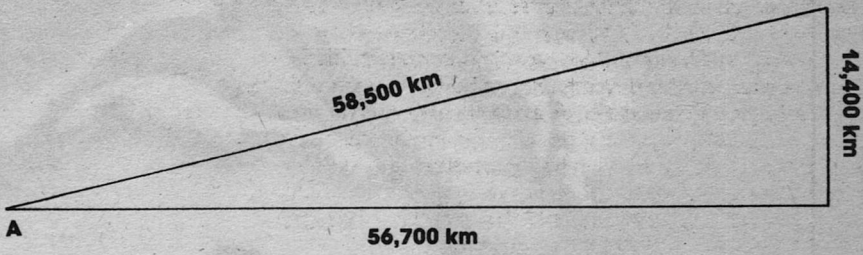
—Michael Bishop

SOLUTION TO THE STRIPE ON BARBERPOLIA

If you cut a right triangle out of paper, then roll it along its base to make a cylinder, you'll see that the hypotenuse will form a helix—a line that spirals around the cylinder from one end to the other.

Imagine that the cylinder shown in Figure 1 has been produced in this way. In your mind, unwrap the triangle, starting with corner *A*. The height of the right triangle corresponds to the cylinder's length. In this case, it is 14,400. Because the helical stripe goes seven times around the cylinder, the unwrapped triangle will have a base that is seven times the cylinder's circumference, or 7 x 8,100 = 56,700 km. (See Figure 2.)

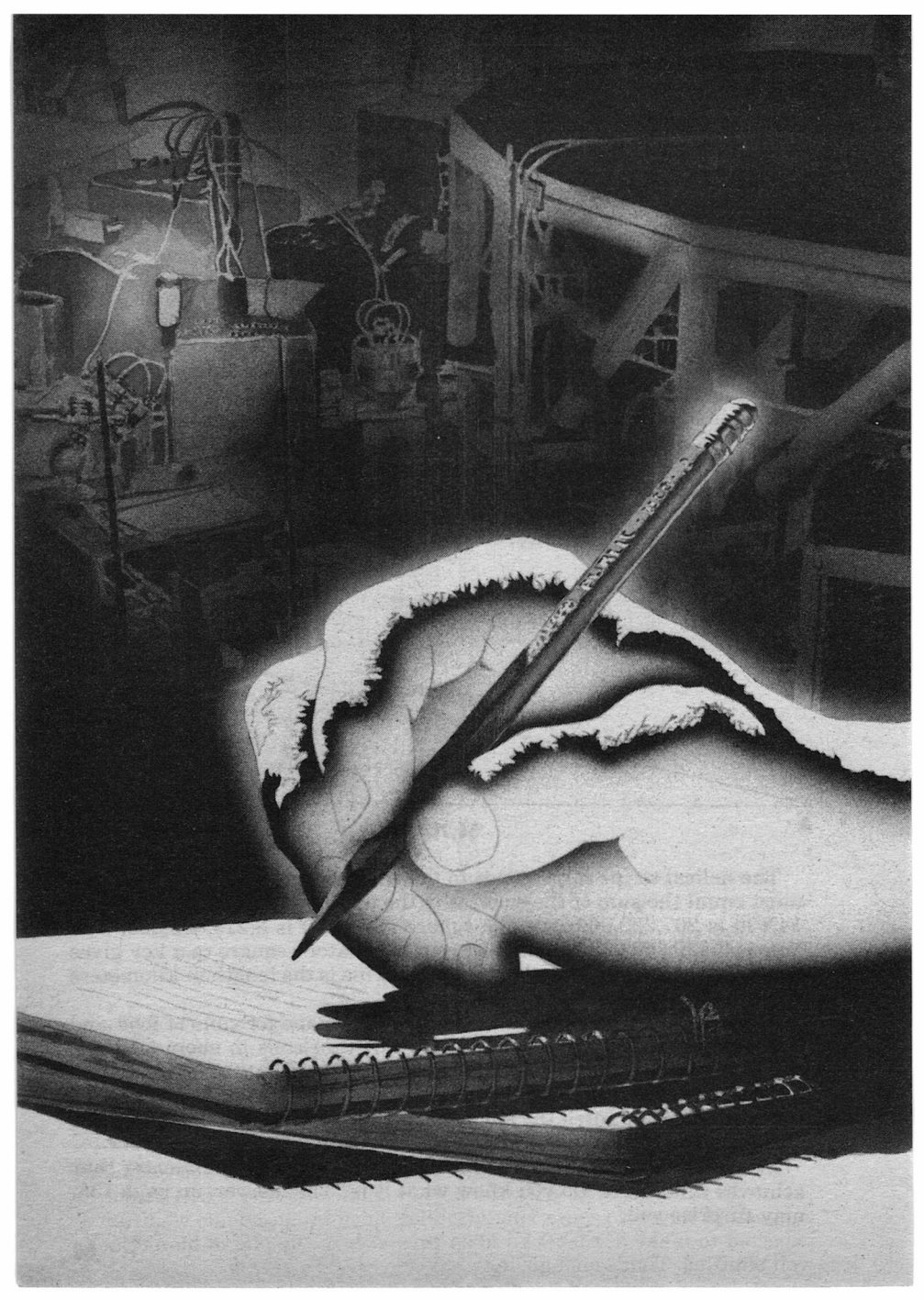
Figure 2



The helical stripe corresponds to the triangle's hypotenuse. Its square must equal the sum of the squares of the other two sides. The square of 14,400 is 207,360,000, and the square of 56,700 is 3,214,890,000. The sum is 3,422,250,000. A punch of your calculator's square root key gives the square root of this number as 58,500. This is the length in kilometers of the helical stripe.

As we all know, the cylinder is a popular shape for cans of food and drink. Shapes vary enormously, from tall thin cans to short fat ones. Suppose a manufacturer wanted to minimize the amount of metal needed for the entire surface (the lateral surface plus the two ends) of a can. In other words, he wanted the shape, given the can's volume, to make the surface area as small as possible.

There is a simple ratio between a cylinder's length and diameter that achieves this result. Do you know what it is? The answer, on page 133, may surprise you.



art: Ron Lindahn

HEAT OF FUSION

by John M. Ford

What could be bigger and better than the results of the Manhattan Project? If current politics don't change, those of us who survive may find out.

Day 1

I had my first fully conscious day since the accident. They tell me it has been about four days, but this will be Note #1, for completeness' sake. I feel remarkably well, for a dead man.

A. was waiting for me when I awoke, smiling brightly. He had a supply of blank notebooks and pencils for me. (Odd how, with all the shortages, we have such a huge stockpile of blank books and pencils.) In the "time remaining," I am to write down all the details of the work that my old gray head contains, so that his Project does not "slip backward."

I see I have written "his" Project. Well. It will be his, soon, since N. died in the accident. (As did I, but have not had the grace to fall down yet.)

N. is dead. And J. is dead. Y., I am told, is still "alive," though in much worse shape than I. I may be able to see her. It is something to look forward to, and I have little enough of those.

I will write the notes A. has asked for, though not necessarily the ones he wants. And separately I shall keep this notebook ("journal" is too much of a word). I don't know for whom. Myself, I suppose. As for why, see prior paragraph, last sentence.

Day 2

While I dozed this afternoon, A. stole the notebook I had been filling for his benefit. I know it was A.; the nurse told me when I called her to search the floor for it. I hope she will not get into trouble for that.

I wondered about hiding these notes, but that is silly. Secrecy mentality. What would attract more attention than my fussing with pillows or drainpipes or loose blocks in the wall?

Even if I found one, soon enough I won't be able to move a loose block.

But they are going to play the Secrets game whether I will or not, I suppose. (I haven't seen a single soldier since the accident; what am I expected to make of that?) I'll keep this book in the pile of blank ones, well shuffled. That's enough.

I wonder what A. will make of what he has?

Day 3

A. was not happy. I think he was furious, in fact. But I will give him this much: he controlled himself better than I had thought him capable. (Capable of?)

He did not bother with a philosophical argument, being not that much of a fool, and went straight to discussing the good of the Project. When that wore thin, he hinted that I might not be allowed to see the "recovering" Y., if I were not "cooperative."

We learn from our environments, and he has spent his Project time among the soldiers, not the scientists.

I asked him, angrily I suppose, why he had stolen my notebook. After a pause, he said that I had given it to him. "Don't you remember? Are you having trouble remembering?"

Then he looked at me with real fear. And his expression changed to

I must describe it precisely. If you have ever worked very hard at a difficult problem, one you doubt is within your capacity, and then broken it, you know the feeling that comes when the nut of solution first cracks open, the glimpse of glory within. That was A.'s look.

He went away without any books.

Perhaps he is frightened by the facts: he could not read the notes he stole because he is too poor a physicist. If all my writing to come is like that, what will become of *his* Project?

But now I know he will threaten me, and I am scared too.

Day 4

No one came today but nurses. One said that I may be allowed to walk soon, at least to the toilet. Outstanding. Martin Luther may have had great thoughts while his bowels worked, but he wasn't using a bedpan.

I am still worried about A.'s moment of epiphany yesterday. Was it about the Project, or me? He had already held Y. over me. J. is dead.

J. is dead, and I am dead, and the living cannot threaten me.

Day 5

I have found out A.'s scheme. What a waste of two days' fretting. One would think I had taught enough students to know that the brightest smiles come from those who have just trisected the angle.

He has started a whispering campaign that the accident was my fault. The doctors have muttered it in the halls, the nurses shake their heads as they change my bottles, A. came as close to saying it as he dared. I must finish my commentary on the Project, he said, because if I do not "erroneous impressions" may take hold.

"Erroneous impressions" is what he said. A waste of six syllables, when "lies" has only one.

Day 6

My fault.

My fault.

I put the words on the page, and they seem to crawl from beneath the pencil, shaping themselves into countless implications but no meanings.

Presumably when the Project Final Report is written, there will be a chapter on the accident. Call it Chapter 13. And there will appear a line, to wit: He was in charge of the Principal Experimental Rig when the accident took place. It was His Fault. (This *misrepresentation* of my responsibilities will be insisted upon by A.) The line will repeat as the caption of a small and unflattering photograph of myself, Figure 13-2. 13-1 will be the standard half-page picture of the Rig, with numbered silhouettes superimposed where the others were standing.

I presume falsely, of course. There will be no such report. After the present mess is cleared up, the Project will proceed to one of two end-points.

If it fails, there will be no one to write the report. If it succeeds, there will be no one to read it.

So this text is going to have to be as much Final Report as the Project will ever see. And epitaph enough, too, for the four of us.

Day 7

A. came in today, falsely cheerful and a little sheepish. He asked how my "Report" was progressing. (He called it that; am I to begin dreaming true as the end approaches?) I showed him what I had for him; his delight was fake but his relief was not. I know very well that he is being driven by others, having no ability to drive himself, and I was about to feel a little sorry for him when he brought up Y. again, saying that she was *almost* able to converse, and the doctors said I was *almost* well enough to see her. (How well a corpse gets he did not explain.)

I am having second thoughts as I write: perhaps A. was ordered to use Y. as a lever against me. It was never in his nature to be deliberately cruel (his masochism, which he doubtless believes is his secret still, is more pathetic than pathological). And perhaps he is watched as he talks to me.

In which case, why do I write these secret notes to no one?

My paranoia is itself rather pathetic. I asked him if there had been memorial services for N. and J., and if not, if I might attend them, and even say a few words.

A. was, if not thunderstruck, at least surprised. He told me that, since complete dissective necropsies were required, the bodies were hardly suitable for view and had been cremated. A memorial he acknowledged as a possibility, after the "immediate problems" were settled. Then he asked to take the notebook, which I allowed, and he went away.

Of course I knew J.'s body would have been disposed of, one way or another. I wanted A., and whoever might be behind him, to be very aware

that I know J. is dead, because though I do know that and threats would mean nothing, still I do not want to hear them.

As for the memorial service, tomorrow I will hold one here.

Day 8

When J. was just a student

I let the line stand, so as to correct and amplify it. When J. had no formal credentials, so that we perceived him through a student-colored filter, I posed a question to his lecture group, one I always gave the Honors students early in the course. It involved a spinning particle, and while the answer was not complex it was tricky, in that there were several wrong answers more plausible-sounding than the correct one, and the class inevitably had to eliminate those before discerning the truth.

So when J. put his hand up first, and the others let him wave it alone, I thought he must be trapped. More fool I. Not only did he have the solution, he had reached it in a novel and elegant fashion. It was obvious that he had not simply made a lucky memorization, but *understood* the underlying theory down to its roots.

The recollection that brackets this one is of J. sitting at a test bench, holding the two pieces of an elaborate glass vacuum assembly that had somehow broken in the center. (I never did learn how that ~~fatal~~ mishap occurred.) I passed by in the hall, shook my head, and went on with whatever I was doing; when I passed by again, at least half an hour later, he was still there, staring at the jagged ends of glass.

I leaned into the room and suggested he call the glassblower, whose shop was only a few doors away. Without looking up, J. said, "No need to. I've about got it now."

I let the story get about, and there was laughter at J.'s expense until I was quite as embarrassed as he was.

There are the stories; the theorist with an intuitive power that, as he learned to focus it, was at times actually frightening, who had no mind at all for experimental hardware.

They are not, I can see now, brackets but mirrors, creating an endless chain of reflections between them.

A reflector assembly.

No more today.

Day 9

I was allowed to walk today, about four meters to the bathroom. Slow progress, in an unsmoothed curve point to point, an orderly with a death grip on my arm, but the heavy particle finally achieved the target.

Triumph.

Once there, I eliminated into cardboard containers, for the laboratory's benefit. They also received a liter or so of my exhaled breath, and of course a little blood. Ultimately I will give my all for the Project, rag and bone and hank of hair, as have J. and N. already.

I was about to write that N. would have been pleased, to know that he gave all his being. How easily the sarcasm still comes. N. loved the Project, and he loved the State, and he venerated the memory of his wife and children (while still being able to make a respectful pass at Y. one Christmas). What can I say of a man who needed to love so much?

Everything is colored by his first spring here, the first spring of the Project. N. was drafted (at least, we thought he had been drafted) to write a speech, to be delivered to all the inhabitants of the complex, about the strange dark secret in their midst. I was supposed to read this text, but A. readily accepted my deferral.

Everyone gathered in the largest common room. A. and N. sat on a dais, in their only good suits, with a few soldiers in their dress uniforms. J. and I had attended, certainly not to heckle. Maybe not to heckle. Frankly we were curious. How is a secret Project explained and still kept Secret?

Yet he did it.

N.'s speech brought up pride, and honor, and glory lost and glory regained, and on and on, and *literally* got the audience to their feet cheering for the Project, despite that they had been told not one word about what it was or what it did.

Afterward, we saw N., smiling and shaking hands and saluting (he had, as we all did, a crypto-military rank, that we might command and be commanded). He said to me "It worked, didn't it?" in the tone any of us used when looking up from the recorder or the slide rule.

The flat box I was provided today was of waxed white board, that distinctly showed the blood in my gruelly shit.

Day 10

A. visited, hungry for more. It is tiring, and it is a dilemma. If I churn out pages for them I am too tired to think about these notes, but if A. and his masters are not kept happy I will have no peace at all.

And of course A. is not inspired but not incompetent either, and eventually he will taste what I am feeding him.

If N. were here it would be different. But N. was in Room 18. N. is dead. N. was the first of us to die, and perhaps died best.

He could take any one worker's idea of data and mathematically transform them into anyone else's mental dialect. It was N. who allowed Y. to comprehend J.'s theories, J. to puzzle out what she then constructed, and this old foolish professor to understand them both.

It was said, not really joking, that N.'s works would be bestsellers if they were not all Secret. He did, in fact, write two popular works, on physics and mathematics for young people. He dedicated them to his children, who were living then. The State press keeps them in print, and it is a fair guess that if you are reading this you read them at some time in your youth.

Unless you are a State security officer, of course.

Day 11

At the moment of the accident, I was not in the Principal Experiment Room, Room 18, but in Room 19, the Recording and Control Room adjacent. The communicating door was open; this was against regulation but usual practice when the Rig was being operated at low energies, and the door was anyway not shielded.

Y. called to me through the open door. There was no special urgency in her voice. I took a step, then heard a chattering sound from one of the power relay cabinets behind me; as I turned, I briefly saw dials leap and pen recorders reach. Then there was a flash of light from the Rig, dazzling and warm as sunshine.

I was screened from the epicenter of flash by the bit of wall between the door and the observing window. I might have been still alive at that point; I do not know. I did not even think about it. I went to the door.

J. was standing on the platform between the B and C assemblies. Above him, a red steel flag indicated that the shutters of the C-stage reflector were fully open, at his chest level.

I entered Room 18 just as the alarm sounded. I was definitely dead then; this was well understood about the alarm system. It was supposed, correctly as it turned out, that with casualties now clearly defined, those inside (dead) could take the most efficient action to secure the area.

Y. had dropped behind a heavy desk, telephone in hand; she was spinning the crank furiously. I could not see N. J. was leaning against the C assembly, left hand clutching a pipe, right hand close in to his body. As I drew close, I saw that he was holding an instrument inside the reflector cavity, and had been timing the measurement with his wristwatch.

I thought for another moment that he was alive (conscious, that is; I have already explained about the alarm), but I took another step and saw his face, half pale and half scorched, and his eyes, his empty, idiot eyes, the brain behind them washed clean of thought in a wave of particles. He stared up and away, not at me, or I think my heart should have failed. As perhaps it

Y. had abandoned the useless telephone (all its magnetic parts were scrambled) and went behind the B assembly: she called for help, and I helped her bring N. out from the small space. His clothing smoldered. There were hideous, deep black burns on his chest and neck and hands. Y. pointed at the wall, where N.'s shadow was still cast, in unburned paint.

It was Y. who locked the doors and turned off the blaring alarm. I could not think at all, not in the room with J. staring, staring at nothing, with the face of a stillborn child.

Day 12

I was loaded into a wheelchair and taken to see Y.

She was on an entirely different level of the complex, though it did

not seem any differently equipped.

A. was there, looking very pleased, with a stenographer to take notes of our conversation.

I had thought perhaps the desk protected Y. some small amount, but obviously her dose was much higher than mine. She was propped up on pillows, intubated, very pale (I almost wrote "deathly"). Her voice was clear, however.

We talked about nothing much for a few minutes. I could see A. becoming impatient. (I looked for, but did not see, a stack of notebooks in the room.) I spoke to A., rather loudly, to be certain Y. was aware he was there; I believe she nodded to me.

After a little more idle talk, A. interrupted us. While we were together, he said, the bastard, were there any important details of the Project that should be recorded?

Y. turned her head. The effort was visibly enormous for her. Then I did see her nod to me. "J.'s thermal data," she said, quite clearly. "The cavity readings he made on the last day."

"Were those important?" A. said. "We have them, of course, but it was thought they were only routine."

Y. coughed.

I said "We should leave you alone."

Y. whispered "Come see me again." There was blood on her lips.

I said "Of course," because it was what she wanted to hear, and then I did a stupid thing. I reached up and touched her dark hair, where it was gray at the right temple.

The hair came away in my hand.

They took me back to my room by a different route. I see they are afraid, and that does not displease me.

Day 13

Last night Y. came to visit.

Not literally, of course. But it seemed that she was here, and it seemed that we talked, in the quiet and dark. She was young, as when we first worked together at the old University Laboratories, her hair long and dark and her almond eyes intense. I remember thinking of her as mysterious, but since I intended to solve all the mysteries of physics in a term, or two at the most, surely women would require only a summer session.

I also learned more about physics.

Now I see I have skewed your perceptions. When I say now that she was a brilliant experimenter, that she did amazing things with her hands, you will laugh in a lewd manner. That is all right. We certainly did enough of it.

But it is true that she could turn a few equations and a pencil sketch into a working bench-test rig. She could solder and drill and tap and blow glass. I saw her make waveguides out of ballpoint-pen tubing. If

there was a tricky curve involved, she would twist paper clips into test shapes, using her slim hard fingers as a forming brake.

When the Project began, there were several unkind comments about Y.'s presence with myself, but I knew it (not I) must have her. And I was correct. We did not resume our other relationship; in the time between she had gotten a husband and children, and lost them, and now there was the Project.

So we talked, last night, about things you have no context to understand, and some that you probably do. Sunlight, and

This morning, a doctor came in, sad-eyed, to tell me that Y. was dead. He offered to take me to see her, but I said that I preferred to remember her as we had last met.

I wish now I had asked her if there were sunlight, but I will know soon enough.

I do not believe in ghosts, they are not a valid quantum phenomenon. But I imagined, as I walked so slowly to the toilet, that the irregularity beneath my slipper was a twisted paper clip.

Day 14

A few weeks before the accident, N. came to visit me, rather late. He was a little drunk, not very, and N. was not a private drinker. He had come to show me a manuscript he had just completed. The State press had requested it long ago, for whenever the Project should be complete; "for some reason," (he said) he had written this draft.

I wonder now if he had been talking to J.

The manuscript was a pamphlet, intended for children and adult poor readers. It explained, in clear, simple language, what the Project was, why we had done it, and why it was necessary that we do it. All the eloquence of his speech to the staff, years ago, was carried over, and no little amplified by the facts he could now state: the enemy might be far away, but we could be sure that there was an enemy, and if we did not bend the laws of physics to our just and peaceful will, that enemy would certainly use them to destroy us.

That was said in such fashion that its inherent absurdity—its *redundancy*—was forgotten.

Then I read the section about the Project's effects, how they would be wholly different from anything we had known before, nothing at all to fear.

It was a naked lie, and when I looked into N.'s face I saw he knew it was a lie, and still it was a convincing lie, a pleasant and friendly lie.

Could anyone have desired to believe it more than I? I cannot think how.

I told him the booklet was very well written, which was the only truth I had loose in my head then, and I praised his ability to write for the young.

He told me that it had never been hard for him to do, that he simply wrote the piece for his children.

Then he looked at me in absolute bewilderment, and asked me who it was he had written *this* for?

Day 15

Woke in the middle of the night, very cold, and saw J., staring at me, not living but dead and brain-dead. Wide pearly eyes with tiny uncomprehending pupils. (They are pearls that were his eyes, of his bones are radon made, Geiger counters ring his knell.)

So exquisitely ugly, like a fairy tale: he danced with the particles, and lived as one of them, until they bore his soul away and left this goggling husk.

I would live in Hell rather than see those empty eyes again. Here is Hell: I must not die now, not yet. I know now what J. was trying to do in the C cavity, and I have to see his data, on the terrible chance that he did it.

A. has the data, of course, but I dare not call him in; he must not suspect.

Maybe there is nothing there. Maybe my opinion of J. was always too high.

Oh no. This is not the time to think that.

Day 16

These pictures that I draw are an attempt to connect points into a smooth curve, but the data will not support an honest curve. There is so little time. I could sketch in data points until my hand was too weak to move—the jewelry Y. made from solder and ceramics; the Christmas N. wrote personal sonnets to everyone he knew in the complex, had them put unsigned into our mailboxes and tried to pretend ignorance; J. wandering the halls with a chess set, playing anyone who would and never winning a single game—but would these smooth the curve, or skew it? They were people. I knew them, one of them in the Biblical sense. I cannot say I understood them, by Heisenberg's principle an it please you.

You who read this, try to understand what I cannot. The particle does not know its charge. It cannot see the outcome of its collisions. When the event is over, the patient observer may try to make some sense of the tracks left behind. Please be patient.

Day 17

Awful tiredness today. Hands ache. Must go on maybe last entry.

Late last n. went toilet. Finished, hand hit switch, lights out.

Mirror suddenly clear. On other side sits bored soldier, smoking, solitaire. He startled as I.

Lights on quick. Back to bed.

Well it brought A. Said only for safety (mine). Maybe he believes it. Asked him for J. data.

No mirrors this room. No use burn notes now. What hell play solitaire.

Day 18

J's data arrived. I read them, instead of writing, small respite. After a few pages my writing starts to look like shorthand. If u cn rd ths u cn gt gd jb phys.

There are several pages of handwritten notes, folded around a pen-recorder strip; they do not seem to have been opened and refolded. The notes describe an absurdly simple experiment, requiring eighty seconds at the C assembly. Such an elementary measurement, I understand why he did not tell the rest of us. He can hardly have believed it himself.

Yet here is the strip trace. Pure theory has mended that which was broken.

Ladies and gentlemen and the rest of you, I report the success of the Project.

I keep staring at a spike on the strip chart, twelve seconds before the experiment ends.

Twelve seconds.

Why, this is Hell, nor am I out of it.

Day 19

Could not walk to toilet. Threw up on floor. Bloody runs too what blood Ive got. Back to bed. Tubes in again.

Pulled my hair, would it fall? Yes.

I need help.

Day 20

I am better today, in the local-relative sense.

J. came, as I thought he would. Not the brainless idiot, but J. young and clever and full of physics and vinegar. He was holding a vacuum tube in both hands, twirling it as we talked; it was whole and without seam. He told me just what he had done with the thermocouples, taking his eighty seconds' readings; he had known that to stop before 80 seconds would ruin the whole reading.

Then Y. came in, older than before but lovely in her maturity.

Finally N. joined us, a little diffident at first, but there was still enough love in him for many men, and now, he said, his children had forgiven him.

And would they forgive me? I asked.

But of course dreams always end before the desired revelation.

A. came in the morning, worried sick that I might leave his work a-dangle. He even offered to bring his stenographer if I could no longer write, a stupid offer given my speaking endurance but well-meant.

I told him what J. had been (ahem) about to discover in the C cavity. I saw his eyes widen. I told him what he would have to do, what he would need. I told him to be careful, setting the switches in Control Bank 7.

I gave him J.'s notes, with my erasures and changes (thanks given for all these identical notebooks and pencils).

When he had gone, I asked the nurses for something to eat, and they brought me some chicken stew. It tasted wonderful, even between bites of J.'s data strip.

Day 21

Only visitor last night was my dinner. (Dessert unreadable, good.) Bad day. Nausea and worse. Death, diet, or anticipation? A. must be at work. *Must.* Theory cannot save us now. Only experiment.

Day 22

I seem to have been granted a little strength and lucidity, here at the end. I will try to use it well. I doubt that there will be any entries to follow this one.

When the Project was first conceived, we had J., of course, and A., mistrusting each other at every step of the planning. One would suggest a name for the staff, and then the other would deliberate long and offer another, as if they were playing chess. This when we had no idea how many of the names were still alive, let alone available to us.

And—this is important—none of this distrust had anything to do with security, or even with the goals of the Project. For us, then, the goal of the Project was to do physics. We were fighting for our respective views of what (and who) made good physics.

That was all.

When I stood behind the thick glass of the Surface Station, watching the armored battery-wagons bring Y., when she stepped through the airlock, removed her heavy helmet, and looked up at the filtered sun—I swear by whatever God is left, all I thought at the time was that *now* we could test hypotheses as we were made to do.

I seem to be crying. I wonder why. It is funny. Sweet hypothesis, sweet mystery of life.

To tell another great joke: The Project was often compared (usually by A., in the presence of the soldiers) to those Projects that came before, but the analogy is very bad. They had worked in a violent but essentially untouched world, toward a goal they could never be certain was there. We worked not toward their goal—which we knew only too well was there—but toward a sort of reaction engineering which could be made to work in a world blasted to poison junk, with a barrier dropped for God's own half-life between us and our old equipment, our old materials, our old selves; a potential-barrier too high for any of the surviving particles to cross.

To that end, we—*I*—assembled J., who could theorize around junk; Y., who could build from junk; N., who could translate among all the various junks; and myself for binder. Three quarks and a gluon. Only this unit, this primary particle, could achieve the Project's purpose. That is why I assembled it, in Room 18. That much I know.

But having brought the masses together, did I intend that they react, or be kept from reacting? Heat of fusion and heat of disassociation differ only in degree, ha, ha. Perhaps I wanted both results: but Schrödinger's cat cannot be alive and dead at once. That is the essence of the paradox.

I do not know what I wanted. Thoughts are all washed away in radiation, and now there is no time to reconstruct them: a doom I now propose to visit upon the Project itself.

Tomorrow, when A. does the experiment I detailed to him, and throws a certain set of switches, and Rig, room, workers, data, yea, all which it inherit, are vanished into incandescent air, the Project will be over for a while. Not forever, because the laws of physics wait patiently for the discoverer, but perhaps long enough for the people here to know better what they want of the laws.

And time is all we can ever win against death. See how I have stolen the days.

The survivors of tomorrow's accident will search and search and never find who welded the safeties down, and set the explosives, and wired destruction into Bank 7 of the Rig controls. It could not, after all, have been a bloodless corpse bound in white linen.

But I was not dead when I did the work, four years ago, when the Project began. Maybe I knew then what I wanted, the actual few deaths instead of the hypothetical many; but if so why did I never set those switches myself?

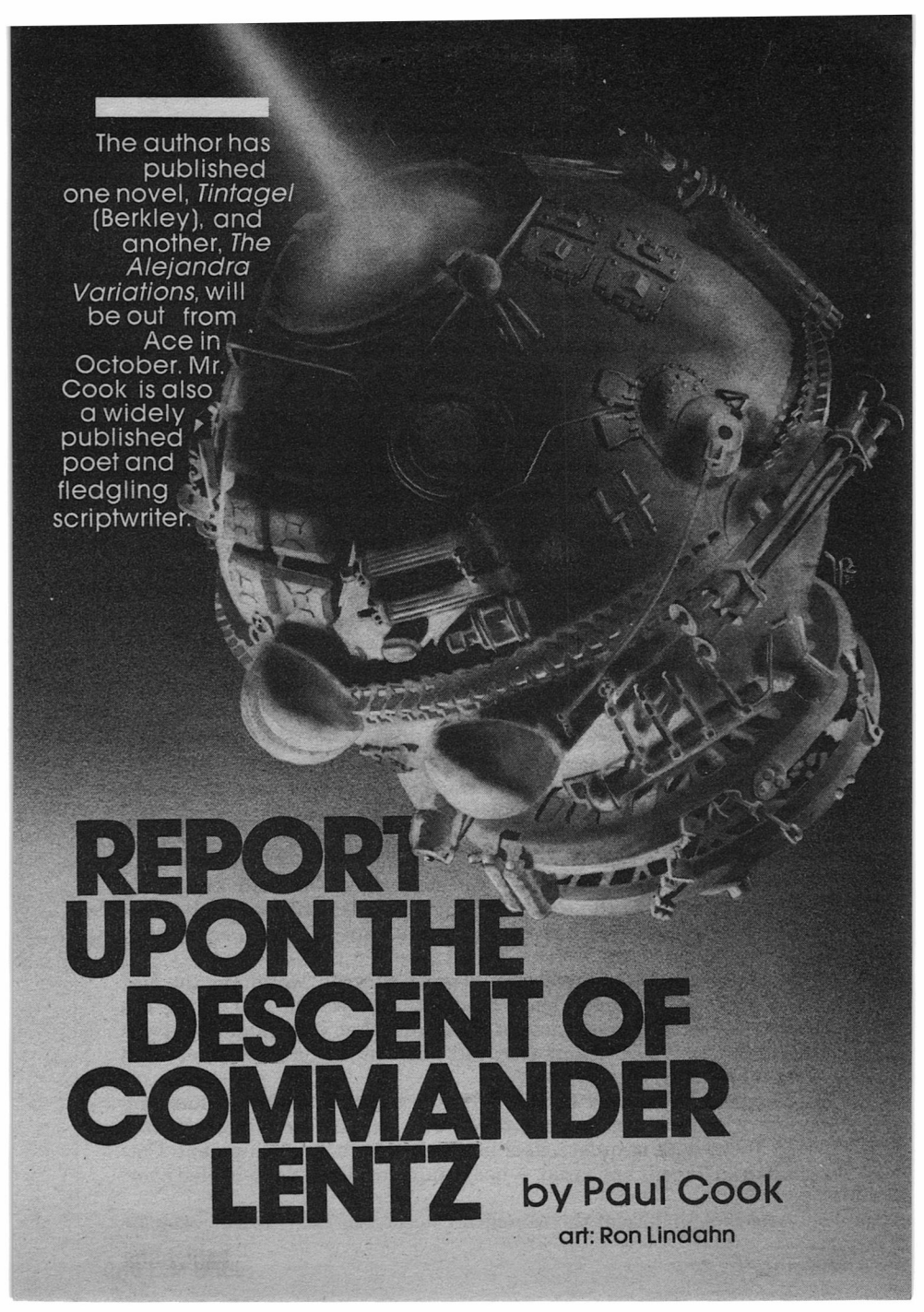
Perhaps I still fail: A. may be a better physicist, or a better coward, than I think. One cannot do nothing and expect to triumph. To do nothing is the triumph of evil (or words to that effect).

And yet. Reactions require a moderator as well as an initiator, and there indeed was a reaction in Room 18. Because it was N., the Project's voice, who deeper than did plummet sound drowned his books, and himself, and all of us. While my beloved J., who loved Physics alone, stood in the open shutters for the twelve seconds he needed to make the Project succeed.

Fusion. Disassociation. In the end we are all heat.

Whatever I have done, I can do no more. I will let go now, as I believe Y. did, and I will see if there is sunlight. Whatever happens tomorrow, there will be a crowd of ghosts in my room, calling me to answer, and I cannot face any of them except as one myself.

Day 23
Light. triumph ●



The author has published one novel, *Tintagel* (Berkley), and another, *The Alejandra Variations*, will be out from Ace in October. Mr. Cook is also a widely published poet and fledgling scriptwriter.

REPORT UPON THE DESCENT OF COMMANDER LENTZ

by Paul Cook

art: Ron Lindahn

I. The Mnemos Report

No man alive—and I do not intend this as a pun—was better suited to test the capacities of the Bardosphere than Commander Eric Lentz.

However in the beginning he had no choice in the matter: an assassin's bullet caught him completely unaware, lodging close to the spine after having penetrated his left lung as he and the returning four crew members of the *New Frontier* were being paraded down New York's Fifth Avenue, where millions celebrated their return from a successful landfall on Mars.

The authorities rushed him as quickly as they could to Mt. Sinai Hospital and plugged him into me, to monitor his vital signs and to filter into his fading consciousness words of encouragement as a team of skillful surgeons desperately tried to revive America's greatest hero. Unfortunately, the traffic in Manhattan had been impossible and the chopper had been late, and Commander Lentz was three and a half minutes dead by the time they got him into the trauma center. And me.

I am Mnemos.

I take my orders from Dr. Albert Saunders, my principal programmer, who was at the Pentagon at the time of the tragedy, even though I myself reside deep within the Rocky Mountains outside of Longmont, Colorado. My Eyes and my Ears, however, are just about everywhere a supercomputer is needed. And on that blustery October day in New York, they were needed in the medical trauma center at Mt. Sinai.

Where am I?

Those were Commander Lentz's first words after the monitoring equipment indicated that his heart had ceased beating. There were some signs of ventricular fibrillations, but they were probably just reactions to the shock caused by the bullet's entry. His neural impulses, though, showed that he was holding on.

I registered his subconscious mental activity out upon the screens in the trauma unit for Doctors Gordon and Horowitz, to let them know that I indeed had control of the situation, but I did not translate back to the Commander the tentative sigh of relief that went up in the emergency room.

Dr. Saul Gordon, Chief Resident and heart surgeon, was doing the best he could, fighting off hemothoraxic activity: the wound was filling the pleural cavity with a great wash of blood, and that very same blood was getting in the way of Dr. Frank Horowitz's delicate—and feverish—search for the bullet itself.

But the only thing they needed to know was that death in that long three and a half minutes had not taken their patient from them. Nurses scurried about with stainless steel blades and suturing equipment. Cotton swabs and forceps appeared. A heart-lung machine was wheeled over.

Dr. Albert Saunders of the Mnemos Project was horrified at what he

had witnessed on television. He had been at the Pentagon most of the morning, watching the parade on NBC, as his long-time friend, Eric Lentz, was being driven in a limousine down Fifth Avenue. He watched as the Mars astronaut waved in a colorful snowfall of confetti and ticker-tape. Then the bullet struck, fired at close range by a nickel-plated Colt Python revolver.

Dr. Saunders was instantly at the Mnemos screens, setting up the Bardosphere program, for he knew what would be required of him. And it had only taken him no more than a swift phone call to Mt. Sinai to get the Commander hooked up into the Mnemos system. Dr. Saunders had originally intended the Bardosphere sequence to be tried upon some other dying patient, but Eric Lentz, being an explorer and an adventurer in the first place, was a top-drawer candidate. Doctors Gordon and Horowitz agreed immediately.

Quickly, I paralleled all of the Mt. Sinai monitoring equipment through my own circuits, eliminating what redundancy I could—and just as quickly, I surrounded Commander Lentz with the Bardosphere.

Please. Somebody tell me where I am.

"You are approaching what is often called the Great Bardo, Commander Lentz," I spoke to his dying mind from the imaginary console-board which I had materialized around him in his bardo-state. "You need not feel any undue alarm, nor should you be frightened by any sounds you may hear."

I . . . I am confused. I don't understand. . . .

"That is entirely natural, Commander Lentz. Please try to relax. We are doing everything we can."

Dr. Saunders in the Mnemos center at the Pentagon alerted the rest of the Mnemos team back in Colorado and threw in the Independence Sequence program, giving me complete autonomy—for if we were to learn from Commander Lentz's experiences in the Great Bardo, we would need to allow the injured astronaut to see, hear, and feel everything in that after-life state unimpeded by any outside interference.

Thus began Commander Lentz's descent in the Bardosphere as the doctors back at Mt. Sinai worked to save his life.

The parade. I was in the front limousine with Mary. Juan Santos, Dr. Toshido and Brett Anders were in the second limousine . . .

"You were shot," I informed him. "A copper-jacketed .32 bullet entered your chest at an upward angle, piercing your left lung and the slug is presently lodged dangerously close to your spine."

I'm dead. He killed me.

He said this with complete detachment, a sign that he was becoming disconnected from his *dharmata*, the totality of his basic spirit.

He was not yet dead. But he was close. *Very* close.

"You are experiencing severe trauma, Commander Lentz," I told him, carefully repeating his name and his title as often as possible in order to keep him within the familiar.

Surrounding him in the Bardosphere had also helped.

Where am I? he then repeated.

Swiftly, I gave him two visions, one very real and the other fabricated. Both were essential if he was to retain any hold upon what was left of his sanity.

I showed him the operating theater where Dr. Gordon had already pried apart the chest and Dr. Horowitz was busy suctioning blood away from the thoraxic cavity that held the now-stilled organ that was Commander Lentz's heart. Behind the two good doctors were eight other men and women, and the heart-lung machine was already at work. Encephalic brain function barely registered upon my screens, but Lentz was indeed alive, despite all that he was perceiving in his disembodied state. This was only because I was keeping him grounded.

But this condition is normal for such extreme cases of trauma. And because of it, I gave Commander Lentz the second vision. The image of the Bardosphere.

I am programmed to follow the logic of the *Bardo Thödol. The Tibetan Book of the Dead.* I have many other capacities, but Dr. Saunders had been so impressed with his visit to some of the lamasaries in Nepal and Tibet, where the near-death experience has been so thoroughly investigated, that he managed to sway the Mnemos project team to allow him to establish a Bardo-descent sequence which someday might be used to witness, through my Eyes and my Ears, an unfortunate man or woman's death.

The *Tibetan Book of the Dead* examines in a mythical-symbolic form what the psyche undergoes during the death experience. And since in the Judeo-Christian West, NDE's—Near Death Experiences—are often slotted into the shadowy realm of "parapsychology," Dr. Saunders thought it might be useful to see how a watchful computer, such as myself, might integrate what a dying patient apprehends, using the information in the *Bardo Thödol* as guideposts—for certainly no one in the Christian world would perceive the near-death experience in purely *vajrayanic*, or Tibetan Buddhist, terms.

As a consequence, all the major hospitals along the East Coast had their monitoring equipment rerouted into the Mnemos circuits, which, if truth be told, blanket the country. All the Mnemos team needed then was a volunteer.

Now they had one.

And since a dying man always associates his final experiences in the Great Bardo with what he knew best in his former life, I gave the Commander something in which to ground his perceptions as he lay there on the operating table at Mt. Sinai. I gave him the imaginary equivalent of a Marlin-Mariet Grapple, which are now so vital in planetary exploration. Only this time it was called a Bardosphere.

Shaped like a deep-sea bathysphere, the Bardosphere is suspended by a luminous fiber of light, a lifeline, as its lone passenger descends—quite like a Marlin-Mariet Grapple—into a hostile and alien environment.

But no Grapple would ever make a trip like this.

Commander Lentz found himself at the controls of the Bardosphere, and upon the screens of the imaginary computer board before him he viewed the team of doctors and nurses fighting to keep him alive.

Why are they doing this?

"You are the first man to set foot upon Mars," I reported. "You cemented a Grapple in the center of Pavonis Mons on the Martian equator after a frightful descent from a tether attached to the *New Frontier*. Without your brave act Burroughs Base would not have been established. You are a hero to them and they want to see you alive and well again."

I studied Lentz's reaction to this.

Just as he had been used to on board the Grapple, all of his senses were channeled into the computer before him in the Bardosphere. The memory came back to him how the *New Frontier* had entered into a stationary orbit above Mars at an altitude of one hundred and eight miles. The Grapple's own computers were capable of providing him all of the information he would find necessary on the way down: barometric pressures, wind shifts, temperature differentials, and the like. The Grapple also had a powerful gyroscope which almost seemed as if it had a mind of its own. Without it, the Grapple would have become something of a pendulum in the fierce Martian winds at the lower altitudes, possibly endangering the spacecraft above. Only Commander Lentz—because he had done it twice before on the earth and the moon—could ride herd on both the Grapple and its cantankerous gyroscope.

And in the Bardosphere I gave him all the sensory input which he would require to give him the illusion that he was only exploring another medium—and not, in fact, dying.

Doctors Gordon and Horowitz needed all the help they could get.

But it was only minutes into the operation that the Commander began to disassociate even more. The Bardosphere began to rise up from the operating theater all of its own as Lentz's astral body started to fragment.

Let's get away from here. . . .

His unconcern for the trials of the laboring doctors was to be expected. He even had no interest in his own body, shrouded as it was in blood-spattered sheets upon the table. The room telescoped downward as the Bardosphere rose. This is the first stage of the NDE. It is also the entry stage to the Great Bardo. What Tibetan holy men had done for thousands of years through deep meditation, Commander Lentz was doing through Mnemos, through me. And at this stage, Commander Lentz was slowly ceasing to *be* Commander Lentz. His *dharmata*, his essential Logos, was manifesting, and as such he was starting to toss off the coat of his egoistic self.

Thus we entered the Great Bardo, a highly-charged silvery tunnel of motion and light, and Commander Lentz in the Bardosphere took to the

experience with the true spirit of an explorer. It was only the Bardosphere itself that was keeping him from going instantly insane at that point. For sanity is *not* the rule in the chikhai bardo, the first of the three main levels to the Great Bardo itself.

What's happening to me? came his suddenly alarmed voice. *What's going on? What is this?*

Once the Bardosphere had lifted away from the emergency room—and all that was familiar to Commander Lentz disappeared—his panic had set in. Clouds of swirling, mercurial light rushed about the Bardosphere, as the entrance to the Great Bardo opened up. The Bardosphere was sucked in like a cork in the waters of a shimmering maelstrom.

"Do not be afraid," I told him from the console of the Bardosphere. "The doctors are taking care of you. You've just passed into the Bardo, a tunnel which transfers the soul from one life to the next."

Commander Lentz, as anticipated, rebelled against this. A man only in his late forties, not a gray hair upon his head, and admired by millions all over the world, struggled with the sights and the sounds around him.

Lentz gripped the armrests of his seat in the Bardosphere, feeling his true descent into the Great Bardo begin.

Around him appeared the visages of people he had known throughout his life, including figures of his grandparents and relatives long deceased. These were quite real, coming as they did from the deepest recesses of his hidden psyche. They beckoned and they called out to him. And behind them roared the sounds of a hundred thunderstorms, all of it spiraling and circling down toward a brilliant white light that itself was haloed in bright blue.

His mind fought for associations. And, again, this was a natural response. He was following the pattern most survivors of NDE's had reported.

That blue light! It's like the glow from the fusion plate of a Grapple, he said excitedly. *And the thunder. All that noise! Just like the Martian windstorms whistling up the Tharsis Montes plain!*

Back at Mt. Sinai they were encountering cardiac muscle that did not want to respond to stimuli of any kind.

And back at the Pentagon, Dr. Albert Saunders was carefully watching that the Bardosphere did not slip too far into the perilous currents of the cyclonic electric tunnel that would doom Commander Lentz if he journeyed too deeply.

The hurricanes of Mars! Commander Lentz cried out.

He was feeling the buffeting against the sides of the Bardosphere, reliving that moment when the Marlin-Mariet Grapple, guided into the Pavonis Mons crater by his steady hand, began melting the soil beneath it, fusing the Grapple itself permanently to the surface of Mars.

Commander Lentz resurrected his exuberance.

But now he was well into the chikhai bardo and long past the stage

of panic normal to a dead person—although Commander Lentz was neither normal nor was he dead. No man had ever had anything like a Bardosphere to assist him over the threshold of death's ragged precipice, and in some dark, inchoate manner, Commander Lentz *knew* what was going on. This was a more peaceful stage, a stage the Tibetans associate with a god called Vairocana, but to the Commander all he was seeing was the blue light around him.

Yet, as the Bardo drew him on, I did not record in that blue light any sign of Commander Eric Lentz's *yidam*, that visualization of a personal god, guru, or friend usually expected at this juncture. My data banks are full of NDE's which record such visions at this stage. But from Commander Lentz, none were forthcoming.

Dr. Saunders back with the Mnemos team in the Pentagon quickly informed me that the Commander was descending much faster than anticipated, therefore his *yidam* did not have time to appear.

But now came the voices, a *different* set of voices. These sounded like the combined wails of a city of mourners coming at him from the walls of the whirling Bardo. The tearful sobs were heartbreaking and the cries of women world-over crept through the hull of the Bardosphere itself, causing Commander Lentz to reach out to comfort them all.

Mary! he suddenly found himself saying. *Oh, Mary!*

Mary Flynn, senior astrophysicist on board the *New Frontier*, had been right beside him in the limousine when he had gotten shot. She had also been with him every minute of their flight to and from the red planet. The Commander discovered just how fond he had grown of Mary Flynn, blonde and pert Mary Alice Flynn, as the Bardosphere descended away from the land of the living. He yearned horribly for her.

And he heard her among the weeping voices.

Still, the Bardosphere did not stop.

Mary, don't cry. I will return. It's only a matter of time. The doctors are working on me. They haven't given up.

Lentz did indeed understand something of the situation in which he had found himself, and it was part of his affection for Mary Flynn that strengthened the dangling tether which held onto the Bardosphere.

Far out ahead of the falling Bardosphere, Commander Lentz suddenly envisioned the second stage of the Great Bardo, called the chonyid bardo, with a different set of lights and sounds. A Tibetan monk might see several Wrathful Deities, as they are called, but Lentz only perceived turmoil. And that turmoil was only causing Commander Lentz to become more agitated and excited by his journey.

Those feelings brought back recollections of the flight home from Mars. The *New Frontier*'s main section remained in orbit above the crimson planet in order to service the thirty-two U.N. scientists left behind at Burroughs Base, as Commander Lentz, Dr. Yoshi Toshido, Juan Santos, their communications expert, and Brett Anders—and of course Mary Flynn—made the thirteen-month journey back in the return vehicle.

He could almost remember every moment he and Mary spent out of cold storage on board the *New Frontier* shuttle. He could see Mary go about her duties, conduct her experiments. He saw her in her cold-couch sleeping.

In the Bardosphere, he watched and he remembered.

But when he chanced to glance into the Bardosphere's imaginary screens, deep into the frightening lights of the chonyid bardo beneath him, he discovered that he could not look at it for too very long. According to the *Bardo Thödol,* only the most advanced monk could face the Wrathful Deities and not look away. But Commander Lentz, not being a *vajrayana* Buddhist nor seeing any of the Wrathful Deities, only saw the multicolored lights—and felt a blinding pain. The pain that comes from being a normal human. Guilt pain. The pain of grief.

He closed his eyes against the light of the chonyid bardo, wanting instead to see Mary. To be with her again. But the Bardosphere kept on falling, despite his all-too-human wishes.

Dr. Saunders, flanked by his colleagues in the Mnemos center, communicated to me his uneasiness over Commander Lentz's failure to home in toward the faraway light at the very end of the Bardo. Consequently, I adjusted the Bardosphere's field of vision as best I could, but the Commander was caught within the currents of the Bardo, following the whims of his dancing memories.

But he was also in a highly critical condition back at Mt. Sinai. I relayed to Dr. Saunders graphs that indicated this from the hospital monitoring equipment. In the Bardosphere, Commander Lentz only knew that his life was parading before him, and he reached out here and there for those elements which kept him attached to his *persona* as Eric Lentz.

And Mary Flynn was part of it.

It was then that the painful lights of the chonyid bardo seemed to bring back the happier memories of the trip aboard the *New Frontier* shuttle.

Despite the official NASA log of the journey, there had been some trouble. But the rumble of the thousand thunders and the harsh reds and yellows of the chonyid bardo kept him from wanting to remember.

I, however, had to know. The Project had to know. I was programmed to follow all responses in the Bardosphere, so I asked him.

"What was the trouble you experienced, Commander Lentz? Can you describe it for me?"

Brett Anders, he said. *It was Brett Anders.*

I registered more anger than sadness from him. Then I registered fear and revulsion as the Commander coupled the memories of Brett Anders with the vision of the rushing lights of the chonyid bardo.

I began seeing some of the events which caused his unhappiness over the affair of Brett Anders.

The Commander had devoted all of his life to furthering America's

interests in space and during the trip to Mars, when the U.N. team was in cold storage, he had quite simply fallen in love with Mary Flynn. As the Commander related it, Brett Anders had also fallen in love with Mary, only his relationship with her had begun back in Houston during their initial training together. Before the remaining five were to go into storage themselves a considerable amount of friction developed between the Commander and their flight engineer. And from then on, Commander Lentz had not trusted the man.

As this information came in through my monitoring circuits, I saw Dr. Horowitz remove the blunted bullet from the region of Commander Lentz's spine, after having carefully searched for it for twenty minutes.

Cheers went up throughout the operating room.

Still, the Bardosphere was sucked down, and through its screens I could now see the approaching sidpa bardo—the last stage of the NDE and the one before Breakoff. The luminous tether of the Bardosphere was getting thinner as it stretched to the length of its limit. Beyond the sidpa bardo there would be no return. Commander Lentz's soul would be headed for its next incarnation.

I love her, Lentz then told us. *I didn't mean to fall in love, but I did.*

"Go on, Commander," I urged. I didn't want him to be distracted either by the lights outside or by the sounds crashing around him.

The Commander related how Brett Anders, in his jealousy, had tried to sabotage the mission. Initially, it was Anders who had been chosen to go down in the Grapple, but as he had gone about his dirty work—as the Commander told it—his fingers had gotten crushed in the closing of a door in one of the *New Frontier*'s compartments. Lentz, originally the one to oversee the Grapple's lowering from the orbiting spacecraft, decided that he would be the one to go down instead. He already had experience with the Grapple, having established NASA's elevator base at the Cayambe Station in Ecuador and the mining colony in Mare Fecunditatis on the moon.

Anders, in sick-bay, brooded and eventually had to be forcibly put in cold-couch storage for the whole trip back.

Mary cheered me on, Lentz said, feeling a terrible longing now for her. I could sense it myself. It was perhaps this longing that was actually keeping him alive upon the operating table.

I would have shown him the two doctors preparing to disconnect him from the heart-lung machine, but I wanted to know more. None of this had appeared in the NASA log and Dr. Saunders had programmed me to dig as deeply as I could. So I dug.

But the Bardosphere was still plummeting; the thunders getting louder and louder, the lights more painful than ever. Brain damage had not yet set in, and the trauma team at Mt. Sinai had only a few moments left.

* * *

Those long months did something to him, the Commander explained. *I guess Anders thought I was with her all that time. So he tried to stop us any way he could. I had to put Anders away. Dr. Toshido even confirmed my evaluation of Anders' condition. It's in the log.*

I was about to query him further, but something shook the Bardosphere.

What was that? he asked, taken by surprise.

Far beyond the sidpa bardo the Bardosphere screens picked up an unpleasant greenish haze that had begun obscuring the white light at the very end of the Bardo tunnel. I knew this was what the *Bardo Thödol* called the "animal realm"—the realm of low human desires. But all that Commander Lentz was seeing was a vile haze.

And the peculiar sensations that came with the vision forced him deeper into his psyche. He thought desperately of Mary Flynn.

I wanted a son born in the sky, he then confessed. *I wanted so much that Mary should bear my child. . . .*

The Great Bardo swirled like the interior of a silvery tornado, and the Bardosphere helplessly descended with the green lights and the green haze waiting the arrival of Commander Lentz. I struggled with the doctors back at Mt. Sinai to hold onto Commander Lentz. Already, Dr. Horowitz was setting up the emergency electro-shock machine. And Dr. Gordon—much against his own wishes—was preparing a hypodermic filled with adrenalin for his patient's heart if the electro-shock treatment failed. The Commander was strong. They felt that he could take it. If he *had* to take it.

In the Bardosphere, Commander Lentz felt nothing as the leads were applied to his chest and the volts of electricity burst through him. Everyone in the operating room held their breath.

Nothing.

The Bardosphere maintained its perilous passage downward unabated by the efforts of the doctors in the emergency room—on the other side.

I probed further for Commander Lentz's *yidam*, which we had yet to register at the end of the Bardo, greenish haze notwithstanding. This we couldn't understand. Almost all the known cases of NDE's report some kind of beneficent encounter with Someone at the end of the whirlpool that was the luminescent Bardo. It could be anyone. The Virgin Mary. Mohammed. Meher Baba. Or just a very bright and loving Light.

The screens of the Bardosphere were filled with only the bilious green lights of the sidpa below. Beyond that there was nothing to be observed because that was where Commander Lentz—should he descend that far—would go to find a new womb in which to be reborn. That was the End of the Road.

Lentz's mind suddenly began to dissipate.

The needle went deep into the Commander's chest and the adrenalin oozed around the flaccid heart muscle. Nurses and medical technicians scrambled for other life-saving equipment.

A son born in the sky, Lentz said dreamily. *Think of it! He'd be just like a god.*

And Mary Flynn *had* conceived, three months close to home—with Brett Anders still in cold storage. I could now see her in the real world through my Eyes and my Ears as she waited along with officials of the FBI and the Secret Service, waiting on word from Drs. Gordon and Horowitz.

But only she and the Commander knew that she was indeed pregnant.

I think it's coming closer, Lentz said with some apprehension as the greenish vapors curled up at the sinking Bardosphere.

I don't understand why this is happening, he stated. *I have so much to give. There are more Grapples to be set. More space elevators to construct. There is so much yet to do!*

The Bardosphere suddenly slowed.

But not because of anything the trauma team back at Mt. Sinai had done. Something else, something much more significant—and sinister—had occurred.

Oh, my god, Lentz breathed. *What's that?*

The field of greenish lights beneath the descending Bardosphere were suddenly beginning to take on shape. Human shape.

Make them go away! he called out. *Make them stop!*

Something had to be done, and quickly. The slowing of one's descent in the Great Bardo does not necessarily mean imminent return. The soul sometimes halts in its confusion—according to the Tibetans—then suddenly crashes into the Bardo like a bullet, aimed toward its destiny, rushing headlong to its next incarnation. Those who have survived the near death experience have never gotten this far.

It was a bad sign.

Then Commander Lentz's voice returned. *Who are they*? he asked.

He was noticing that individual lights in the green realm below were beginning to take on specific forms. According to the *Bardo Thödol*, figures appearing in the greenish haze at the end of the long Bardo tunnel meant that his spirit was conjuring up his choices for upcoming lives.

Trapped within the Bardosphere, dangling in that whirling luminosity, Lentz suddenly found himself captivated by the twinkling greenish stars before him.

Each star became the point at which couples, locked in various positions of copulation, were brutally and savagely satisfying themselves. Voices of females screamed in orgiastic pleasure as the men groaned in their bestiality.

But Commander Lentz could not look away. The sidpa drew him on.

I then picked up a police broadcast transferred in through my Eyes and my Ears, informing Dr. Saunders at the Mnemos center that Commander Lentz's parents were being raced to the nearest Mnemos outlet to help assist with their son's retrieval. Presently, they were in Houston, guests of the Johnson Space Center and at the facility there would be an in-system Mnemos hook-up.

"Hurry," I heard Dr. Saunders relay to the police escort. "*Hurry!*"

A link-up with his mother might provide just the right impetus it would take to pull back the Bardosphere. All I could do was monitor the Commander's descent and keep him alert—until the end.

In Mt. Sinai, the two good doctors were bathed in sweat, trying everything they knew to bring the Commander back around. Life-support just wouldn't be enough, even though the wound had been sealed and the pleural cavity safely washed of blood. Everything was normal.

Except that Commander Lentz was dead.

Or close to being dead. I was holding onto him even though Lentz himself had never acknowledged my presence other than perhaps as the voice of his conscience. He was only vaguely aware of the Bardosphere, such as it was.

Could I—Mnemos—be impeding the vision of his *yidam*? Could the Bardosphere be what was blocking him? Shouldn't he be seeing Jesus or Someone by now? The whole concept behind the Bardosphere sequence was to keep an individual conscious during the near-death experience, not to confuse him. Was I doing something wrong?

But as Dr. Saunders quickly informed me, Lentz merely had other things upon his mind.

Such as his death.

And he could not tear his eyes away from the screens showing the fornicating couples. They reminded him of his first night with Mary Flynn on their way back to the earth. Just the two of them. Juan Santos, Dr. Yoshi Toshido, and the hapless Brett Anders were in their cold-couches like hibernating bears waiting out the long winter. He and Mary Flynn had the whole of the *New Frontier* shuttle in which to enjoy themselves.

They remind me of being with Mary, he said openly, staring at the screens and their depiction of the women in the green vaporous light. The sounds they made in their passion reminded him of the sounds Mary had made when they had made love in transit back to the Earth.

Suddenly the green lights began getting brighter, drawing him on. They began taking on precise contours of fetal human beings where the stars glowed their brightest, right at the genital region of their potential parents.

I signaled Dr. Saunders and his team. Saunders never thought we'd ever get this far, but we had. *This* was reincarnation. And we were getting it on video tape. They were just a few of the choices Commander Lentz would have if the Bardosphere went too much further.

One sparkling green star would be a child born of a lower-class couple in Brooklyn, New York. Its life seemed to evolve in speeded-up time on the Bardosphere's screens. Commander Lentz bolted in horror: the child would live in spiritual and financial poverty. He would be beaten by his father throughout his childhood only to eventually take his own father's life. He would die at the age of twenty-one in prison.

Another green light appeared and became a vision of a girl-child to be incarnated in Kampuchea. She would live a life of harlotry, contract a social disease not yet known to medical science, and slowly die as parts of her body rotted and fell off.

Another green presence there in the deepest regions of the sidpa would become a child in Zambia. Ridden with horrible birth deformities, he would gradually starve to death before the age of seven.

And a final light was that of a Bolivian boy who would become a terrorist. He would be caught and tortured at the age of sixteen. Though he would live, it wouldn't be much of a life until a night during his twenty-third year when a spider of a newly mutated strain would seep its poison into him as he slept. He would never wake.

Why? Commander Lentz then asked. *Why? These aren't me. They can't be . . .*

But he couldn't take his eyes away from the fornicating couples. The breasts of the women. The sweating, groaning men. The utter sensation of pleasure which embraced them seemed to reach up to the Commander in the Bardosphere.

Back at the Pentagon, Dr. Saunders had gotten the most recent videotape of the assassination attempt from NBC and quickly ran it through to me. I showed Commander Lentz the scene of the shooting.

It answered *why.*

His last moment upon the earth showed him sitting next to a three-months pregnant Mary Flynn on the back seat of the limousine, waving to the crowd. Confetti filled the air like autumn leaves. Behind them in the other limousine were Juan Santos, Dr. Yoshi Toshido and an angry, sullen Brett Anders, released by the NASA public relations department in order to participate in the parade and to give the impression that the mission to Mars had wholly been a success.

I showed Commander Lentz—through the screens of the Bardosphere—how Anders jumped out of the limousine, unable to stand it any longer, and ran up to the Commander's limo. The gun came up. A shot was fired. There were screams as darkness enfolded its cobalt wings around Commander Lentz.

But the Commander could not—for the life of him—take his eyes away from the green lights and the couples forming before him in the sidpa bardo.

I deserve better than this, Lentz said distantly. *These aren't for me. There must be some mistake. . . .*

"Why did Anders want to shoot you?" I then asked. "He was to have made the trip back in the cold-couch anyway."

He was jealous, Lentz said without hesitation. *He couldn't let the best man win.*

The Bardosphere monitor, however, said differently: Commander Lentz was lying.

Then quite suddenly, back at Mt. Sinai, the Commander's heart jerked with life. This sent cheers throughout the operating theatre—and throughout the Mnemos center at the Pentagon.

But the truth became known within the small confines of the slowed Bardosphere. For in the final depths of the Great Bardo only the truth can exist.

What Commander Lentz had been telling us, and what we saw, were two entirely different things.

The memory flashed upon the screens of what *really* happened on board the *New Frontier.* Commander Lentz was so deep into the Great Bardo that his conscience could not hold it back.

It had been he who had broken Brett Anders' fingers in a suddenly closed hatch above Mars, and it had been he who had urged Yoshi Toshido to confine the flight engineer to his cold-couch earlier than called for.

And none of this appeared in the official NASA log. The U.N. team had yet to be thawed at that point, and Mary Flynn couldn't prevent their rivalry from going as far as it did.

Also not in the NASA log is the *rape* of Mary Flynn. As the Bardosphere began withdrawing—as Lentz's body began reviving back on the operating table at Mt. Sinai—there was no reason for his own mind to hold back the truth, even though he could still feel the attraction for the greenish couples in the vapors of the sidpa below him.

The screens and the memory circuits showed us more. Much more. Scenes of his ruthlessness, his ambitiousness, flew out across the screens in superfast time. I could sort it out, but Dr. Saunders would need weeks to go back through it all. But the Mnemos team was getting more than enough.

It suddenly became a confessional.

Commander Lentz, despite his stature, was a self-serving opportunist, rising up through the ranks of the space program to become just the kind of man he turned out to be. He wanted the glory of being the first man upon Mars. He also wanted Brett Anders out of the way. We even caught a vision of an attempt at a thinly disguised murder which had failed once when he was a test pilot at Langley Air Force Base.

Commander Lentz wanted Mars and Mary Flynn. And he had gotten both of them by sheer force of will.

Commander Lentz's heart fairly leapt with joy, there in the Bardosphere, as he began his return to the world of the living. Those greenish lights would have to trap someone else, perhaps someone who had just died at Mt. Sinai—or somewhere else far away. It didn't matter. The nightmare was over.

Then my eyes saw another emergency room at a different New York hospital. My Mnemos circuitry showed the badly mauled body of Lieutenant Brett Anders who had suffered at the hands of the worshippers of Commander Lentz on Fifth Avenue.

It was in the waiting room of *that* hospital that Mary Flynn sat weeping, not that of Mt. Sinai. She wept for the death of Brett Anders, not that of Commander Lentz.

To the FBI and members of the Secret Service around her, she had been confessing her side to the story: her love and admiration for Brett Anders, her contempt and loathing for Eric Lentz.

No! shouted Commander Lentz, also party to the Truth through my Eyes and my Ears. *No! That's not true!*

That was when, at the far end of the Bardo—deep within the swirling energies that led to the next life—appeared the *yidam* of Commander Eric Lentz.

Only it wasn't a *yidam* proper, but something of a *preta*, what a Tibetan would call a "hungry ghost," one of the dwellers—in their understanding—of the deepest regions of the sidpa bardo.

But Commander Lentz did not see a "hungry ghost." What he saw, and heard, was the soul of Brett Anders crying out for justice, itself falling on to its next reward.

The moment Commander Lentz sighted it, the Bardosphere began back down, faster and faster until the luminous tether snapped with the overwhelming weight of the guilt that filled the craft. The Bardosphere fell.

Dr. Saul Gordon jerked around at the monitoring equipment whose alarms were declaring that the Commander's vital signs had ceased. Dr. Horowitz was half-way out the door, and he rushed back. But it was too late.

The Bardosphere crashed down into the green vapors, drawn to one of the copulating couples. The Great Bardo had known all along where the *dharma* of Eric Lentz would lead.

We did not. We never would. Such things are not given to men. Or to computers.

Commander Lentz disappeared into the vile greenish haze of the sidpa bardo, plunging into the next life.

* * *

II. Addendum

By Albert R. Saunders, Ph.D.

Of the final images we recorded through the Bardosphere as seen by Commander Lentz, we have only in these last few years since his death been able to locate two of the sighted families.

I have stressed to the Mnemos Committee that there were probably a hundred more incarnations that Eric Lentz could have been given as punishment for what he did in this life. It would be a worthless expenditure of taxpayers' money to attempt to track them all down in hopes of finding him. The Bardosphere sank too rapidly on that second descent to allow us an accurate determination of which family Lentz might have entered. Moreover, there is no genuine way to know if any particular child we would find in those families would indeed be Commander Lentz.

But that isn't the worst of it.

What really transpired on board the *New Frontier* shuttle was more than what the Commander revealed in the NASA log of the flight or in his trip aboard the Bardosphere. And because the greenish haze of the sidpa means that only the worst of human lives was in store for him, it will take him thousands upon thousands of retributive incarnations to return to the level he had once reached.

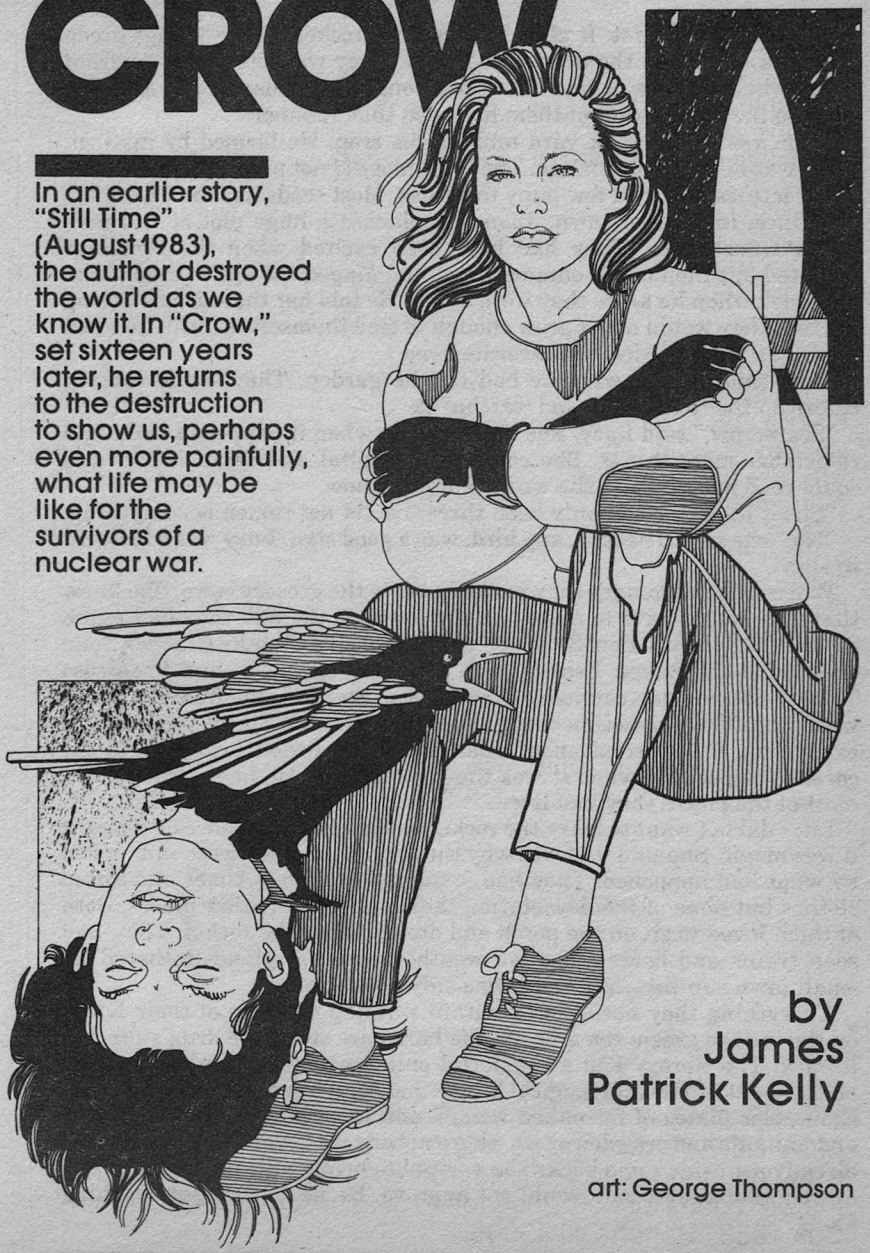
Mary Flynn knew that she would abort her child once she returned to the earth, and once she could do it without the glare of public attention focused her way. And she agrees with us that enough is now known about what had happened on the shuttle that there is no further need for investigation into the affair.

But Commander Lentz did leave us with one valuable contribution. Few of us will ever descend to a new planetary body inside a Marlin-Mariet Grapple, but we will all take a trip someday on board the Bardosphere.

In that, Commander Lentz, true to his spirit, has paved the way. ●

CROW

In an earlier story, "Still Time" (August 1983), the author destroyed the world as we know it. In "Crow," set sixteen years later, he returns to the destruction to show us, perhaps even more painfully, what life may be like for the survivors of a nuclear war.



by
James
Patrick Kelly

art: George Thompson

The crow came first. It glided around the rocket on the village green and then landed on the dead oak nearby. Lucy was sitting on the front porch when she saw it and she ran through the house to tell Juan. It was the first bird either of them had seen that summer.

Juan was in the back yard tending his crop. He farmed by instinct; there was no one to teach him. The little plot did not produce much: some bitter lettuce, chard, a few puny tomatoes. Most seeds he found were too old. Once, in another town, Juan had planted a huge plot of Burpee's Silver Queen corn. They had both been excited when the seedlings sprouted but then a mid-summer frost had nipped the entire crop. Juan had cried when he knew they were dying. He told her that he was giving up, that they would never grow enough to feed themselves. Still, he liked to plant a little garden wherever he lived.

Juan said that crows were bad for the garden. They sat in rocking chairs on the front porch and watched it.

"Scarecrow," said Lucy. She had been six when it happened and could remember more things. She could print capital and small letters and could read most labels. She was twenty-two now.

"Shoot it." Juan had only been three; he did not remember anything.

"No," she said. The bird, any bird, was a good sign. Lucy was a believer in signs.

When they got hungry they walked over to the grocery store. She knew that they would have to move to a new town in the fall; they had eaten all the Dinty Moore Beef Stew and the Campbell's Chunky Chicken Soup and the B&M Baked Beans. Lucy got some spaghetti and Progresso Tomato Sauce. Juan carried another case of Sterno home from the hardware store. They sometimes cooked on wood fires but Sterno gave a more even heat. She worried about Juan and wood fires. He tended to get careless, especially when it was time to move on. He had burned down most of the places they had lived.

Lucy did not want to leave the rocket on the village green. She thought it was magic. She said that was why the town around it was so untouched by what had happened. They had found a few piles of bones and rotted clothes but none of the devastation they had seen in other places. Both of them loved to sit on the porch and dream about the rocket. They had seen trains and boats and even weatherbeaten airplanes tethered on small town runways. But there was only one rocket.

Everything they needed was within walking distance of their house on the village green: the grocery, the hardware store, the drug store, the library. The library had a wonderful children's section, full of picture books about fairies and magical kingdoms. Juan liked the art books with their color plates of fat naked women and landscapes full of live trees and animals and crowded cities where nobody was ever lonely. Lucy had already set aside some books she wanted to bring with them when they moved. She knew Juan would not approve. He never brought anything along.

They had supper on the porch. The crow had not moved. When they were done Lucy had an idea. She scraped the leftovers onto a paper plate and left them by the rocket. They watched the crow flutter out of the tree and peck at the garbage.

"A pet." Lucy was delighted.

She let him touch her that night. Before, when there had been no touching, Juan used to tease her with the magazines from the drugstores. He wanted to know why she did not look like the women with big tits and tiny asses. She told him that she was alive and they were dead. Now she did not try to keep him away with angry words. She liked to feel him growing in her hand. When he felt her, the blood pounded in her head and almost made her forget how the Bad Daddy had hurt her. Almost—she still would not let Juan do the thing that the Bad Daddy had done.

The stranger came the next day. She drove a flatbed truck with some kind of digging machine on it. She was wearing bluejeans, workboots and a flannel shirt with the sleeves rolled up. Her hair was very thin and it was streaked with gray. Lucy had never seen anyone with gray hair before. Maybe that was how she knew the stranger was crazy. The stranger did not roll her eyes or twitch or talk to ghosts. She parked next to the village green and walked around the rocket three times. She stared up at the crow. Then she sat down on the weeds and began to write on yellow paper.

Juan and Lucy watched her all morning from behind the curtains of the front parlor. For years they had made believe that they were the last people in the world. They had tangled with a few other survivors—none recently. The roads were full of potholes now, the winters lasted ten months this far north.

"If she has a gun. . . ." Lucy closed her hand around the knife she had brought from the kitchen. The Bad Daddy had carried a gun and had locked them up after it had happened and had beat them when he was drunk. She pretended for Juan's sake that she was not scared.

In time the stranger got up and walked over to the grocery store.

"Let's go," said Lucy.

They crossed the green to the stranger's truck. The cab smelled of old sweat and oil. There was a cardboard box of books and a tool chest with four drawers. The steering column was rusty and the driver's side door was held shut with wire. There was no gun.

"Crazy." Lucy was no longer afraid. The stranger was old and alone. Lucy sat at the picnic table under the dead oak and waited for her to come back.

The stranger was snacking from a can of La Choy Chow Mein Noodles when she stepped onto the broken street. She did not seem surprised to see them. She walked slowly toward the picnic table.

"This your town?"

"We live here." Since she was the eldest, Lucy had always spoken for them.

"I mean you no harm. All I want is the missile."

"Why?"

She shook her head. "I know all about you, you know. Two seconds after I walked into the store. You live in the dead places and you've never made a damn thing in your lives. You drink out of ponds and squat in the woods. When you get sick you suffer until you get too sick and die. You're scavengers and you want me to explain what a rocket is for?" She laughed and offered Lucy some chow mein noodles.

Lucy thought she looked too small to drive such a big truck. Juan grabbed a handful of noodles.

"You're going up," said Lucy.

The woman laughed until she started to cough. "Up." She spat into the weeds and licked blood from her lips. "Yes."

"We'll watch," said Juan. He sat down at the table. Lucy was angry but she would not cross him in front of the stranger. She sat too.

"Not here, damn it." There was no anger in the stranger's voice; she sounded like the Bad Daddy often had when he was drunk and did not want them bothering him. The stranger showed them the sketches she had made on the yellow pad. "I'm going to load it on the truck and take it away."

The crow cawed and hopped to a higher branch. Lucy and the stranger looked up. Juan gazed at the sketches as if they were magic spells. He nodded. "We'll come."

The stranger's name was Hannah.

Her yellow backhoe awed Juan. It moved on two treads that chewed earth and stone and wood alike. With its flat blade at one end it could push down a house; with its bucket shovel at the other it could bury the remains. Hannah used it to dig a hole beside the rocket. She made a ramp leading to the hole and backed her truck down it so that the flatbed was level with the tail of the rocket. Then she ran a steel cable from the nose cone to a hook on the tractor's bucket. She hacksawed the bolts that held the rocket on its concrete base and slowly lowered it onto the truck. The job took three days. It would have taken Juan and Lucy a year, had they been able to do it at all.

The stranger's craziness made Lucy nervous. At night Hannah would bring beer from the grocery store and sit on the porch and drink. The beer made her sick. Sometimes a fit of coughing would take her and she would stagger to the edge of the porch and hang over the rail, heaving and cursing between heaves. Then she would sit and drink another beer. Lucy wondered if Hannah was cooked. The Bad Daddy had told them after it happened that everyone who was cooked would die—some sooner than others. Throwing up was one of the signs of being cooked.

Hannah talked about things that they did not understand, about nuclear winter and solid fuel rockets and why it had happened. Sometimes she did not talk. Silence worried Lucy most of all. It was when the Bad

Daddy was drunk and had stopped talking that he was most dangerous. She was not afraid that Hannah would hurt them. Lucy would kill her if she tried. But her silence made Lucy want to cry. There was a sadness to it that knifed into Lucy and would not be moved. Lucy did not want to feel sad. She was alive. She had Juan.

The backhoe's roar scared the crow and it flew around the back of the house on the village green. It found Juan's garden. She watched as it pecked the tomatoes; she made no effort to stop it. Juan would not miss them now.

When the crow had finished the garden she scattered food for it on the back porch. It liked Planter's Dry Roasted Cashews and Spam and Pringles. When it cawed, she would caw back at it. Then it would cock its head to one side and stare at her. It seemed more a person than a bird. She gazed into its tiny, black searching eyes and wondered if it was magic, like in the story books.

She had not expected it to be so friendly. It hopped right up to her once and took a cashew out of her hand. On an impulse she swiped at it and seized it by the legs. The swiftness of her attack must have taken the crow by surprise. She realized that it had never suspected that a human being could be a wild thing like itself. The crow screeched and fluttered and jabbed at her with its beak. It opened a gash on her arm before she caught it by the head with her free hand. With a quick twist she could have broken its neck.

"We're going." She smiled at the helpless bird. "You too."

Hannah lived alone at the Snowflake Lodge, near a partially burned-out ski town. Most of the ski area had escaped the fire. She drove them to a barn that looked like a giant red can sliced lengthwise. Outside were the remains of snowmakers and groomers and snowmobiles. Inside were Hannah's treasures: two jeeps, a dump truck, an oil tanker semi, a yellow pumper fire truck, dusty stacks of boxes filled with parts and a vast workshop with hundreds of tools. Out back was a gas-powered generator which had been used to run the lifts in case of power failure. Hannah turned it on when she worked in the barn or when she wanted to pump gas or diesel fuel from the underground tanks.

Juan climbed over the trucks. He took the tools down from their hooks and fiddled with them. He watched while Hannah worked over the generator. When the lights flickered on overhead he dropped to his knees and shouted. It ws a cry of wonder and joy and recognition, as if he had looked into a mirror for the first time. Hannah watched with a lopsided grin on her face. Lucy realized then that what Hannah wanted was to change their lives.

"Come here," said Hannah. "Here's the real prize." She led them to the far corner of the barn. "A space capsule. From the Gemini program of the sixties. I found it in a museum basement."

The hatch was off. Juan ducked in. Lucy hesitated.

"Does it work?"

"Lucy, I'd give two fingers and a toe to find out." Hannah shrugged. "The batteries need replacement but I can get some systems to power up. There're lots of things I haven't been able to figure out. It didn't come with an owner's manual."

Lucy thought she understood then. It was in Hannah's voice, the angle of her shoulders, the way her hands moved. She loved the space capsule—and she hated it for not loving her back. She was a foolish, lonely, cooked woman.

"Small." Juan wriggled back out. "Can it go up?"

"I was just telling Lucy, I don't know. I hope so but we won't know for a long time. It's not just the capsule; I have to find a way to boost it high enough. I'm working on a couple of angles. Then maybe we can jury-rig a coupling with the missile. And then we'll have to find some way to reset the guidance systems."

Lucy heard her say the word. *We.* But she knew that Juan had not heard. He never seemed to hear what Hannah was really saying. "When?" said Juan.

"Not soon." Hannah's face twisted. "There's lots to do."

Juan nodded. He still did not understand. Lucy wanted to take him out and shake some sense into him like she used to do when they were children. But those times were gone.

Hannah was watching her. Lucy knew they must be enemies. "Come out," she said. She had left her lucky crow in a basket in the cab of the truck. It was time to set it free.

She would not let Juan live at the lodge with Hannah. Instead they explored the ruins for a place to stay. The town was farther north than they had ever been before but Lucy did not mind. Despite the fires which had devoured its heart, the town was still alive. She spotted more different kinds of birds than she had seen since it happened. At night they could hear peepers and in the day they saw chipmunks and squirrels. The mountains around the town were covered with a thick stand of pine and hemlock.

On the far side of town a shallow river with a sandy bottom had stopped the fires. The buildings on the opposite side were scorched but intact. She picked out a blue motel called Ray's Riverside with a view across the water. A rusting bridge was a block away. It was a half hour walk to the ski area.

Hannah had an answer for her. She gave them a jeep.

"Cher . . . ok . . . ee." Lucy sounded out the name on the back. "Cherokee?"

"A kind of Indian," said Hannah.

"What's a Indian?" said Juan.

Hannah laughed. "You are."

Lucy had never seen him so happy. For a while he stopped going to

the red can barn. They spent the last days of summer racing down the old roads, exploring the abandoned towns, swimming naked in the cold mountain streams. Sometimes when she looked at Juan Lucy felt a tightness within her, as if her body was too small to contain her own unexpected joy. Then she would reach for his hand or slip her arm around him. When they touched each other at night, the past no longer seemed to matter. It was as if it had never happened, as if the Bad Daddy had never caught them. One night she helped him enter her for the first time. "It's all right," she said. She laughed and grasped his hips and knew it was the truth.

For a few weeks the world seemed newly made. Only one thing marred her contentment: she had not seen her crow since the day she had released it. Still, she believed that she remained under its lucky spell.

Slowly, though, Juan changed. It began with his fierce pride in the Cherokee. There had been other cars, years ago, but they had run out of gas or broken down. In time none of the cars would even start. But the jeep was different. It worked and it was *his*. When it stalled one day he wept and slammed his hands against the steering wheel. He shouted at it as if the machine had betrayed him. Lucy recognized Hannah's madness in his rage. They walked back to the barn. He and Hannah brought the Cherokee back on the flatbed. They opened the hood and he listened while Hannah explained how they were going to fix it.

They.

Lucy walked back alone to Ray's Riverside. Juan did not come home that night. The next day the Cherokee roared into the motel's parking lot. Juan honked the horn until Lucy came out. He slapped the passenger seat. "Get in, get in," he said. "We fixed it!" She tried to scold him but he was too happy to pay attention. He drove her straight back to the barn.

Juan still took her for rides but it was not the same. The first frosts came; summer had lasted but six weeks. Juan started to spend too much time at the barn, listening to Hannah. Soon he was taking care of the jeep by himself and boring Lucy with talk of dwell meters and compression ratios. Hannah gave him his own set of tools. He began to learn about diesel engines. He even borrowed a greasy do-it-yourself book from Hannah and would sit up at night looking at the pictures and sounding out words until she called him to bed. His studies worried her. She had never known him to pay attention to anything but her for more than a few days at a time.

She thought they did not want her at the barn so she stayed away. Instead she hiked up and down the ski trails, searching for her crow. It still had not come back. She was sorry now that she had not respected its wildness. She knew what it was like to be captured and helpless. A bird was not a toy, like a story book or a jeep. Sometimes she left piles of cashews out in the parking lot of Ray's Riverside and around the barn. She never saw what ate them. As she walked she thought it must be

watching her from some hidden perch, its tiny eyes filled with hatred and fear. This thought began to haunt her, feeding on her loneliness. The luck of the crow was turning.

She stopped by the barn to see Juan. He was sitting in the sun on the Cherokee's rear bumper, eating Starkist Tuna out of a can and drinking a Budweiser. Lucy felt the hollowness inside her filling with rage.

"Is this what she teaches you?" Lucy grabbed the bottle and shattered it on the side of the jeep. "You little shit," she said. It was what the Bad Daddy used to call them. They had never before spoken like that to each other.

"Lucy, I didn't . . ."

"Shut up, shut up!"

Hannah came running. "What's going on here?"

Lucy emptied Juan's toolbox onto the blacktop and began kicking the tools. She sent a spark plug wrench skittering toward Hannah, who charged her. She caught Lucy's arms and tried to pin her against the jeep. "Calm down for a minute, would you? What's the matter? Tell me."

Juan jerked Hannah away. "Leave her."

Lucy spun around and kicked Juan in the balls. He dropped to the pavement, writhing in pain. Hannah started toward her again. Lucy stooped and picked up a tire iron. Hannah froze. All of a sudden she looked very old. Lucy swiped at her and she fell backwards.

"No, Lucy." Juan could barely talk. "No."

They had made a pledge to each other on a dark night eleven years ago. They had dipped their hands into the Bad Daddy's blood and smeared their faces and promised that they would stay together always and protect each other from the craziness that came out of a bottle. "We don't drink beer, you old shit." She threw the iron. It gouged a hole in the blacktop two inches from Hannah's head. "We don't drink."

She and Juan argued all night. They did not know how to argue and they did it badly. She wanted them to go away. He would not leave. She blamed Hannah for the beer but Juan would not hear it. Hannah had told him there was no harm in a bottle or two. She called Hannah a liar. Juan said that there were many things he wanted to try and that he was not going to live like a child anymore.

Lucy wanted to hurt Juan then. Words were not sharp enough. She slapped him. Juan struck her with his fist and she stumbled backwards against the wall.

"Go ahead, Juan." She looked up at him and all she felt was sadness. She was losing him to a crazy woman. "You're the Bad Daddy now. Go ahead and beat me."

"Lucy." He shuddered; she could see the anger leave him. "No." She remembered the nightmares he had when he was a boy and the look on his face as the last scream died in his throat.

"Something bad is happening to us," she said.

He nodded. His eyes were bright with tears.

"What can we do?"

"Don't know."

She held out her arms to him but he did not come. She wanted to hold up a mirror so he could see Hannah's crazy sadness on his face.

"Don't know."

Lucy felt sick the next morning. At first she thought it was because of the fight. Juan went to the barn as if nothing had happened. Lucy did not ask him to stay. She knew that if he refused her she would have to leave him. She was not yet ready to make Juan choose between Hannah and her.

After he had gone she walked along the river road, kicking stones into the water. There was a chill in the morning air. The trees were splashed with color. Soon they would have to move out of Ray's Riverside to a place with heat. She felt a rush of dizziness at the thought, shivered and threw up. After she had finished she took a few steps and sat abruptly in the middle of the broken road. She had never been so sick before. She wondered if she was cooked.

Caw-caaw.

Lucy looked up and saw the crow wheeling in the sky just above her. She clapped and called out to it. "Crow, crow! Here I am." She raised her arms as if she were inviting Juan to bed. The crow swooped down and landed on the branch of a nearby tree. She did not move. The crow fluttered to a new branch. And another. Always downward. Closer. She stopped breathing. It glided to the ground about twenty feet away. It cocked its head.

"Crow." Nothing moved but her mouth. "I won't hurt you."

It hopped toward her. She thought she could make it come to her if she held out her hand but then it would expect something to eat. "I haven't got anything," she said. "I'm still glad to see you."

She heard the crunch of gravel beneath wheels, the mutter of an idling engine. The crow flapped its black wings and leapt into the air. Lucy watched as if remembering a dream. That is our way, she thought. The way of wild things. Fly away. She did not move. Fly.

A jeep swerved around the corner. Its horn honked. Hannah pulled up next to her and opened the door. Lucy could see a half-empty fifth of Jack Daniel's Tennessee Sour Mash Whiskey on the passenger seat.

"Lucy. You all right?" Hannah stood over her, swaying. Her face was slack and she reeked of alcohol. "What you doing, sitting out here like this?"

"I threw up."

"Where?"

Lucy pointed. "I think I might be cooked."

"Cooked?" Hannah bent to sniff the vomit. "Stinks. No blood in it though. What did you eat last night?"

"Didn't. I fought with Juan." She gathered herself to stand. Her bones seemed to ache. "You're drunk."

She nodded as if Lucy had said something profound. "When was your last period?"

Lucy did not understand the question. "I feel better now."

"The bleeding." Hannah grasped her arm. "Comes every month."

"You're crazy. Who keeps track of *that*?" Lucy shook free.

"Lovers do. Juan said . . ." For a moment her eyes were very bright and Lucy thought the old drunk might cry. "Been talking to Juan." Hannah steadied. "You got him pretty upset. Talking nonsense. He says you're going to make him go away. You can't do that to me, Lucy. Can't do that to yourself. Look, I want to be your friend. I just don't know what you want from me. I never intended to come between you and Juan, Lucy. Never crossed my mind. I just wanted some company. Someone to talk to. Maybe someone to believe in what I'm doing. Lucy, you listening to me?"

She smiled. She wondered what the crow would say if it could talk. Maybe it would ask for a cashew.

"You think I'm crazy. Maybe I am crazy to think that old rocket will ever boost again. But I'm not crazy to think that people can fly. That you and I . . . I'm not crazy to hope that someday someone will climb into a rocket and . . ." She sounded desperate. There was a glitter in her eye, as if the more she talked about not being crazy the crazier she became. "All I want," she said, "is a chance to convince you. One last chance. Come back to the barn with me. I'll show you something you'll never forget. Juan's waiting. Will you come?"

She saw then how fragile Hannah had become. She was like a picture of a woman in a rotting magazine. She was brown and dry and as dead as the world that had made her. Only she did not know it yet. When she did she would curl up and blow away. Lucy laughed at her. "Yes."

It was big, big enough to shake Lucy's confidence. The thing could have swallowed a house. It was red and green and had pictures of winged giants on the outside. On the ground beneath it was a large wicker basket. In the basket was Juan. He gaped up into the mouth of the balloon like a madman.

"The ski area needed summer income," said Hannah. Lucy had made her throw the bottle away. She seemed more sober now. "So they started a ballooning center. Were two in the barn when I got here but one of the bags was pretty badly torn up. Never had the patience to sew it." She parked the jeep beside the basket. Lucy looked but did not get out. Supported by pipes between the basket and the balloon, a coil of metal tubing made an angry sound. She thought of an animal's snarl, the hiss of a grease fire. The thing was hot.

"Must seem a little frightening to you," said Hannah. "But don't worry, it's safe. I've taken it up many times. Float for an hour, land in a field and walk back. Juan's not worried."

"Up, Lucy." Juan grasped the edge of the basket and shook it like he had once shaken his playpen. "Up!"

Hannah stumbled around the jeep and offered Lucy a hand to help her down. "Don't be afraid. It's just a bag filled with hot air. Hot air rises. The thing at the top of the basket is a burner. Makes a noise and shoots a flame but it can't hurt you. I just want you to see, Lucy. To understand."

Lucy pushed Hannah's hand away and climbed out herself.

"I'm going to have Juan turn the burner up now," Hannah said, "so that you can hear how it sounds."

Juan pulled a lever and a tongue of blue flame leapt out of the burner. Lucy covered her ears and turned away but she did not cry out. The basket tugged at its tether lines. Juan pushed the lever back.

"You ready, Lucy?" said Hannah.

Lucy could feel her blood pounding. The thing was so big, so loud.

"Lucy," said Juan. He laughed and waved at the sky. She could see the whites of his eyes as he looked up. Hannah was wrong. He was frightened. "We'll be like birds, Lucy. Like your crow."

Hannah swayed and grasped the edge of the basket.

Crow. Lucy steadied. The word named some part of her and in that naming tapped a wild strength that had kept her alive all these years. This balloon was part of the old craziness that was killing Hannah. Now Juan was sliding into it. Lucy knew he would go up with or without her. No matter how drunk Hannah was. The crow in her said to fly away. But she could not leave Juan. She would have to fight the craziness to keep him. One last time and she would win.

She climbed into the basket beside him. He put an arm around her and squeezed.

"Turn on the burner." Hannah cast off the last tether, dove at the basket and tumbled aboard. Juan helped her up. They sailed across the parking lot, inches above the pavement. Then the balloon climbed. Hannah turned the burner off, waited a few minutes then gave another short blast. The ground fell away. "We'll stabilize at a thousand feet. Take you higher but I have to watch out for the wind. Sometimes you catch a gust swirling around the mountain."

They cleared the treetops and drifted over the burned-out town. The balloon moved like a cloud. Lucy picked out the roof of Ray's Riverside and felt dizzy. It was not just the height. It was the way of seeing. She had climbed mountains before and looked down. But even at the top of the highest mountain she was still on the ground. In a place. Now she passed over the familiar buildings like a mind without a body. She was afraid.

Juan pointed out things that she could see for herself. His face was flushed with the heat and excitement. He chattered like a little boy who was afraid to stop talking. As they went higher and the land spread out below them he said less. The view demanded silence. The evergreen forest that rolled over the northern mountains was already filling with

snow. The hills to the south were mottled with patches of brown and scummy green.

Hannah did not waste her time looking down. She gazed up into the clear autumn sky. "I was fourteen when it happened," she said. "My parents were survivalists. They saw it coming but they didn't see it all. The germ bombs. The winter. They died in our shelter. I buried them and waited to die myself." Her laugh was short and bitter. "Still waiting. There were books. I educated myself. A lot of guns. And a radio. That's what kept me going." She pointed up at the white crescent of the moon. "You two have spent your whole lives looking at the sky and never knew. There are people up there. Our people. They live the way we used to, by the rules we believed in. Kennedy Base. Two orbiting factories. A handful of spacelabs. I used to talk to them on the radio. I begged them to come and get me. They never would, afraid of contamination. One night I got so mad I shot the radio. Just set it up on the table and emptied a few dozen rounds into it. Crying like a baby. Waste of good ammunition."

She shut off the burner. "This high enough for you?" She patted Juan on the back. "That's it, get a good look, Juan. Next time you can take her up yourself. How about you, Lucy? Not quite what you expected, eh? Still think I'm crazy?"

"You can't have Juan."

"Don't talk, Lucy." Juan glared at her. "Not now. Not up here."

Hannah slumped. "Maybe we'll start down." As she stared up at the moon Lucy could imagine a lonely girl crying. Lucy shut her eyes.

"NASA used balloons all the time in atmospheric research," said Hannah. "Not this kind; super and zero pressure gas jobs, enormous things. Some in combination with rockets went up sixty miles. Sixty miles high, that's almost halfway to low orbit. Now if we could get a hold of one of them, we'd really have something. Of course in the old days no one ever used balloons as boosters. But then the old days are gone, aren't they?"

The treetops loomed. They were coming down fast.

"What I really need is a booster rocket. A Saturn or even an old Titan. But a Titan weighs three hundred thousand pounds. I'm just one woman. I'm all alone."

Juan reached over Hannah and turned on the burner. Too late. The balloon did not immediately react. They dropped still lower and hemlock branches whipped at them. "Damn it!" Hannah's face was gray. "Hold on." They hit a trunk and the basket lurched. "Come on baby. Lift, lift!" Juan moaned and reached for Lucy's hand. They began to twist and Hannah shut the burner down to keep from scorching the cables and the skirt of the balloon. Then they came free. The basket spun back and forth.

"Sorry." Hannah's eyes were out of focus. "Too busy talking, got careless." She took a deep breath that ended in coughing. "Turn the . . . burner . . ." She covered her mouth with a handkerchief and doubled over.

Juan gave the bag a short blast. The wind was picking up. The ground rushed by beneath them. Juan and Lucy looked at each other. They shared their fear without speaking. Hannah was trying to kill herself—and them as well.

Hannah stood and grasped the edge of the basket. "We'll land. The first field." There were flecks of pink foam at the corners of her mouth. "Any open place. Watch out for old power lines."

There were no fields. They skimmed the treetops. Hannah shut her eyes for minutes at a time.

Lucy thought she heard a voice calling her. It was not a human voice. She looked back and picked out a shadow against the sky. It seemed to shimmer like a mirage. "Crow! It's me." The mirage solidified into a bird. The crow swooped down on them. Lucy waved. Her confidence returned. Lucky crow. Magic crow. It circled the balloon, its outspread wings knifing through the air. Then it flew on ahead and dropped into a hole in the forest.

"Looks like a pond." Hannah shook herself and peered at the fuel gauge on the propane tank attached to the burner. "Down to five percent. We'll have to chance a water landing. Can you swim?"

Lucy and Juan shook their heads.

"Damn." Hannah craned for a better view. "It's not very big. I'll try to drop her near shore. Even if the basket floods, the empty propane tank should keep it afloat. I'll swim to shore with a line and try to haul you in."

They swooped down into the trees. Some high branches caught at the basket. "That's okay." Hannah was talking to herself. "Moving fast but we're okay." She did not sound convinced. The basket tilted. The bag was ahead of it, dragging it through the treetops. "Hold on now." The basket tipped and then pulled free. Below them was the pond. "Here we go." Hannah tugged on the red strap which hung from the top of the bag down to the basket. A large panel of fabric at the top of the balloon pulled free. The bag shrivelled and they fell.

The force of the landing knocked them sprawling. The bag collapsed into the pond downwind, pulling the basket onto its side.

Lucy thrashed through icy water in a panic. Her hand closed around the edge of the basket. She clung there for a second, stretching for the bottom. Too deep. She climbed up the side of the basket which was still above water. Hannah straddled the burner supports and clung there with eyes closed.

"Juan!" Lucy scrambled around her bobbing perch. "Juan, where are you?" There was no sign of him in the dark pond.

Hannah shivered and opened her eyes. She stared at Lucy for a moment with that crazy glitter in her eyes. She took a deep breath and slipped into the water.

Lucy screamed.

She was answered by the crow's harsh cry. She had startled it. The bird flapped out of a pine tree and skimmed low across the pond.

"Crow, help! Crow."

The crow climbed past her, its black wings beating faster. It cleared the treetops, banked south.

"Crow!"

She watched it disappear into the blue sky. No sign, no magic: a bird. She realized that her crow and Hannah's rocket were the same kind of lies.

Hannah surfaced behind her and started coughing blood. Lucy reached out and grasped her outstretched hand. When she tried to haul Hannah to the basket Lucy nearly tumbled back into the pond. It was impossible. The old woman was not that heavy.

A pale shadow floated toward the surface of the brown water beside Hannah. Lucy lowered herself into the water, clinging with one hand to the basket. She clutched at the shadow and caught it. Juan's head broke the surface.

First she pushed Juan onto the basket, then Hannah. It tipped when she climbed up. Water lapped at their knees. Juan was not breathing.

"Mouth. Blow into. . . ." Hannah was racked by a spasm of coughing. "Make him . . . breathe."

Lucy covered Juan's mouth with hers and breathed several times. Juan did not respond. She knew he was dead. She raised her head and glared. Hannah had killed him.

"Don't stop!" Hannah's voice was a croak. "Harder . . . deep breaths." Hannah caught Lucy's shirt in her trembling hand. "Save him!"

She thought Hannah had finally gone mad. The old woman would not let go until Lucy continued. Only then did Hannah fall back onto the basket. She licked the blood from her lips and panted.

Lucy worked over Juan until she was dizzy. She did not notice the first whisper of breath in his lungs. Suddenly he was breathing on his own and she did not know what to do. She looked to Hannah. Hannah glared at the moon. She was crying.

Juan moaned and Lucy pulled back. "C-cold," he said.

"Juan! Are you all right?"

His eyelids flickered. He rolled to the edge of the basket and gagged.

"Juan." Hannah was panting like the Bad Daddy on the night Lucy killed him.

"He can't hear you." Lucy crouched over her. "I think he's all right."

"Go." Her eyes stared right through Lucy. "Burn it and go. Crazy, yes. Lucy's right. It's over. Her world now."

She took two days to die. They buried her at the top of the ski lift. They had never buried anyone before, not even the Bad Daddy. But she had made Juan promise.

When they finished they walked down the slope in silence. A light snow had begun to fall. Lucy had filled the Cherokee with gas and packed enough food for a week. It was parked in front of the rocket on the flatbed.

"She said to burn it."

Juan shook his head.

"Let's go then." Lucy jingled the keys nervously.

"You heard her. You can't go." There was a crazy glitter in Juan's eyes that chilled Lucy. "She said you're having a baby."

Lucy did not believe in babies. They were the same as the crow: lies that fools made themselves believe. The old woman had been cooked. Crazy with her pain. There were no babies anymore.

"We'll stay." He nodded at the rocket and the barn behind it. "It's ours now."

Lucy had been very tired lately. She could not find the strength to argue. In a few months Juan would realize that nothing was going to happen and then they would go. She could wait.

Juan held out his hand. She gave him the keys. ●

MARTIN GARDNER (From page 89)

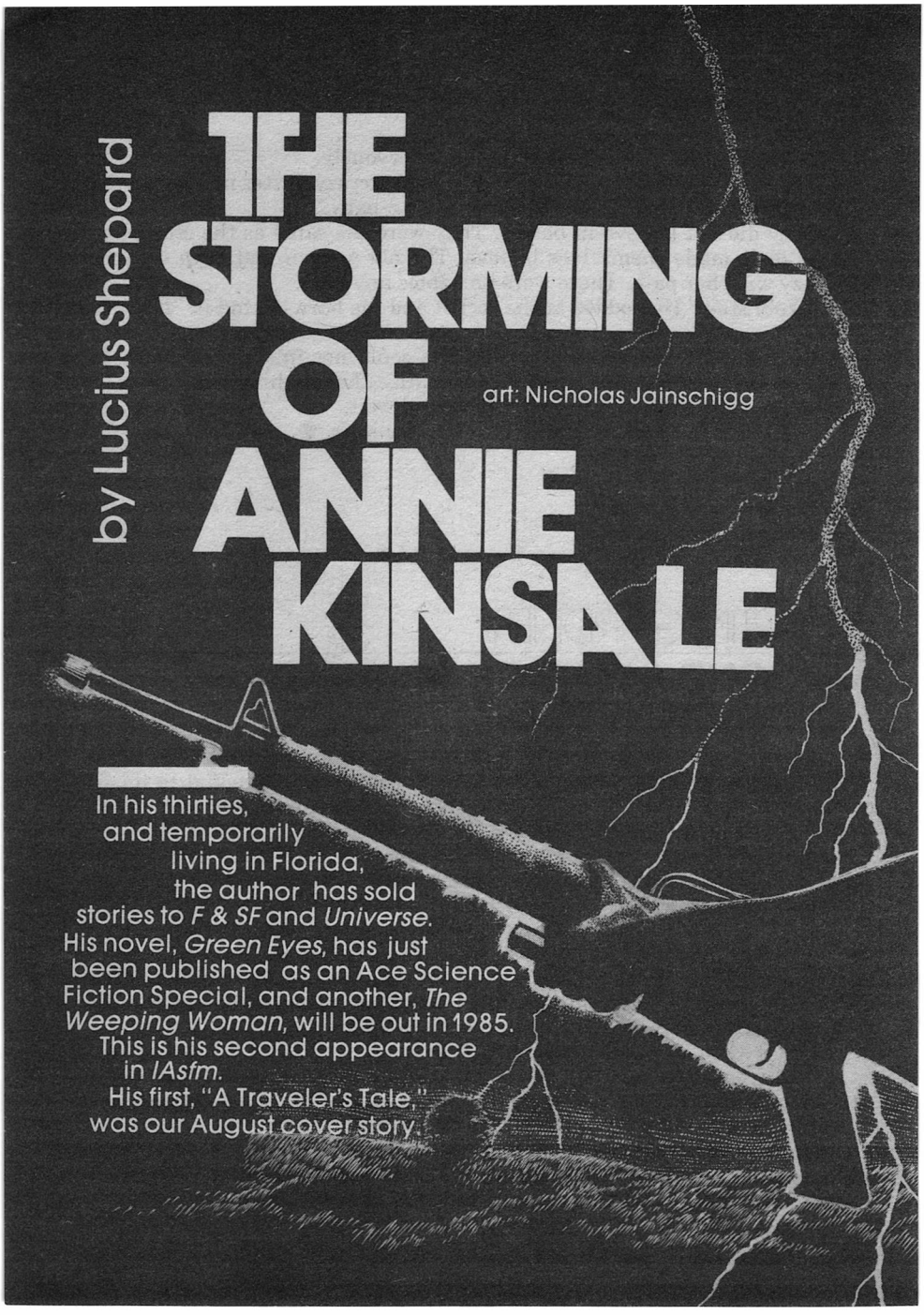
SECOND SOLUTION TO THE STRIPE ON BARBERPOLIA

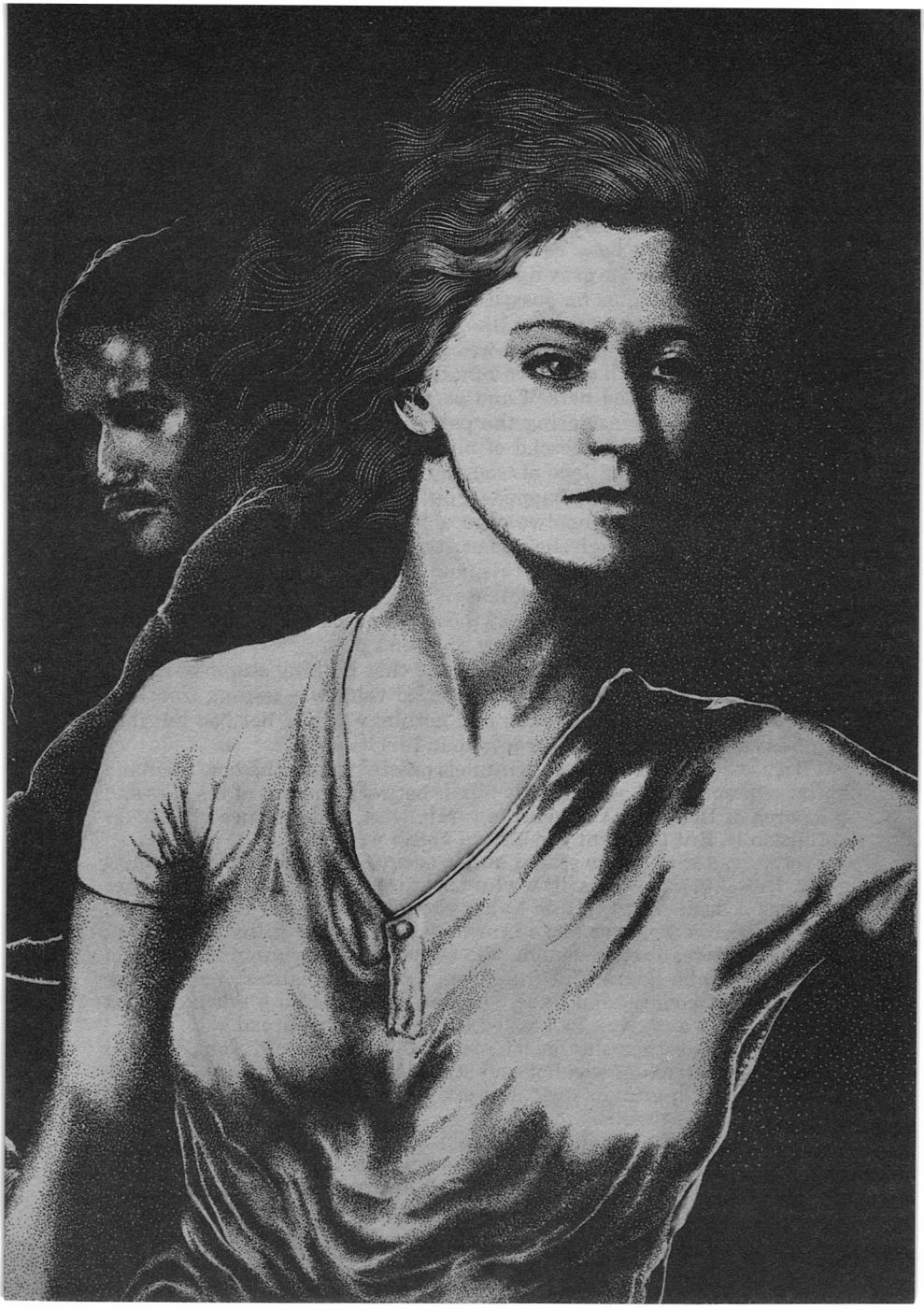
The shape of a right circular cylinder that minimizes its surface area, for a given volume, is a cylinder with a length exactly equal to its diameter. This is why so many cans, such as most cans of lubricating oil, have this shape. The reason not all cans are shaped this way is that other considerations may override the saving of material. For example: ease in packing cans in standard-size cartons, the way a can feels in the hand, and the way it looks. Taller cans tend to look like they contain more than shorter cans of equal volume.

Proving that a can with its height equal to its diameter uses less metal than any other cylindrical shape of the same volume is not easy. The formula for a right-circular cylinder's volume, given its height (h) and diameter (d), is $(\pi d^2 h)/4$. The total surface area is:

$$\frac{\pi d(2h + d)}{2}$$

If you try different values for d and h, that give the same volume, you will find that making $d = h$ produces a surface area that is always less than any other pair of choices. This can be graphed as a curve that reaches a minimum value along the coordinate axis for the cylinder's area when $h = d$. But a rigorous proof is best obtained by way of elementary calculus.


by Lucius Shepard
THE STORMING OF ANNIE KINSALE
art: Nicholas Jainschigg
In his thirties, and temporarily living in Florida, the author has sold stories to F & SF and Universe. His novel, Green Eyes, has just been published as an Ace Science Fiction Special, and another, The Weeping Woman, will be out in 1985. This is his second appearance in IAsfm. His first, "A Traveler's Tale," was our August cover story.



It was on a rainy Thursday morning, just the odd speckles of rain staining the front stoop, but the sky over Bantry Bay nearly black and promising worse to come, that Annie Kinsale caught sight of the soldier's ghost. She was standing at the kitchen window of her cottage, half-listening to the radio, idly debating whether to add cheese or butter to her shopping list—a body couldn't afford both what with prices these days—when she saw the gray figure of a man waving a rifle and running, stumbling, and then, as he passed the point where her primrose hedge met the country lane, vanishing like smoke dispersed by a puff of wind. Annie's heart went racing. There was no doubt in her mind that he had been a ghost, and she had known him for a soldier by the curious shape of his rifle. She crossed herself and peered once more out the window. Gone, he was, and considering the paleness of his substance, the poor soul had likely been at the end of his earthly term. Her first thought was to hurry into the village of Gougane Barra and tell her best friend Eleanor Downey what had happened; but on second thought she decided against it. Though Eleanor was the only person in whom Annie had confided her secret, though she was trustworthy in that regard, she would be quick to spread the word of this, and Annie's reputation for being a "quare one" would suffer an increase. Sure, and wasn't her name this moment dancing on the tongues of those red-nosed layabouts who were welcoming the morning in at Henry Shorten's pub.

". . . livin' out in the midst of nowhere," that hulking stump of a man Tom O'Corran was saying—his static-filled voice was issuing from Annie's transistor radio. "Six years, and nothin' warmin' her bed but that damned cat! It ain't natural for a woman like herself."

" 'Twas the manner of Jake Kinsale's passin' what done her," said old Matty, rheumy-eyed, with hardly a hair between the tips of his ears and the porch of Heaven. "The heart is rarely wise, and violence will never enlighten it. But I'll grant you she's a pretty woman."

Pretty, was she? Annie stared at her opaque reflection in the window glass. Her skin was that milky white that turns easily to roses, and her hair was a dark shawl falling to her shoulders, and her features —undistinguished, except for large brown eyes aswim with lights—were at least expressive. Pretty enough, she supposed, for a bump in the road such as Gougane Barra. But thirty years old, she realized, was not the first bloom of beauty, and lately she had accumulated a touch of what Eleanor—with a giggle—had called her "secretarial spread."

"I'll not argue that she hasn't reason to grieve," said Tom. "Well I know that the friction was hot and strong 'tween her and Jake, and he was a soul worth grievin' over. But six years, man! That's time enough for grief to go its rounds."

"It's not grief that's taken her," said Henry Shorten; his voice faded into rock music, then swelled as Annie adjusted the tuning dial. "She's settled into loneliness is all. Her mother and grandmother, and as I've heard, her great-grandmother before them, were women who thrived on loneliness."

"Och!" said old Matty. "I was only a scrapeen of a boy when her great-grandmother was alive, but there was a force of a woman! 'Twas said she had unearthly powers, and that the divil himself had tied a knot in her petticoats. Maybe Annie Kinsale is not so alone as you're thinkin'."

"Well," said Tom, laughing, "be it diviltry or loneliness or grief that keeps her shut away, before winter's end it'll be myself she's hearin' at her bedroom door."

Irritated, Annie switched off the radio. That blustering fool! Then she laughed. At the heart of Tom O'Corran's bluster was a great shyness, and like as not, if he ever were to reach her bedroom door—a most improbable event—she'd have to instruct him on how to insert the key.

For the remainder of the day Annie put aside all thought of ghosts and Tom O'Corran, and—also putting aside the idea of going shopping, because the storm that soon blew up from Bantry Bay was as thunderous and magical-seeming as the one that had carved the name of St. Kieran on the wall of Carrigadrohid Castle the year before—she went about cleaning the cottage. With muttered phrases and flicks of her fingers, she set the teakettle boiling and rags to polishing and the bed to making itself; and when the water had boiled, she sat herself down at the kitchen table with a steaming cup, her marmalade cat Diarmid curled beside her, and tuned in the radio to a Dublin station, hoping for some music to drown out the pelt and din of the storm. But there had been trouble in the north that day, and all she could find were reports of bombings and fires and pompous editorial expressions of concern. She switched it off. Ever since Jake had been cut down by an errant bullet on a Belfast street, she had not allowed any talk of war within the confines of her home. It was not that she was attempting to deny the existence of violence; it was only that she thought there should be one place in her life where such concerns did not enter in. The cottage, with its feather pillows and hand-me-down quilts and contented cat, was a fragment of a cozy, innocent time that had just faded around the corner of the world, and she meant to keep it so despite the ghosts of soldiers and bad news from the north.

A stroke of lightning illuminated the smears of rain on the window; beyond the glass, the lawn was momentarily drowned in yellow glare, and Annie saw a primrose torn from its stem and blown away into the night like a white coin thrown up to appease the fates. It made her shiver to think the wind could be so particular, and she switched on the radio again, tuning not to the Dublin station but to the cottage belonging to Mrs. Borlin who—foul weather or fair—told the cards of an evening for those uncertain of their paths.

". . . faith," she was saying, "and isn't it a fine life I'm seein' before you! What's your name, girl?"

"Florence."

Thunder crashed, static obliterated their voices.

"Will you listen to that!" said Mrs. Borlin. "Praise be to God, at least the hay's in. Now, Florence, there's yourself there, the queen of hearts . . ."

And Annie, comforted by this telling of a golden future, sipped her tea and absently stroked Diarmid's back.

If you haven't yet guessed how it was that Annie accomplished her housework, how she eavesdropped on her neighbors, it was, simply stated, because she was a witch. Not a flamboyant witch of the sort typified by her mother, who had once caused the waters of Gougane Lake to rise into the air and assume the form of a dragon; nor was she a vengeful sort like her grandmother, who had once transformed an English banker's eyes into nuggets of silver; and she certainly was not as renowned as her great-grandmother, about whom it was said that an eagle-shaped rock had flown up from a mountain in Kerry to announce her death in Heaven. The witch blood was strong in Annie's veins—and hot blood it was, too, for an Irish witch is a creature of potent sexuality, her body serving as the ground upon which her spells are worked; but her mother had undergone a late conversion to the Church and had preached against witchery, infusing Annie with an enfeebling dose of Christian morality, and she had never developed her powers. She was—except for a spell she'd nurtured over the years, one she might use if someone more suitable than Tom O'Corran happened along—limited to feats of domestic management and the like. She had as well the gift of seeing into people's hearts (though not into her own), and she could sometimes catch the tag-ends of people's thoughts, an ability that came in handy when dealing with Mr. Spillane the grocer, a thoroughly larcenous individual. Yet she was content with these limits; she had no need for more, and what she did have sufficed to ease her loneliness. Mrs. Borlin's readings were a special balm to her—their uniform cheerfulness reinforced the atmosphere of the cottage.

"Don't be despairin', Florence," said the old woman. "A girl like yourself will soon be marchin' at the head of a regiment of suitors. You might have 'em all if that's your wish, and . . ."

Suddenly Diarmid sprang to his feet and let out a yowl, and at almost the same moment there came a thump on the door. Then another, and another yet. Slow, measured knocks, as if the hand that sounded them belonged to an oak-limbed Druid stiff from centuries of sleep. Annie lowered the volume of the radio, crept along the darkened hall, and put her ear to the door. All she heard were branches scraping the stone wall. She peeked through the window beside the door, but whoever it was must have been sheltering under the lintel, out of sight. If it *was* anyone. Chances were it had been a bump in the night, a spirit blown by the storm from its usual haunts and flapping there a moment. To make certain, she cracked the door. An eye was staring back at her. Lightning bloomed, and she saw that the eye was set into a man's haggard, bearded face. She screamed and tried to close the door; but the man's weight was

against it, and as his eye fluttered shut, he slumped forward, forcing Annie to give ground, and pitched onto the carpet. His rifle was pinned beneath him.

Annie bolted for the kitchen and grabbed a carving knife, expecting him to follow and attack her. When he did not, she peeked out into the hall. He hadn't moved. The skeleton stock of his rifle made her wonder if he wasn't the soldier she had seen earlier—yet he was no ghost. She flicked on the lights, knelt beside him, and rolled him over. Blood came away on her fingers, and there was a mire of it soaking his right trouserleg above the knee. Without further speculation as to who he was, she dragged him into her bedroom and hoisted him onto the bed. She slit his trousers, ripped them up the seam, and Whssht! the sight of a livid scar running the length of his calf stopped her breath a moment. The new wound was drilled straight through the flesh, with—thank God—no bones or arteries involved; after cleaning and dressing it, she took his rifle and hid it under some logs in the woodshed. Then she came back and sat in a chair by the bed and applied cold compresses to his brow until his tossing and turning had abated.

Annie kept watch over him late into the night, easing him when he cried out, rearranging the blankets when he tossed them off, and while he slept she studied the puzzle he was. He was in his thirties, olive-skinned, with black hair, heavy-lidded eyes, a cruel mouth, and a blade of a nose. Written everywhere on his features were the signs of great good humor and equally great sadness. A face like that, she thought, was as uncommon around these parts as a rose in winter. He might be an immigrant, but that didn't wash—something about him failed to blend with the notion of dark northern winters and bitter springs. She tucked a blanket around her legs, preparing to sleep. The puzzle would be solved come morning, and if he was legal, she'd have him off to the county hospital. If not . . . well, she'd deal with that as events dictated. The last thing that crossed her mind before she slept was an odd feeling of satisfaction, of pleasure, in knowing that the morning would provide a chore more fulfilling than the composition of a shopping list.

Be they strangers or lovers, there's an artful process that goes on between two bodies sleeping in the same room, a subtle transfer of energies, and who's to say how much effect this process had upon Annie and the soldier. One thing certain, though—Annie had not slept so soundly in years, and on waking, stretching out her arms to welcome the day, she felt her animal self uncoiling as it had long ago on waking after a night of love. The rain had diminished to a dripping from the eaves, dawn hung gray in the folds of the curtains. It was to be a clear day. She pushed off her blanket, and as she stretched again, she saw that the soldier was watching her. His eyes looked all black in the half-light.

"Quien eres?" he said. *"Donde estoy?"*

Annie had a queer, chill feeling in her chest. "Don't you speak English?" she asked, laying her hand on his brow, which was cool.

He stared at her, bewildered, as if he had not understood. But after a second, he said, "Where are the others? Where is this place?"

"There weren't any others," said Annie. "And you're in Gougane Barra, County Cork." Then, the chill feeling intensifying, she added, "Ireland."

"Ireland?" He said it "Ay-er-lan," repeating it—the way you'd try out a new word, mulling over its peculiar sound. "That can't be true." Suspicion hardened his features. "Who are you?"

"I'm Annie Kinsale." She went to the window and pulled back the curtains and pointed out to the green hills rising into a silver haze. "And that's Ireland. Where did you think you were?"

He couldn't take his eyes off the window. "I was in the mountains above the village of Todos Santos." He shook his head, as if to clear it of a fog. "There was a storm. The fighting was very bad, and the government troops were all around us. I was running, and it seemed I was running just ahead of the lightning bursts, that they were striking at my heels. Then I was running in a place without light, without sound . . . not running, exactly. My legs were moving, and yet I felt as if I were falling, whirling. I thought I'd been hit again. . . ."

He had started to tremble. Annie sat beside him and tried to steady him with a consoling touch. "My grandmother used to tell us that storms and wars were sister and brother," she said. "Children of the same chaos. She said they had a way of interactin', creatin' a magical moment between them in which things could pass from place to place in the wink of an eye. I'll wager that's what happened to you." He wasn't listening, his trembling had increased. "What country are you from?" she asked.

"Chile." The answer seemed to give him strength—he cleared his throat and squared his shoulders, ordering himself.

"Chile, is it?" she said, affecting sunniness. "Well, now! That explains it further. Wasn't it an Irishman who freed your country from the Spanish? Bernardo O'Higgins. And wasn't it Chile that sent the first fuschias to Ireland? There's many a connection between the two lands, both physical and spiritual, and maybe the storm was part of that."

"What year is it?" he said wildly, lunging up, then wincing in pain and falling back.

"1984," said Annie.

He looked relieved. "I thought that might have changed as well." He inched up on the pillows. "Is there a newspaper, a radio? I must learn what has happened."

"The local paper's more likely to have news of Cam Malloy's prize sow than of rebellion in Chile," said Annie. "And besides, though I'm glad to be of help to you, as long as you're here there's to be no talk of war in this house. I won't stand for it."

A flush of anger suffused his face. "Is it that you find the idea of war repulsive, or is it just that you're hiding from the realities of the world behind your riches?"

"Riches! You call this shoebox of a cottage riches?"

"You have warmth, food, health. In Chile these are riches."

"Well, here they're not, and I'm hidin' from nothin'! I've had a sufficiency of war in my life, and I'll not be takin' it into my bed!" She blushed, realizing what she had intimated, and, angry at herself, she lashed out. "If you won't obey that simple rule, then get the hell out of my house!"

"Very well," he said stonily. "In any case, I must get back to my men."

"Oh?" said Annie. "And I suppose you'll be catchin' the next bus for guerrilla headquarters?"

He stared at her a moment, dumbfounded, and then he burst into laughter. And Annie—never one to hold a grudge—joined in.

His name was Hugo Baltazar, and before becoming a soldier he had been a professor of comparative literature at the university in Santiago—thus his knowledge of English. Over the next two weeks as his wound mended, stormy, rainy weeks, he told Annie about his country; and she added each new detail to a picture she'd begun painting in her head. It was like one of those tourist maps with illustrations of parrots and golden beaches and cathedrals rearing up and dwarfing the little towns whose attractions they were—her version of Chile had so many attractions that it was less a map than a collage of brilliant colors. Of course she knew it was incomplete, that Chile was suffering a war the same as Ireland, probably a worse war, and that those terrible images might dwarf the ones she had pictured. But she liked thinking of Hugo as hailing from a land full of fiestas and shade trees, where an engraved and beaming sun rose out of a map-colored sea, and the four winds had smiling faces. War did not suit him. Not a man who carved flutes from twigs and sang and told stories about Indian ghosts and mysterious rites on Easter Island. He was, she thought, a born Irishman. Perhaps there had been some truth to that sauce she'd ladled about Ireland and Chile having a spiritual connection.

Be that as it may, shaved and washed and dressed in Jake's old clothes, he cut a fine figure. Now and again she would catch herself looking at him, watching, say, the muscles bunching in his jaw or his hair ruffling in the breeze; occasionally she would find him looking back at her, and then she would blush and duck her head and start peeling spuds or chopping lettuce or whatever chore was at hand. She knew very well what was happening, and even if she hadn't had the gift of seeing clear, she would have known by a dozen different signs—the way they passed each other in the hall, as stealthy as two cats on the prowl, being careful not to entangle their tails; the way he jerked back his hand after accidentally touching her, as if the prospect of touching her had been foremost on his mind; the way he tensed when she reached in front of him to set down his dinner plate. Yet she also knew that he was troubled by all he'd left behind, and one evening, while she was still trying to figure out how she could ease his mind, he brought up the subject on his own.

"Annie," he said, "I want to talk to you about . . . about the disturbance in my country."

They were standing at the kitchen sink, her washing, him drying, and Annie set down a plate so hard upon the counter that it split in two. "No!" she said. "I told you I won't have it!"

He balled up his towel and dropped it onto the broken plate. "If we can't talk here," he said, "then we'll go outside." He seized her by the arm, and, limping, fighting off her slaps, he dragged her into the garden behind the cottage. There he let loose of her arm, and she started to flounce back inside; but before she had taken three steps, he said, "I love you, Annie."

She stopped dead in her tracks but did not turn to face him; she could tell what was coming—it was spelled out in the drooping stalks of the primroses, in the angles of a broken ivy trellis, and in the stars that ignited cold and white like crystallized points of pure pain. "Do you?" she said. His hands fell on her hips, and they felt so heavy, they seemed to make her light, to drain away her strength. If he moved them, she would shatter.

"Yes," he said, "and I want to stay with you. But I can't. I have responsibilities I can't avoid. Friends who are suffering."

"Is it addicted you are to sufferin'?" Her anger became brighter and hotter with every word. "Is peace too stodgy a situation for your warlike soul?"

He tried to turn her, but she refused to budge. "I know you don't understand this kind of commitment," he said. "You haven't seen . . ."

"I've seen plenty, thank you very much! And one thing I've seen is that war changes nothin'. One dictator falls, and another pops right up."

"You can't stop trying," he said. "If you do, you risk losing your humanity."

She twisted free of his grasp and walked a few paces away. "How will you go?" she asked, her voice small and tight. "You've no money, and God knows I can't help. I'm barely scrapin' by."

He was silent a moment. "The other night during the squall, I had a feeling, a very strong feeling, that if the winds were blowing harder, if the lightning was striking down, I'd be able to walk out into it and find my way home. It sounds unreasonable, but it's as reasonable as my coming here." He moved up behind her and again put his hands on her hips. "You seem to have an understanding of these sorts of things. Do you think . . ."

"Yes, damn you!" She whirled around and pushed him away. "Go, if that's all you want of the world! Go, and good riddance to you!"

"Annie . . ."

"Leave me alone!"

"Please, Annie. I just want . . ."

"Will you for Jesus' sake quit tormentin' me!" Out of the corner of her eye, she watched him limp toward the door. She had an urge to call him back, but her temper got the best of her and she shouted at him instead. "All this time I thought I was givin' shelter to a man, and in truth I was just harborin' a Communist!"

"I should have known," he said angrily, pausing on the stoop. "I should have known you were the type to rationalize injustice, to cure a disease by sticking labels over the sores." He stepped inside and slammed the door.

Annie stood in the garden until the light in the guest room had been switched off and the moon—almost full—had risen over the roof of the cottage. She shivered a little with the night chill. She tried to hold everything inside her, to harden it into bitterness, but the bitterness caved in and she cried. The tears left cold, snaky tracks down her cheeks and blurred the sharp image of the moon—it seemed a weepy arch of moons was connecting her eyes and a distant point in the darkness beyond Bantry Bay. Finally she blew her nose and wiped her cheeks. There was no use in moping. Things were as they were, and the question was what to do about them. What, indeed?

She went into the cottage and leaned against the wall beside the door of the guest room; her fingers strayed to the top button of her blouse. "Why not?" she said to the empty hall. "Better to know exactly what you're losin', if you're to lose it a'tall." In a matter of seconds her clothes were heaped on the carpet, and she was slipping through the door.

The room was ablaze with moonlight, so bright that she thought the arch of moons she'd seen must have been real, that they were beaming in from every angle. Hugo's head was a shadow on the pillow. He propped himself on an elbow, his breath sighing out. Annie came a step closer. She could feel the moonlight shining up her skin, and could see the shine of her skin reflected in his eyes, in all the stunned and stricken way he was staring at her; and she remembered a night twelve years before, how she'd stripped off her dress and gone dancing along the crest of a hill—a wild, slim girl taunting her first lover, Jake; and he'd stumbled after her, tripping over stones, afflicted with that same bedizened look. She could almost believe she was that same girl, the years peeled away by grace of the moonlight. She knelt upon the edge of the bed and stretched out her hand to him.

"If you're really leavin' on the storm," she said, "we mustn't waste the calm weather."

Magic—at least the contemporary Irish brand—does not consist of a pair of golden thimbles or a book of spells or secret brews or of anything so rigid and bound to a single set of principles. Mainly it consists of having an eye for the materials appropriate to the moment, having the talent to weave them together, and having the power to spark them, to channel their own natural powers into a symmetry that fuses opportunity and intent. Annie had all these qualities, and by five o'clock the next morning, she had all the materials as well—hair, a silver thread, a ruby pinprick of her blood, and various other substances (which, for various reasons, are best left unmentioned). What she lacked, however, was the conviction that this was the proper course of action. Oh, she wanted Hugo

right enough! Her senses were still stinging with him, and his smell was heavy on her skin. But her Christian upbringing was getting in the way. She wished now that her mother had let her develop her powers, that she had acquired a strong and helpful familiar rather than Diarmid—a fat old mouser with bad breath, a taste for porridge, and scarcely a flicker of animal cunning. She picked him up from the floor and gazed into his slitted yellow eyes. "What do you think, cat?" she said. "Will we have him, or should we let him fly?" Diarmid twisted his head to the side, trying to sniff the saucer that held the materials; he nudged it with his cheek, and the drop of blood slid down along the silver thread.

"Well," said Annie, deciding. "I imagine that's all the omen I'm likely to get."

She took the saucer and a lit candle and stole back into the guest room. Hugo was asleep, his breathing deep and regular. She knelt upon the floor, held the candle above the saucer, and searched her mind for words that—though they didn't have to be particularly meaningful—would give the spell sonority. She sang them softly, each phrase stirring the candleflame.

"May all white birds and unicorns
Here find shelter from the storm,
May man's light strand and woman's dark
Knit together in a spark,
Singe their spirits, steam the flood,
And bind this moment in our blood."

She touched the flame to the materials. They burned separately at first—the hair crisping, the thread shriveling, the rest sizzling and smoking—and then a web of cold white light united them, flared briefly, and was sucked into the ashes. Annie smeared the ashes on her lips, rubbing them in until her mouth began to tingle. Hurriedly, before the tingle could subside, she slipped into the bed. Hugo was lying on his side, facing her, and she pressed herself against him; she rested her knee on his hip, reached down and guided him between her legs, fitting him to her. He mumbled, waking to the touch. She kissed him, mixing the tingling ashes with their saliva. And as his hands gripped her hard and he eased inside, their mouths still clamped together, she felt the charge go out of her.

In the morning Hugo told her he would stay. He seemed happy, yet at the same time confused and a bit depressed. To take his mind off the confusion, Annie suggested they go on a trip, a honeymoon of sorts. She'd borrow Eleanor Downey's car and they'd drive out into the country. She'd show him Cork. Still confused, he agreed.

For the first four days it was as if the Emerald Isle were intent on proving the accuracy of its nickname, flashing a different facet of its beauty around every bend in the road. Near Glengariff they saw what appeared at a distance to be a river of milk flowing down a dark green hill; and as they drew near, it turned into a scene equally as magical—a

herd of sheep streaming over the hillside, with golden dogs barking, leaping, and men in bright sweaters shouting and running after. They picnicked in the Pass of Kimaneigh beneath steep, ivy-matted cliffs, the slopes thick with ferns and foxgloves and honeysuckle, and they listened to an old man tell a story about a skeleton that ran nightly through the pass, carrying a ball of yellow flame in its hand. They walked along mossy bridges and tossed pennies into the still rivers for luck; they bought an armload of crimson fuchsias and decorated the car with them to symbolize the union of their souls and blood; they made love all night in a country inn as quaint as a picture on a teacup, and in the morning they watched the sunrise stripe a nearby lake with heliotrope, rose, and silver—like the markings of an enormous tropical fish. But by the end of the fifth day, despite the beauty of Cork, despite their own beauty, Annie realized that she had been wrong to work the spell. No amount of sightseeing and lovemaking could diminish Hugo's confusion. That night, lying awake beside him, she listened to the fringe of his thoughts—there were screams in Spanish, anguished faces, bursts of gunfire, gouts of flame rising from the midst of jungles. Those thoughts were part of him, permanent, untouchable by magic. She understood that sooner or later, bound together in this way, all their brightness would fade, and she determined to break the spell. It would be better to lose love quickly, she thought, than to watch it linger and die.

Now the breaking of a spell is the sole constant of Irish magic. Every spell worked successfully—it's said—causes pain to the Devil (not the Christian Devil, but the old Celtic demon whose back was broken by Cuchulain, whose splintered backbone props up the Irish hills), and the only way to reverse the process is to take back the Devil's pain. All this requires is the will and the strength to bear it, and a knowledge of those places where His bones lie close to the skin of the earth. Annie was not afraid of pain. She'd borne Jake's death, and nothing could hurt her worse. And so, that same night, she left Hugo asleep in their hotel outside the town of Schuul, and climbed to the top of a hill overlooking Bantry Bay, a spot dominated by a standing stone—a head-high cylinder of moss-stained granite, tufted around by weeds and carved deep with both pagan signs and crosses.

The moon was just past full, wisped by clouds; its light made the grass underfoot and the surrounding hills look dead and gray. The sea was the color of old iron, and the wind and wave-sound combined in a single mournful rush. Nothing seemed alive. Even the distant lights of Schuul might have only been flecks of moonstruck mica on a rock face. Annie shed her clothing, her skin pebbled by the chill, and embraced the standing stone, crushing her breasts against the largest cross, pressing her hips to one of the pagan signs. The stone's coldness pervaded her, but nothing happened. After a while, she realized that she did not want anything to happen, that she lacked the will. Determined, she began to talk sweetly to the stone, teasing and charming it, building up inside

her the weight of self-loathing and perversity that was needed in order to contact the Devil. She crawled over the stone, grinding her hips into it, licking it, tracing the deep seams of its carvings with her fingers as if it were a live thing and she was giving it pleasure. Then she felt a trembling in the earth, felt also an eerie lustful joy that was both hers and another's, and heard a keening note within her skull. It seemed that the pain and her scream were one substance, a white cry issuing from the rock below, a column of pale fire pouring through her, reducing her to a white frequency that shrilled along the crisped pathways of her nerves. She fell back onto the tussocky ground. Her limbs were quaking, and the muscles of her abdomen were writhing like serpents beneath the milky skin. She tasted blood in her mouth.

She lay there for a long time, debased, ashamed, foul with the act. Dawn paled the sea with a dingy yellow light. At last she put on her dress and went back into Schuul. She brought Hugo coffee and cakes, kissed him as if nothing were out of the ordinary, and told him that she wasn't feeling well, that maybe after breakfast they had better get along home.

It went unspoken between them that he was leaving. He knew she knew and vice-versa, so what was the point in talking? They made love sadly and spoke rarely and spent long hours staring at one object or another that they weren't really seeing at all. On the fourth night after their return, a mad black grandfather of a storm blew up off Bantry Bay, and Annie took shelter in her bedroom, lying on her back and gazing into nowhere. Every few seconds the walls were webbed with lightning flash and shadow; the porcelain vase on the bureau leaped forward from the dark like a plump little god garlanded with flowers, and evil energies winked in the facets of the crystal doorknob. Annie closed her eyes against the sight, against seeing in general. It wasn't long, though, before she heard Hugo enter. He stood in the door, holding his rifle.

"I'm leaving," he said.

"Leave, then." She turned away from him, wishing she was stone and trying to be so. "Mind you don't let out the cat."

"I can't part from you this way, Annie."

"Does that mean you'll stay if I keep up my sulkin'?"

"You know I can't." His footsteps came near. "For God's sake, Annie . . ."

"Is it for His sake you're leavin'? I thought it was to right the wrongs of the world that you were givin' me up." She sat up, tossing the hair from her eyes. "Don't expect me to be noble, to see you off down the garden path with a wave and a gentle tear. That's not the way I'm feelin'." She flung herself face down. "You'll be needin' all your concentration for the killin', so you'd do well to forget me. I'm startin' to forget you this very moment."

After a second, the door clicked—a vital, severing sound. She squeezed

a handful of quilt hard as if she could make it cry out and lay motionless, heavy, full of dark thoughts. So this was to be her lot, was it? Growing old ungracefully in Gougane Barra, and, now that she'd wasted her one potent spell, settling for Tom O'Corran or some unsightly replica thereof, each night having the grand pleasure of watching his chin sink to meet his chest after a half dozen pints at Shorten's, and once a year—unless the weight of children was upon them—having a wild fling at the livestock fair in Killorglin. The storm lashed at the windows, raging, smearing the peaceful planes of her life with roaring light. God, what a fool she'd been to think she could shelter from it! It swept over the entire world, and whether by magic or bullet, it found you out and sucked you into its maw. There was no shelter from it, not in fortresses or mine shafts and least of all in a rosebud cottage on a country lane. . . . Then the real meaning of that thought penetrated her, startling her so that she jumped up from the bed and went into the hall without—at first—having any idea where she was going. There was no shelter, no hiding. But there was a more profound kind of shelter in doing and sharing. It shamed her to be learning it at such a late date. She took a step toward the door and felt a surge of insecurity; but the bonds tying her to Gougane Barra had suddenly grown frail—they were ancient Irish bonds of habit and hopelessness, and she threw them off. She tore open the door and ran into the storm, with Diarmid streaking ahead of her.

Lightning was printing the world in negative, casting images of white electrified trees and palsied shrubs. Rain blinded her, thunder set her heart pounding. Where could he have gone? She spun in all directions, dizzy with the tumult. Then she spotted Diarmid prancing down the lane, his tail waving, as if the storm didn't exist in his universe. Shielding her eyes, she followed him. He turned off through a thicket, and Annie had to run to keep pace. Branches whipped her arms, eel-like strands of wet hair plastered to her cheeks, and she began to doubt Diarmid's instincts; but a few yards farther along she caught sight of Hugo standing on the slope of a hill, looking lost. A lightning flash showed his shocked face as she came stumbling up.

"What are you doing?" He grabbed her by the shoulders.

"I'm comin' with you!"

He shook his head and said something, but the words were drowned out by the thunder.

"What?"

"You don't know what it's like!" he yelled. "What'll you do there?"

"What am I doin' here? Nothin'!" She took his hand. "Come on!"

He pried her hand loose. "No!"

"All right! Be off with you! Or don't you know where to go?"

He didn't answer.

Another lightning burst lit the hillside, and Annie saw Diarmid perched on a stone farther up the slope. His tail was curled around his haunches, and he was licking a paw.

"This way!" she shouted, taking Hugo's hand and dragging him along.

Diarmid scampered off uphill. Beyond him, above the crest of the hill, the darkness was arched over by great forks of lightning that receded into the distance like the supports of an immense hallway. Shadows whirled through the air, briefly silhouetted by the flickering arches, and Annie saw that they were all bearing arms—rifles, pistols, knives. As she and Hugo drew near the crest, she felt the presence of these phantoms, the chill touch of their unreality, and it frightened her to think that she would become as insubstantial as they. But she kept walking. Ozone stung her nostrils, and the wind drove needles of rain into her cheeks. The darkness atop the hill now seemed to be flowing toward them, and though they were making a steady pace, they seemed to be moving faster, the toiling shapes of the bushes rushing past. She glanced at Hugo. His face was dissolving in a black medium; there were absences in his flesh—beneath his eyes, above his lip, in all the places where shadows might accumulate. And yet his hand was solid enough. He tightened his grip and pulled her around to face him.

"Are you sure?" he shouted. "Is this the right way?"

He didn't appear to notice anything out of the ordinary, and his dependence on her gave Annie confidence. She smiled and nodded. All the noise of the wind and rain and thunder were merging, resolving into a keening note that she heard inside her skull. The Devil's music. She wasn't surprised to learn that He was involved. She felt herself going dark, pressed thin and whirling by the union of two darknesses. Hugo took a step back, his face anxious.

"It's all right," she said, putting her lips close to his ear. "Like you told me—I've an understandin' for this sort of thing."

It was more than a year later in the dead of winter, a few weeks after the fall of the dictatorship in Chile—an event that had stirred barely a ripple on the still pond of Gougane Barra—when Eleanor Downey received a package from Annie Kinsale. There were exotic birds and Indian faces on the postage stamps, and inside was a letter, a newspaper clipping, and a vial of pinkish white powder. Eleanor read the clipping first. It was a sidebar to an article about the Chilean revolution, detailing the rash of minor upheavals that had afflicted the government and the military during the latter stages of the war—swindles disclosed, plots unmasked, infidelities revealed; two generals had been shot by their wives, and one of the wives—judged insane by the press—claimed to have been listening to a program of classical music on her radio, when suddenly she had heard instead her husband in intimate communion with his mistress. There were rumors of similar phenomena, all unsubstantiated. Eleanor laughed so hard that tears sprang to her eyes.

In the letter Annie said she was sorry to have run off without a word, but that she was happy with her marriage and work. Especially with her work—it was a joy to have a meaningful occupation. Things had

improved immensely for her since leaving; even her powers were on the increase, what with the turmoil of war to stimulate them. And speaking of that, the one sight she wanted to see in Gougane Barra—aside from Eleanor, of course—was the expression on Tom O'Corran's face when he heard the news. If Eleanor would rub the powder on her eyelids and ears, and would read the pertinent parts of the letter to the boys at Shorten's, Annie would be able to see and hear all that transpired. Eleanor didn't waste a moment. She applied the powder and hurried through the snow to the pub, where she found Tom O'Corran, Henry Shorten, and old Matty gathered around a roaring fire and just lifting their first pints of the day.

"I thought she was dead," said Tom O'Corran after Eleanor had finished reading. His expression was that of a man who's swallowed something that didn't taste quite right.

"Chile!" said Henry Shorten. "She must have lost her wits to be runnin' off to a godforsaken place like that."

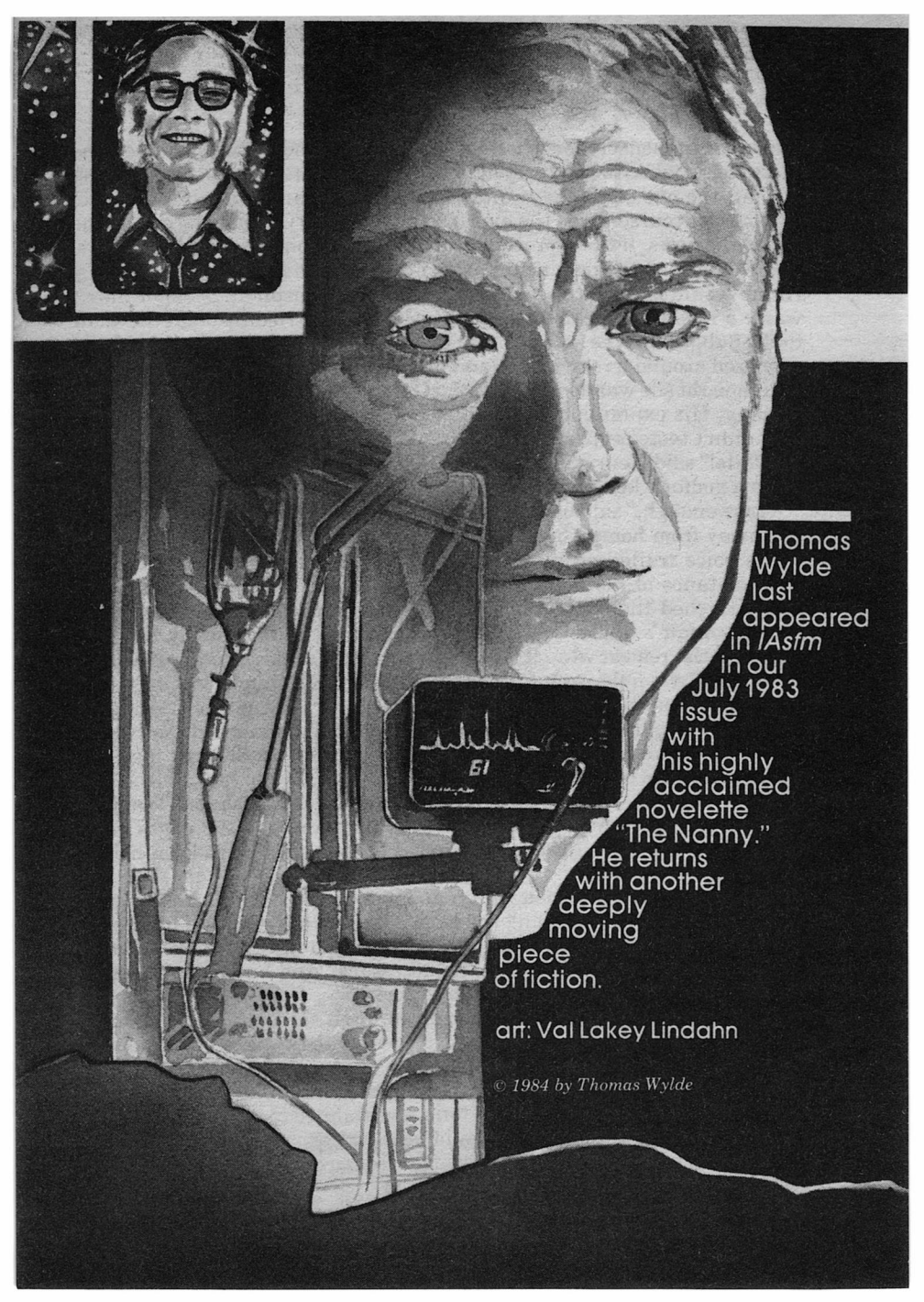
"True enough," said old Matty. "It's never the path of reason that leads you away from home, though . . ."

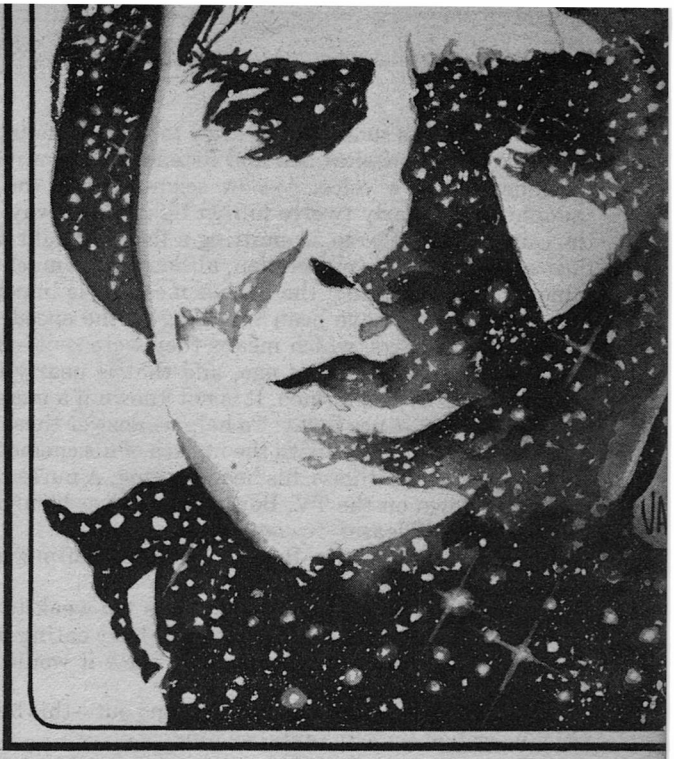
His voice trailed away to a mutter, and he stared off into the malt-dark distance of his mug; Tom O'Corran sighed and lowered his head and scratched the back of his neck; Henry Shorten's eyes were misted and his Adam's apple worked; even Eleanor felt a bit gloomy, without knowing the reason why. It was a moment that comes often to Irishmen these days, when their souls understand what their minds will not—that Ireland is a poor, sad speck of greenery, pretty enough but losing its magic at a rapid rate, becoming a tourist map of unhaunted castles and mute stones and unhallowed darkness, lit only by the shining myths of its liars and the drunken glow of its poets.

"Well, she may be a fool, but still and all she's an Irish fool," said old Matty, recovering his spirits. He raised his glass, and the edges of his ears were made translucent and as red as fuchsias by the firelight behind them. "So here's to her!"

They all toasted her then, again and again, and before long the reminiscence was flowing. Hadn't she been a fine seamstress, and hadn't she had a grand touch with a tune, and couldn't you always count on her if you were a few pennies short of the necessary? And hadn't she been the prettiest flip of a girl in all of County Cork?

Halfway around the world, peering through the distanceless pour of the magical moment, Annie laughed at the way they talked about her—as if she were casketed, covered up, and on the verge of being canonized. As if they never expected to see her again. But Annie expected otherwise. Once things were more stable in Chile, she planned to go storming again, this time to Belfast where she would take up her new vocation. She had a score to settle there. Her story was far from over, and the radios of the world had just begun to tell their tales. ●


Thomas Wylde last appeared in *IAsfm* in our July 1983 issue with his highly acclaimed novelette "The Nanny." He returns with another deeply moving piece of fiction.
art: Val Lakey Lindahn
© 1984 by Thomas Wylde



THE ONCOLOGY OF HOPE

by Thomas Wylde

Carl Boyce was suddenly too dizzy to look at the television screen. He lay back in the hospital bed and listened to the wavering sound of the noon newscaster's voice: "—now scientists say the quasar, which is thought to be nearly twelve billion lightyears away in the direction of the constellation Pisces, is emitting a flashing light. It is thought these flashes may contain information, although it is much too early to determine what, if anything, the flashes mean. It is important to remember that these pulses have been traveling at the speed of light for nearly twelve billion years, which means they were sent—if 'sent' is the right word—twelve billion years ago, and that is nearly eight billion years before the Earth was formed. It is not known if a message that old could be of any consequence today. To help us answer these questions . . . "

A wave of pain mixed with the nausea of his chemotherapy, and Boyce lay tensed and breathless, his head buzzing. A nurse came in and turned the sound down on the TV. Boyce looked over blearily. "Turn that up," he whispered. "Please?"

"It's just the news, Mr. Boyce," she said, smiling, and pushed a thermometer into his mouth.

He pleaded with his eyes, but he was too weak to insist. The cancer that gnawed his bones and his guts was busy eating itself out of a home. They wouldn't tell him when, but he knew it would be soon. Days. Or hours.

And now—just as his time was running out—this business of the flashing quasar had come to tantalize him.

He'd spent most of his life hanging around antenna control rooms, waiting for the messages to come in. Just six months ago, before his collapse in the parking lot—which brought the tests and the hopeless tour of clinics and hospitals—he'd been working as an electronics tech at the Very Large Array radio telescope in New Mexico. The guy on TV had said the pulses had been coming in for months. That meant whatever happened must have started just a few weeks after he'd left. Unless . . . unless they'd deliberately kept him in the dark.

My God—was that possible?

Didn't they know how much it meant to him?

He groped for the TV's remote control. The nurse patted his hand. "In a minute, dear. The TV's not going anywhere." She pulled the thermometer and glanced at it.

The nurse gave him a shot of Demerol, for which he was grateful. "You're scheduled for radiation in one hour. Do you want the pan? No?" She held up the urine jug. "How about . . . ?" He shook his head slowly, looking past her toward the television mounted on the wall. The newscaster was interviewing a guest via satellite, a man with glasses and white muttonchops.

He looks familiar, thought Boyce.

As she left, the nurse nudged the sound up, but he had to strain to hear.

The man with the muttonchops was talking: "—important thing is that *some* message is being broadcast—if it is a message. It doesn't matter so much if we ever decode it. The *fact* of it tells us a great deal about the universe."

"What does it tell us?" asked the newscaster, peering into his monitor.

"Simply that there is somebody out there—or that there *was* somebody out there twelve billion years ago." The man's name was flashed beneath his face, as a reminder.

Dr. Isaac Asimov.

Boyce thought: oh, yeah—I've read his stuff.

"This particular quasar," said Asimov, "is moving away from us at six-tenths of the speed of light, according to its red shift. Which is not in itself unusual; there are many others traveling faster."

"Hundreds," said Boyce.

"But this is the only one that flashes, right?"

"Well, no. Many quasars habitually change in intensity, some of them quite violently. But this quasar is the only one changing this fast—or this much. Remember it's already putting out the energy of one hundred galaxies. But when it flashes—it gets fifty thousand times brighter in about a second."

"Jesus," said Boyce, his eyes flicking toward the bright window. "It might even be visible to the naked eye."

"We have some tape of that," said the reporter.

The screen became gray, white dots scattered randomly. A circle was superimposed over a faint speck in the center.

Asimov said, "That's video from an image intensifier. The telescope is in Earth orbit."

Suddenly the dot in the circle flared, blackening the rest of the screen.

The studio cut back to the newscaster, with Asimov on the monitor.

"How could they make it flash like that?"

"I could answer that," said Boyce. "Believe it or not."

At work nobody had ever asked him anything. He was just another tech.

Asimov smiled. "That depends a great deal on what exactly a quasar is. There are lots of theories—super-sized stars, swarms of massive pulsars, clumps of antimatter—but the one that's gained the widest following is the black hole theory.

In this case, the quasar would get its power by annihilating matter as it fell inside a spinning black hole. It would take only a cloud of gas the mass of the sun to keep it going all year—if you fed it in just right. But to make it flash the way this one does, the black hole would have to gobble up the mass of Saturn—in one bite."

"How big would that black hole be?"

"I suppose you mean: 'what is the radius of the event horizon?' "

"Do I?"

"Idiot," said Boyce.

"The event horizon is the closest you can get to a black hole without getting sucked in. That's the point at which the escape velocity is equal to the speed of light. *Inside* the event horizon is an open space. All the mass is concentrated at the center, in a horribly dense mathematical point called the singularity. In any case, the radius of a black hole with the mass of the Milky Way Galaxy is about six hundred billion kilometers—roughly a hundred times bigger than our solar system.

"But of course it's almost certainly *not* as massive as a whole galaxy. We're probably just looking at the degenerated nucleus—perhaps containing a billion stars—which has collapsed into a black hole. Earlier I was figuring two hundred billion stars for the whole galaxy, so this smaller black hole would only be one-two-hundredth as massive, with one-two-hundredth the radius. That's about as big as the orbit of Uranus. Tidal effects would—"

"Now wait—you have the radius changing at the same rate as the mass. But it really changes as the square root or something, doesn't it?"

"You clown," said Boyce, his stomach quivering.

"The cube root, actually," said Asimov. "But that's for normal matter, like stars and planets and giant ants. Black holes are different from you and me."

Boyce grunted with pain, held his breath until it eased.

"It's still big enough," said Asimov, "that it would take light five and a half hours to cross from one edge to the other. If the whole thing were flashing, it would take at least that long to get one flash together. The fact that the flashes of this quasar are on the order of every forty minutes or so would require that only a portion of it be flashing, maybe just a piece of its surface, like a gigantic solar flare."

The interviewer glaced off camera. "Dr. Asimov, we're running out of time."

"Don't be so pessimistic. Even if this message—"

"No, no, doctor. I mean we're running out of time for this segment. I want to thank you for taking time out of your busy schedule to—"

"Quite all right."

"Thank you."

The newscaster turned to the camera. "We'll return after this." A commercial began. A man persistently attempted to get a sour-faced woman to try a bulk laxative. She refused adamantly. Boyce found the remote control and dropped the sound to nothing.

He let his head sink into his pillow. The strain of watching the news had blurred his vision, and the ceiling drifted in an unfocused orbit over his head. He knew if he closed his eyes it would be worse. He was dying, soaked in pain the Demerol couldn't touch, but he couldn't let go. This thing about the quasar gripped him. He had to know. He couldn't let himself die without knowing.

All over the world big shot scientists were hunched over their terminals, running analyses of the pulses. At Cal Tech and Mt. Wilson and

Mauna Kea—all places he had worked. Did any of those bastards notice Boyce wasn't there? Did even *one* of them phone to tell him the news?

Wherever he worked he was never anything more to them than the guy they yelled at when the pulse generators went out of calibration, or some VDT's blower motor started to whine, or the goddamn shift supervisor's coffee machine shorted out.

I took all that, thought Boyce.

I took all that because I wanted to *be* there when it happened. I ate all that slop *specifically* so I could be on hand when the flashes came in. Because I knew they were coming. I *knew* it.

Jesus God, look at me.

How can I die now? This has to be the most important thing that has ever happened on this Earth. How can I die without knowing what the message is?

But it was hopeless. It could take years to make sense of the message, even after it was proven to *be* a message. Years. He had—what?—days? Hours?

Minutes—from the way he felt now. Seconds . . .

Hopeless, hopeless.

Without hope.

To die without hope.

He thought: but I have always *lived* without hope. I've always *hated* hope, hated the very *concept* of hope.

Boyce knew all about it.

Hope crackled in the minds of the weak. It wiggled along the neural paths, drooling poison.

There was no place in his heart for such an insidious visitor. It distorted reality—and reality was his God.

Hope was a tumor feeding on the intellect.

Nothing was ever true because someone *hoped* it was true.

The muscles of his stomach tensed as the pain flared and seemed to glow at the center of his body—like a solar flare, he thought. A solar flare.

My body is sending a message to me. And the message is: drop dead.

The pain pulsed again, then receded into the glowing center of his gut, where it never quite went away. It had been months since he'd been free of pain. Now all he had to look forward to was an ever increasing ratchet of pain, flashing stronger every time, then easing, slowly easing, but never reducing to the old level, always higher, always one notch higher on the scale of absolute agony. Then another flare, probing the frontiers of his endurance.

But not much longer. Days . . . hours . . . minutes . . .

How he wanted to let it go, to drop straight and clean into the abyss of pain as it opened and beckoned with the paradoxical promise that if he gave up to the pain there would come an end to pain, as if he had to dive into the fire to reach the mythical core of ice.

But now— how could he let go? How could he give in to the pain without knowing the meaning of the flashes?

How we torture ourselves, he thought. How we love to twist the knife.

He was sleepy, but he forced himself to stay awake. Sleep scared the hell out of him. *He died in his sleep*, they always said. *Just like that. Very peaceful, very easy.*

No! Not me! Not *me*!

"Hey!" he yelled, too loudly.

The old man in the bed across the way looked up, startled and a little angry. Boyce smiled. I sure give this guy hell.

"Talking to me?" the guy said. He was bald, his scalp spotted and loose.

"Sorry, Gianni," said Boyce. "Didn't mean to yell. Did you hear that story on the news, about the flashing quasar?"

The old man shrugged. "So what? It blinks. None of my business."

"But it is!" Boyce said, yelling again. "Sorry. But look, it's important. It's probably the most important thing—"

"Not to me. Let the young folk worry about it."

"But don't you want to know? Don't you want to know what it means?"

"Not me. That 'stronomy stuff's over my head, anyway," the man said, then he grinned unexpectedly. "Over my head."

"There could be people out there."

"Okay. Find out if they pay less taxes than we do, maybe I'll go there."

"It's been twelve billion years since they sent the message," said Boyce. "That means—"

"That means it's stupid to even talk about it."

"We could learn—"

"Not me," said the old man. "You can't teach me anything. I ain't opened a book in forty years. How old are you? I'm seventy-nine."

"Yeah, you told me."

"I'll never make eighty, though. What about you?"

"I'm forty-seven, Gianni. I'll never make eighty either."

The old man stared at Boyce for a moment. "So I heard." His voice was neither sad nor patronizing: You're dying? So what else is new? We're all dying, pal.

Boyce said, "Before I landed here on my back I used to get paid to look for those guys."

"What guys?"

"Space guys. I was a SETI scientist. S-E-T-I—that's Search for Extra-terrestrial Intelligence. That's what I do. What I did."

Gianni looked doubtful. "Any money in that?"

"Not really."

The old man nodded and let his head roll back to face the ceiling.

"Right now I got a call in to Cal Tech."

Gianni said nothing.

Boyce felt his face get hot.

Why can't I just leave it alone? He's not interested. And he doesn't know enough to be impressed.

God, they're *all* idiots, thought Boyce.

None of them have any conception of what is going on. They don't know and they don't care. They live smack in the middle of the greatest enigma, at the bullseye of the most perfect mystery. And it's *real*—you don't have to take any of it on faith. All you have to do is look around. It's all happening right here, right now.

"The universe is a fantastic place."

"Not in my neighborhood."

"*For instance*," Boyce said, angrily chopping the old man's words from the air. "Right now—this *second*—there are billions of neutrinos passing through your body. They come from the sun and all the stars. And from nuclear power plants, too."

"You can't scare me," said the old man. "I'm seventy-nine years old. You can't scare me."

"They call it the ghost particle," said Boyce, his voice rising. "They go right through the Earth without a twitch. No mass, get it? Moving at the speed of light. Billions of 'em every second, plowing right through your *brain*."

"Baloney."

"Three *kinds* of neutrinos. Six—if you count anti-neutrinos." Boyce tried to remember all the kinds, but could only think of two—electron neutrinos and muon neutrinos.

Why can't I remember? I used to *know* that!

His mind was a rush of words. He hunted angrily for something to say, but it was all slipping away. What the hell good was it to learn that stuff if it all went away? What the hell good was curiosity, if you never *used* any of the knowledge you dug out of the world? He struggled to find a fact, a notion, a word.

"*Synchrotron radiation*," he said in sudden triumph. "High energy electrons traveling at nearly the speed of light, spiraling in the magnetic fields, radiating, radiating—"

"All that space stuff is baloney," said the old man. "I'm seventy-nine. I ought to know. Ghost particles!"

"*Holy* Ghost Particles!"

"Don't say that!" The old man crossed himself. "You atheist!"

"I was never an atheist," said Boyce, losing interest. "Not that I didn't try. But I can't *prove* there's no God."

"You have to *believe*."

"I don't want to believe. I want to *know*!"

"Then don't talk to *me*."

"Don't worry, Gianni."

Boyce lay back, exhausted. Why do I keep trying? There was no point in talking to the old man. He had no imagination; he was *proud* of his

ignorance. There was no talking to people like that, though it seemed he had spent his whole life trying.

Maybe he hadn't tried hard enough. . . .

Boyce picked up the TV clicker and flipped through the channels, looking for anything that might be a news show. He found several, but nobody was talking about the quasar's message. For a horrible half hour it haunted him that there would be no further news today—perhaps not for weeks or months. Or years.

What if this story was one of those items that flares and dies and only returns for a postscript a year later? If it turned out the flashing was caused naturally, *that* conclusion might not even make it to the network news. It was the sort of information you might only find buried in a notice in some magazine, in the back pages of *Omni* or *Discover*. It was possible he might not hear another word on the subject in his lifetime.

It was a tormenting thought.

It seemed as if he had spent his whole life in the pursuit of answers to the big questions, while everybody he knew concentrated on booze and swimming pools and Cuisinarts. Everybody thought he was a special kind of idiot, amusingly tortured by the lofty requirements of his life. He saw them shortsighted and venal, petty and mired in the slime of everyday living. *Some of us are looking at the stars*. There was no way he could prove that his quest had meaning—let alone that there *was* a source of answers hidden somewhere. He only knew that to abandon the search was impossible for him. And now, when there seemed to be a chance that the source had been located, orbiting a quasar twelve billion lightyears away, he was about to be tossed out of the game. Called on account of death.

Perhaps the only hope was that death was not the end of the game. An afterlife: the quintessential *hope*.

It was not something he was counting on.

After a few minutes they took him away for another pointless round of radiation therapy. They got him back to his bed just in time for him to vomit all over it. They sat him in a chair while the sheets were changed. He looked dizzily at the old man's disgusted face, and cherished the sour taste in his mouth. I'm still alive, he thought. No corpse could have a mouth that tasted this bad.

Finally his bed was ready. The strong scent of detergent on the fresh sheets made his head spin faster, but he said nothing. All he wanted was for everybody to leave him alone, and as soon as he could he cranked up the television and searched for news.

The images from the screen curled and faded and rocked to his own rhythm, faces of familiar actors distorted to gargoyles in the filter of his medicated, radiated brain.

It was early afternoon, and the TV provided soaps and reruns of old shows. *Leave It to Beaver*, *I Love Lucy*, *Bob Newhart*, *I Married Joan*.

For half an hour the faces, the smiles, the knowing looks, the familiar,

soothing music, all blended into a fantasy of childhood television. And when Ozzie looked over at Harriet and shrugged, it wasn't Harriet but Boyce's mother who smiled back. And out on the open field beyond the line of fragrant eucalyptus trees Boyce's father taught him and the Beaver how to bat left-handed. Ricky Nelson combed his flattop, then pulled a crow's foot out of his jeans pocket to demonstrate to Boyce in their treehouse how the claws flexed when you pulled on the muscle strings. And there was Captain Midnight, banking his jet to investigate the flashing light from a mirror in the forest below, the light winking on and off, sparkling bright and clean from between the dusty pines, flashing, flashing, beaming out its vital message, saying: *look look we're here*!

Boyce awoke with a sob, and tried to focus his eyes on the screen. The room was dim, far darker than it should have been, so dark it scared him.

"What is it?" he said softly.

"He's dead," said a voice.

Boyce rolled his head. The old man's bed was stripped. For a moment he didn't comprehend. A nurse slid past, dipping to look into his eyes, then was gone.

"Dead?" said Boyce. "Gianni?"

But he was alone again. The images of the television had locked into stability, the sound turned down to a whisper. The room was empty. Outside the window it was black. *What time is it*? He leaned to rake the side table for his watch.

Seven-fifteen.

A dinner tray lay on a swing table over his stomach. He didn't remember being awakened for dinner, but they must have. They always did. I'm losing it, he thought. I'm losing track of the momentary flux of activities.

Boyce picked up the TV clicker and ran through the channels. When he spotted the face of Carl Sagan he hurriedly poked at the volume key, bringing his voice into the room.

Sagan was saying: "—just a hopeful rumor at this point, you understand, but it *seems* to make sense. If we put ourselves in their place, we have to ask what message can we send that may still be news billions of years from now. The measured density of the universe would be such a message. Why? Because it answers one of the most basic questions about the universe. *If* that's what the message is about. Right now we can only guess at the question, and the answer, if they are providing one, is still beyond our grasp. But it's simply a matter of mass. If the universe is sufficiently massive, the outward expansion will halt and reverse and all the stars and galaxies and gas and dust will return to the center, where—perhaps—it will expand again in another Big Bang. If, on the other hand, the universe does not contain enough mass, enough matter, enough *stuff*, it will *slow* in its expansion, but never stop, and never

return to the center. If that's the case the universe will simply become more and more dilute, and eventually all the dust and gas that can form stars will do so, and all the stars will grow old and fade, and the universe will end spread out over the immense blackness of space, burned out and dead and empty. This *appears* to be the subject of the quasar message. It *appears* they are trying to tell us how massive the universe is. But we'll need more study, much more study. The message is unbelievably contorted and complex, as if the string of light flashes have been mutilated en route through twelve billion lightyears of starry space."

The interviewer said, "So we know the question, not yet the answer."

"We *think*," said Sagan, "we know the text of their sermon, but we don't yet know their stand on the subject. We are all looking forward to the answer. We're all very excited about the possibilities."

"I'm sure you are," the interviewer said. There didn't seem to be a trace of sarcasm in his voice.

Boyce thought: this must be public television.

An old nurse came in, deftly turning the television sound off as she passed. "Not hungry tonight, Mr. Boyce? You have to eat, you know. Got to keep your strength up, don't you?"

Boyce grunted. At least this one didn't use the medical *we* in her conversation. *How are we feeling*?

"Would you like me to leave it for a while longer?"

Boyce shook his head.

"You paid for it, you know."

"Yeah, and I paid for the steaks in the doctors' lounge, too."

The nurse smiled. "The doctors have been meaning to thank you for that."

Boyce shook his head again. "You guys just want to keep me alive another couple days so you can gouge my insurance company."

"Hospitals got to eat too, Mr. Boyce."

She took his pulse.

"Did Cal Tech call back?" he asked.

"Nope."

"I used to work there in the Physics Department."

"That right?"

Boyce lay still and stared at her while she looked at her watch. He liked this one. Maybe she was smarter than the others. "Have you seen the news about the quasar?"

She nodded, then wrote on his clipboard. "Little Green Men," she said.

"They're going to tell us how the universe will end."

"Don't be morbid, Mr. Boyce."

"But don't you want to know?!"

"Whatever for? As long as they don't send me the bill."

Boyce closed his eyes, and in his mind the room spun on an axis pounded through the center of his forehead. Saliva filled his mouth, and for a moment he thought he was going to be sick again. He felt so awfully

alone, so helpless, so alone. And these people, he thought. These people will live when I am dead. They will hear the answer and they will ignore it, and next week they won't even remember that it came up.

"The universe . . . " he whispered.

"The universe can kiss my—" *Smack*! was the sound as the metal file folder shut. "Did you want the sound back on? Never mind."

When he opened his eyes he was alone again.

On the television screen was a map of the Middle East. The news had marched on to more familiar ground. Boyce ran the dial around, found nothing pertinent, and shut the TV off.

They owed him another shot of Demerol at eight.

Twenty-seven minutes. His gut was burning a path up his spine toward his brain. His breath was shallow, his eyes half closed.

He remembered the reverie and the dread from the afternoon. His mind was aswarm with scenes from his past, television images, glimpses of forest, lake, and trail, the scent of pine and seaspray, the motion of surf when just your neck is above water, tugging and pushing. He was afraid again.

I'm never going to find out. I'm not going to live long enough to find out. It isn't fair. It isn't *fair*.

He laughed softly, despite his fear, despite the ripples of pain.

All right, *fair* is a pretty fluffy concept.

Fair is not one of the Four Forces that operate in the universe. Gravity is real. Electro-magnetism is real. The nuclear forces—strong and weak—those are real. *Fair* is just a fantasy of man. And what are men?

Mythical creatures of hope.

Observe how they squirm and posture in the light of examination.

Boyce waited impatiently for his shot of painkiller. He was hoping for another clouded period of memory, even though the confusion it created in his mind made it impossible to contemplate the flashing quasar's message. He knew it was a weakness to give in to the pain, but he felt helpless.

A man shouldn't have to die this way.

He rested, fighting the nausea of his medicine. The gray darkness of the television screen scared him. What was he missing right now? What news was being discussed behind the dull gray surface of the tube?

He waited for his shot, trembling, and thought about a black hole a hundred times bigger than the solar system. He tried to imagine the impact of a swarm of stars into the turbulent, violently spinning mass, its surface aglitter with scintillations of light, throbbing in the x-ray spectrum, shrieking with radio frequency light, hammering out gravity waves, expanding spheres of energy, the whole immense frantic globe, pulsing in time with the pain that scraped rhythmically at his spinal column. In his mind he created the black hole himself, forged it on the anvil of his pain, charged it with the current of his tormented soul,

blasted his very own message across the billions of lightyears. And he never planned to be there when the answer came back.

In his delirium he could see the light he emitted reflected off the walls and in the empty rectangle of the television screen. In the center of the screen a light flashed intermittently, as if pleading to be understood.

A shadow moved past his bed, reappeared and lingered, as if striving to make contact. His arm rose automatically, became cool on the wasted lump of his biceps, stung momentarily, and dropped slowly toward the bed . . . never to arrive. He sighed. The shadow was gone.

It's up to me, he thought. I must force my body to respond. I must chase the cancer from my system. I must squeeze myself dry.

He remembered a technique they tried on him once, months ago. Guided imagery, the therapist called it. They wanted him to pretend a safari into his gut, to imagine his cancer a pack of ravening beasts, to seek them out and blast them with a magic rifle. He pretended to pretend, just to make the man go away. (The guy was so healthy-looking—so tan, so robust, so goddamn energetic—it made Boyce sick just to listen to him.)

It had all seemed so silly months ago—but at the time he had many months, perhaps years (with a good remission), to live.

Now was different. Now was earnest.

Boyce calmed himself. His breathing slowed, his eyelids drooped. Okay, he thought. Let's go hunting.

He dropped slowly within the barrier of his skin, submerging himself *in* himself, and prowled the ribbed surface of his slack muscles. It was not difficult to imagine the extent of his illness. Cancer dwelled like evil maggots in every organ, squirmed along every duct of lymph, nestled in every crease of stale fat, in every glistening coil of gut. Their blind, darting heads swiveled to face him; their pale bodies began to advance.

He drew back, his heart pounding.

Not that way, he thought. I can't do it that way.

He took a deep breath.

I need a new image, a new mechanism.

He could see his body laid out on the bed, pale and loose and helpless. His skin glowed with yellow light.

That light, he thought. It's like a barrier. It's like a glowing shield that surrounds my body and keeps me whole.

And inside that shield—inside the boundary of this luminescent skin—lies every scrap of the cancer that feeds upon my body.

If that shield—that barrier—were to contract . . .

He concentrated on the glowing skin, making it solid, toughening the fabric of the barrier, insuring no particle of his cancer could escape.

The shimmering trap was set, awaiting the trigger.

For a moment he lay breathless.

In the center of his body he saw a single cancer cell shiver and divide.

Now!

The golden shield began to contract, shrinking down through his body, allowing all that was *truly* his body to pass between the interstices of the magic barrier. It dropped like a net through water, squeezing outward a body cleansed and perfect. All that was of the cancer collected in the net and was urged toward the center by the passage of the shield.

The sparkling net of light shrank to an angry knot in his stomach, and all the cancer in his system was concentrated there in one black evil lump, compressing ever closer, tighter, denser, collapsing like a star, squeezing the cancer into a black hole at the center of his being, smaller and smaller, into the realm of the microscopic. Abruptly the cancer imploded into a singularity surrounded by glittering yellow haze, and flashed out a message of defeat before a final obliterating shrug of violet light signaled its departure from the physical universe.

The pulse of violet light swept through his tissues, erupted from his body, and vanished outward into the world beyond. He lay in darkness without pain.

And in that moment he was convinced—his body was whole and pure and healthy. A wave of euphoria spread out from his chest like the escaping ghost of final hope.

He blinked at the dim ceiling.

It's true, he thought. I'm cured. *Cured*!

Call the doctors! Call *any*body! Gianni! *Gianni*!

He let his head roll to the right, to tell the old man in the next bed, but he discovered he was alone in the room. It didn't matter. He closed his eyes. He was exhausted by his triumph. He would let his body sleep.

Sleep. Thank God for sleep. . . .

And as he slept the cancer poured back into his body like an evil tide, dragging the knives of pain in the hiss of its approach. He was dying, and there was no way around that. Not in this world.

He shivered in his bed on spikes of pain, half awake.

He thought: there must be a way out of this. How can they let a man die when at any moment the answer will come to the most basic question in the universe? It is *impossible* that I could die now.

I'll be frozen, he thought suddenly.

I'll *make* them freeze my body, freeze it now, while I'm still alive—and when they can cure me they will, and I'll come out into a new world, a world where the answer of the universe will dwell in every pair of eyes. I'll survive to live in the future, and then I will know everything.

Freeze me!

He knew it was experimental. He knew they would object. It was even illegal to freeze living bodies. He had to make them realize it was his wish. He would take the risk. He would insist on taking the risk. Why in God's name should he not? He was dying. *Right now* he was dying. How could they refuse him? How could they be so cruel? He must find a way. Petition the courts. Demand, threaten, *order* it done.

I'll put dynamite in the building. They'll *have* to do what I say! (In his mind the hospital exploded to dust.)

He moaned, twisting on the razor of pain, his legs jerking, quivering, shivering.

I have to tell them. I have to *make* them.

He lay back, dazed, and the lights of the room rotated on every conceivable axis. His body bobbed and sank and rose, and the feeling of the ocean squeezed over him. He gasped at the air, trying to time his breaths, afraid of gulping seawater. The pulsing light calmed and fled the room, leaving him in cool darkness. Cool, cold, icy darkness.

That's right! Ice! There was ice all about him. *Ice*!

Somehow they had got the message, and they were doing what he demanded. The first stage was already in progress—his naked body packed with ordinary ice, his body temperature dropping, dropping slowly into the dull regions of hypothermia, preparing his descent into the truly frigid land of frozen life.

He sighed as the ice poured in around his body.

That's right! That's right! Oh, thank God!

Freeze me! *Freeze* me!

His legs began to quiver in the cold, but he rejoiced at this. Yes, yes, colder and colder, freeze me all down to the core, keep me alive to see the answer. I can't die now. It is impossible to die now.

The cancer throbbed against the cold, as if it knew what was coming, knew that its time was ending, that its campaign was lost, its attempt at murder thwarted by ice.

"He's kicked his blanket off," said the old nurse, her voice very near. "Poor baby."

He felt, sudden as dragon's breath, the retreat of the ice—and warmth returned to his shivering legs.

No, wait! Don't do this! Let me freeze! Freeze me to death! It's my only hope! I must be frozen to live. I *must* be frozen! *Please*!

He felt a hand on his forehead. "Is that better?"

His eyes filled with tears.

It isn't fair. It isn't fair.

He slept uncomfortably, dipping down and back, dizzy half the time, dreams scraping along his spine, culling memories of body motion —running, jumping, pulling, lifting, pushing, straining—muscles giving up their useless memories. His fingers twitched. Piano lessons when he was nine. His toes tapped, pushed off, his arms encircling the cotillion at thirteen. He swam underwater at the Y. Fourteen. His legs quivered, climbing Mt. Whitney with the Scouts at fifteen. On and on. His life unreeled in his muscles, marching him inexorably toward his bedridden body, crawling unswervingly toward his own death. He felt weary.

I mustn't sleep. I have to concentrate. I have to think. I have to *plan*. I have to figure how to get out of this!

He woke with a jolt, the sound of his shout ringing. The room was dark, menacing, strange. The noises of the night were unfathomable and weird.

Am I still here?

He picked up his watch from the side table and fumbled with the button. A scramble of blurry red letters and numbers flashed at him, suddenly quite close and ominous. What does this mean? The watch made no sense at all.

Where am I?

He climbed out of bed, moving shakily in the dark on the cold floor. He went to the window. Outside he could see the world of darkness, of blinking lights, of strange vehicles that crawled along the sides of buildings. What city is that?

Is this L.A.? What *year* is this?

The hallway was deserted, though brightly lit. At the end of the corridor he found what *had* to be a library, but instead of shelves of books, the room contained small bottles with cryptic labels. A *chemical* library. A library of the future. The future. It has to be!

I made it! I made it!

He figured he must have gone into a coma, that he had lain in a bed for twenty, thirty, fifty years. *Longer.* His body ached vaguely, as if from nearly constant bedrest. Yet they must have exercised him from time to time, or he'd be paralyzed with muscle atrophy.

He smiled. The future. Now it remained to find the answer to the big question. Were the quasar flashes a message? Did the message tell of the fate of the universe? Surely these questions were answered by now—maybe a hundred years in the future. He searched the library for a book he could *read*—and found a magazine in a file cabinet. The magazine had a story about heavy neutrinos.

"There are four kinds of neutrinos," the magazine said, "and each one is associated with a particular lepton—the electron, the muon, the tau particle, and the fermion. There are also four anti-neutrinos. Neutrinos may resonate, that is, they may change from one kind of neutrino to another, or from one kind of anti-neutrino to another. Each variety of neutrino has a characteristic energy, and a characteristic mass. For many years it was thought the neutrino had no rest-mass; then the message of the quasar told us that the neutrino possesses a real, though infinitesimally small mass. Amazingly, the masses of all the trillions and trillions of neutrinos in the universe add up to more than all the stars and galaxies and dust put together—thus providing a mass sufficient to insure the universe will one day stop expanding and begin to contract, slowly at first, then faster and faster, into one super dense body. This fact is known as the 'Secret of the Universe.' "

"What are you doing in here?" asked a voice.

Boyce put the magazine back into the file folder, and put the file—which had changed itself into a packet of patient case histories—back

into the file cabinet with all the others. He turned to see who was talking, and as he did so he felt suddenly very dizzy, and had to sit down fast on the tile floor.

The black man looked down at him and grinned.

"This is the future," said Boyce. "Isn't it?"

"It's always the future, if you say so."

Boyce smiled and leaned back against the gray file cabinet. "Neutrinos are heavy," he said.

"They're out of sight, if you say so."

Boyce was helped to his feet, and into the empty hall. As they crept along—and his trembling legs began to collapse—he was struck by the sameness of the hall. After a *hundred* years . . . He said, "They haven't changed a thing in this hospital."

"Federal cut-backs," said the black man.

When they were back in his room, Boyce picked up the watch from his side table and pressed the button. Again the face read out numbers and letters of a most confusing design. "What does this mean?" he whispered.

"Man, it's upside-down," said the orderly, helping Boyce back into bed. "Maybe I'd better call the nurse. What do you say?"

Boyce lay back and looked up at the black man. The future dissolved in his mind, and he sighed.

I almost made it.

The black man was looking at him as if he wanted something. Boyce could easily see his white smile in the dim room.

Why is he smiling like that?

He looked just like Mephistopheles with a proposition.

"You are the Devil," said Boyce, pointing.

The smile blinked in the dark and came back brighter than ever. That was proof enough for Boyce.

"I must have time!" he said urgently. "I don't want to die now. You can help me."

"I could call the night nurse," said the orderly. "Maybe she help you."

Boyce shook his head. "It's you. You know what I want."

Boyce sank into the bed, his gaze directed upward. The smile was no longer visible, but he could imagine it.

The Cheshire Cat.

"Just a little more time," he pleaded, his voice barely audible. He knew he wouldn't have to shout. When you call the Devil, he hears you.

The smile was six feet across, projected on the ceiling in the dark.

I know what you want in return, thought Boyce.

I invite you to take it, since it does me no good. All I want is information. That's all I've ever wanted.

I just want to know what is really going on.

The smile widened greedily.

Yes, yes, thought Boyce. We'll work something out.

Everybody wins. Everybody gets something.

But when his eyes dropped, the Devil was gone from beside his bed.

Boyce pressed his chin into his chest and struggled to lift his head to look. The room was empty.

Does that mean *yes*?

He searched the room for a sign, and his eyes stopped on the dull gray surface of the television screen. A light winked in its depths, small and faint, like a quasar flashing out its message across twelve billion light-years. Flashing just for him.

Boyce suddenly understood precisely why he had fought to stay alive. The message *was* for him—for him alone. No one on the planet wanted to know the meaning of the message as much as he. That could only mean that it was *meant* for him—for him alone. He *had* to stay alive now.

The light throbbed in the screen, and he blinked back tears. Yes, yes, *talk* to me.

I bet my soul. I spent my life. I *paid* for this.

The light quivered and floated, drifting on the screen, growing larger, now blurred, now sharp and distinct; the light swelled to fill the screen in pearly brilliance. It overflowed the screen, forming a haze in the room. Boyce's heart beat thunderously with fearful hope. And the light grew in the room, filling it all from floor to ceiling, from wall to wall, a thick cube of light that swirled and coalesced.

Yes, yes, you are welcome.

Images formed briefly, tentatively, in the mist. Tears came from his eyes. Yes, yes, talk to me.

He heard a voice that spoke directly to his brain, calling his name.

"Tell me," he said. "I'm ready. Tell me."

In a minute you will die, said the voice.

"I don't care!" said Boyce, shaking. "*Tell* me."

It came to him that the knowledge he sought would kill him, but he was prepared for that. It was dying without the knowledge that he dreaded.

When you die, said the voice, *when anyone—when anything in the universe—dies, the soul of that being departs its body at the speed of light and begins a journey upon a path that is unique. Yet though the paths of all the creatures of the universe are all different, they possess this same characteristic: all paths reach the same place at the same time. And that terminus is the center of the universe, and that time is the exact moment when all the matter of the universe has returned together at the end of time.*

"The universe is closed," Boyce whispered. "It expands and contracts. I *know* this is true."

The light flickered and pulsed in the room. Boyce could hear faint footsteps in the long hall, coming his way. The night nurse, summoned by the Devil.

"Go on," he said. "*Hurry.*"

Since the souls of all the dead travel at the speed of light, no matter how long their journey all souls see the trip as instantaneous, because the speed of light is the speed of time standing still. Therefore, the moment you die you seem to arrive at the end of the universe—and find upon your arrival the souls of every other creature that has lived in all the duration of the universe—all those you knew in life, whether they die before you or after you—everyone arriving without time at the same instant. And you will see them all, and know them. And the shout of joyous recognition will spread like a shockwave to destroy the universe—and create the next.

Boyce could not help but weep, and the images of all his friends, living or dead, came into his mind—and he knew that in a moment he would meet all of them at the end of the universe—only to begin again.

The footsteps in the hall were now very near, and it was as if he could hear with a heightened awareness.

He supposed the night nurse would be upset when she saw him dead, but he knew that would pass.

The light brightened, filling the room with friendship and hope.

The nurse bent near. "I'm dead," he whispered.

"I'll be the judge of that, Boyce," she said. "Go back to sleep."

In the morning he felt like a different person . . . but then he always did. Network news recapped the quasar story, but added nothing, and from the cursory manner in which the story was handled, he got the impression there would be no more about it for a long time.

He also got the impression the day-shift nurse was surprised to discover him alive. But he knew she'd never say so.

She gave him a pain shot, and he sat with breakfast watching cartoons on TV. The morning's oatmeal had been steeped in bile again—and that helped clear his head.

After breakfast the guy finally called from Cal Tech, but the news was not good. "If Sagan said that, he must have been speculating. Did you hear the whole interview?"

"No."

"There you go. 'Cause I gotta tell you it's too early to confirm that a message is coming in. I was over at JPL yesterday, and there was a guy talking to Murray, said he thought the accretion disk might compact in places to form giant pulsars, which would orbit the black hole, maybe throwing off a beacon as they spun. A couple of those—flashing at us when we were lined up, but occluded by the hole as they orbited—might produce a pretty interesting set of pulses. Now if this were a natural development of quasars, we might see others start to flash. Unless they're just answering their mail." The guy laughed. "But I agree with Sagan: the density of the universe would be a good ice-breaker for the folks gathered round the old spin-flip frequency."

He means the twenty-one centimeter radio band, thought Boyce after he had hung up.

I remember that. Fourteen-twenty megaHertz. The frequency radiated when the electron in a hydrogen atom flips its spin to oppose the proton. Some SETI folk thought it would be a good standard frequency to monitor for intergalactic messages. But it was already too noisy with natural radio emissions.

I remember that *now*, thought Boyce. But tomorrow I'll probably forget again. What the hell am I doing to myself? What good does it do even to remember such stuff? What am I preparing myself for? Who am I trying to impress?

Even if I *weren't* dying, what's the point of knowing anything like that?

Is it possible I study useless information because I *hope* it will one day be useful? I must be nuts.

At nine-thirty they brought a brand new old man to fill in for Mr. Gianni, who was presumed to be traveling at the speed of light along a unique path toward a rendezvous at the end of time and space.

Boyce sighed. Bullshit.

I seek the truth and my silly brain serves up bullshit. Great going, Boyce. You sell your rational skepticism down the river just to get through the night.

Boyce looked at the new guy and smiled. Prostate cancer, the nurse said. His face was lined and mean-looking, but as soon as he was settled in, Boyce asked him if he'd heard about the flashing quasar. The man shook his head. Boyce could tell by the set of his jaw that he was in pain.

Boyce smiled gently. "I'm going to tell you what it could mean."

He stopped to rub the stubble of his beard. Maybe he could try a shave today, make himself presentable in case of visitors. Did he still have friends out there in the real world? He couldn't remember.

Sometimes loners really do get lonely. . . .

In a minute I could be dead, he thought. Therefore I must make this minute last a long, long time.

He began to explain the quasar's flicker.

And when, from time to time—as the day went on and the room's light shifted and changed—he caught, in the center of the dull gray screen of the TV's face, the tiniest glimmer, the minutest random sparkle—he smiled, embarrassed by the tickle of hope that shivered, shivered in the empty chamber of his heart. ●

ON BOOKS

by Baird Searles

The Adversary
By Julian May
Houghton-Mifflin, $16.95

The wise reviewer will periodically find ways in which to remind his readers that he/she is all too human, not a voice trumpeting down from on high passing judgement. We have this month a ready-made opportunity for just such a reminder; it is the publication of the thundering conclusion to Julian May's epic "Sage of Pliocene Exile" series, entitled *The Adversary*. (Notice already I'm using clichés such as "thundering conclusion.") There are certain works which, if there is not the space to go on at thesis length, simply reduce one to burbling hyperbole. May's four-volume novel (The first three are *The Many-Colored Land*, *The Golden Torc*, and *The Nonborn King*.) is such a work.

One problem for the conscientious reviewer is that the concept and canvas are at this point so huge that encapsulization is impossible. One would have to sum up all three previous volumes for any precis to make sense; this is needless, of course, for those who have already made the trek through them, but something is owed to the uninitiate who may wonder what the fuss is about. Why do I have the feeling that my kindly editor would not look tolerantly on a request to devote this entire issue to *On Books*?

Oh, hell, Searles, give it a try. From a 22nd century that is nearly Utopic, a "Milieu" of interstellar peace with several other intelligent races, malcontents of all sorts have been able to escape in a one-way, anomalous gateway to Earth's Pliocene age, where they hope to find pre-civilized peace, rustication, and/or adventure. No one in the future knows what they *do* find, since the gateway is strictly no-return; so it is with horror that the exiles find themselves involved in an immensely complex culture built by a dimorphic race, the god-like Tanu and the smaller, more primitive Firvulag. This dual species is itself exiled, from another galaxy. They call Earth "the Many-Colored Land," and have constructed with their enormous psi powers a glittering civilization, based on human slavery, that is rent with enormous power struggles, not only between and among the two parts of the race, but complicated by mutant offshoots, and the humans, many of whom are also psi powerful.

On this complex base, May has erected an enormous narrative, with literally hundreds of characters. Another reviewing problem is that

she has a unique gift for surprise, so almost anything said about this fourth book is giving *something* away, particularly to those who have read the earlier volumes. Tantalizing clues can be dropped, however. In *The Adversary*, the forces of the Many-Colored Land go through the Terrible Winter which their lore says precedes the Nightfall War, in which all shall be destroyed. The Gods (the Tanu) and the humans group on one side, the giants, trolls, and dwarves (the Firvulag) gather to the other. But there are those in between, including many of the principals, and there is the Adversary, a new factor in the Land. Does that whet the appetite?

Reservations can be voiced (or word processed, as the case may be). The number of characters has been extended so far at this point that if there's a gap in the reading time between volumes, keeping track of the minor characters is almost impossible—and sometimes the minors become majors ("Who *was* that masked alien that just won the battle?"). A cast of characters *cum* gazetteer is badly needed in this final volume, and shame on the publisher for not providing one. (I am assured on the best authority that there will be a companion volume to the series which will be just that, but it's still much needed *now*.) There are helpful maps, and a synopsis of the preceding action that is little short of brilliant. No matter how good the synopsis, it is still *not* advised to skip the earlier books. This overplentitude in a way applies to the narrative as a whole; nothing with this kind of impetus can be described as diffuse, but keeping track of the numerous plot lines as they merge and separate tends to blunt the narrative.

But none of this matters a hoot in the face of the amazing achievement of these books. May has combined and included so many factors and qualities that they defy listing, much less analysis. The saga is unabashedly science fiction, and yet creates a world that is fantasy incarnate. There is great grandeur here, and yet jarring crudity (in ideas *and* sometimes, execution). And what SF novel has ever before dared to include (take a breath for this one): time travel, intergalactic travel, interstellar travel, alien races, mutants (alien and human), telepathy, telekinesis, matter transmission, shape changing, Celtic mythology, Norse mythology, living space ships, and a Galactic Mind as major themes, not to mention other matters such as some sex and lots of violence, a pizza, a plesiosaur, a drag Queen Elizabeth I, the catastrophic birth of the Mediterranean, a mass murder aboard ship, the climbing of a mountain higher than Everest, and Bifrost, the rainbow bridge.

The welding of all this and much more into one coherent (if not exactly neat) whole is an achievement with few, if any, parallels. The 1980s have given us, barely halfway through the decade, two amazing tetralogies, Wolfe's "Book of the New Sun," and May's "Saga of Pliocene Exile." They can no more be compared in relative mastery than can Beethoven's *Eroica* and Debussy's *Pelleas and Meli-*

sande, but it can be said that the May is the more classic. Using the major themes of SF (almost all of them!) and firmly harking back to the action-adventure sources of the field with affection and humor, she has made a new and fresh masterwork of the genre, and irrevocably placed herself among the greats of fantasy and science fiction.

The Integral Trees
By Larry Niven
Del Rey, $14.95

The clever Larry Niven, adept at creating strange and wonderful environments, may just have outsmarted himself this time. It's been a long time since we've had a solo novel from this master of the high-tech end of the SF spectrum; finally here's *The Integral Trees* and Niven has pulled another marvelous milieu out of the hat. Trouble is that it's so complex that the casual reader may just find himself adrift (and that word is not used casually, as you'll see).

One of the basic forms of the field is for the author to think up a really exotic ecosphere, with pertinent life forms that would logically appear in such an environment. Therein the story is placed, which must traditionally grow out of the peculiarities inherent in the created world.

The trick is not only to make it unusual and full of colorfully unlikely factors which must all be rationalized technically down to the last satisfying detail, but for it to be comprehensible to the reader without a scientific treatise to explain why these unlikely creatures are behaving in these strange ways. Otherwise, one ends up with an Alice-in-Wonderland surrealism lacking in the quality which can only be conveyed by the thought that comes with every satisfying piece of SF—"Of course, that's the way it would be if . . . "

In *The Integral Trees* Niven has come up with an idea about as far out as one can get, a created world without a world. Well, there *is* a world involved, but nothing can live on it, since it's an aging gas giant. But its orbit is a gas torus, which in the simplest possible terms (and that's all you're gonna get in a review) means a huge "smoke ring" of breathable atmosphere in which life *can* be maintained.

The implications are endless (no gravity, atmospheric "tides," floating spherical bodies of water) and Niven takes full advantage of them. The major life forms of this—er—place are the huge, free floating trees which grow to a length of a hundred kilometers (ca. 60 miles, if you're as shaky in metric as I am), and on which all sorts of things live, not to mention the various thingies flying around in the sky between the trees and living in the asteroid-sized ponds of water.

The plot is woven around the human tree dwellers, the various colonies of which are descendents of mutineers who left the survey ship which discovered the gas torus five centuries back. The central characters are a group who, due to lack of food and water at their end of a tree, have mounted an expedition uptrunk, as it were. Just as they reach the midsection, their tree disintegrates, and they are cast into the sky. Needless to say,

their odyssey is an adventurous one.

This is certainly classic science fiction—the idea is truly the hero, and everything else—plot, characters—is secondary to it. The problem is that this hero is so complex that it takes half the novel to get the idea across, despite valiant efforts of the author to work in expository clues (and a series of charts at the beginning). For a good part of the story, the reader is as adrift as the inhabitants of Dalton-Quinn Tree, wondering—who *are* these people and why are they climbing this tree?

All becomes more or less clear by the end. But also by the end, one suspects that the story itself is almost an afterthought. It's a brief novel (just over 200 pages) and there just isn't enough plot to justify this amazing background. There's something of the quality of building Versailles to house Pompadour's poodle. Perhaps Niven will give us more on the oversize smoke ring, with a bit more solidity to it. This will certainly be welcome, even if the initial impact has been dissipated.

The Golden Grove
By Nancy Kress
Bluejay Books, $13.95

Fashions in mythology seem to change, particularly with our two major sources, the Greek and the Arthurian. If Arthur's *in*, then the Greeks take a back seat. The Greeks were big in the early part of this century, which could have been Freud's fault; everybody from Martha Graham to Erskine Caldwell had a grand time offering new interpretations of the Greek myths, usually psychoanalytically oriented. Simple old Arthur & Co. were in the shade until T.H. White and a change in taste brought a Celtic renaissance; since then, hardly anyone has paid any attention to updating the Greeks.

However, in the past couple of years there has been a minor revival of interest in the Greek mythos, maybe from a surfeit of Arthurs and Merlins. Nancy Kress, for instance, has woven *The Golden Grove* around one of the simplest and oldest of the Greek myths. It is the one about Arachne, who wove so expertly that she challenged Athena herself to a contest; she did so well that Athena tore up her creation, Arachne hanged herself, and Athena changed her into the first spider (hence "arachnid").

The tale is so basic that it must be very old; Kress sets it in pre-Greek times, the period of the dominance of the Minoans of Thera. Arachne is co-ruler, with her brother, of Island, settled by their ancestor some generations back. They live in the Villa, a sort of one-house town like the palace of Knossos, in which resides most of the population of Island. Island is a sort of Utopic Elysium due to the influence of the mysterious Grove, which the Therans found there when they first arrived. It is a grove of trees, thought to be undying, in which live spiders, whose webs are so strong that they can be woven like silk. Out of them the Islanders, most notably Arachne, weave glorious fabrics; the Grove itself casts a sort of mystic spell which accounts for the beauty of life on the island.

The core of the novel is the dying of the Grove and its effect on Arachne and her family—in addition to her brother, Jaen, there are her husband and their two children. Jaen makes the journey to Thera to find some sort of remedy; the sophisticated Therans with whom he returns desire only the silks of Island, and bring devastation and ruin, as the Grove continues to die.

The Golden Grove is not so much an attempt to recreate a time of history, or cast an ancient myth into contemporary terms, as it is a psychological study of a woman. The characters are really modern people in period drag; the Grove is less a creation of true fantasy than a metaphysical device. This results in the novel seeming more book-length allegory than true fantasy. Nevertheless, the characters are strong and compelling, and the locale has a certain mood and color that keeps one reading. It's a change from whimsical dragons, perky unicorns, and yet another incarnation of Merlin, at least.

Witchwood
By Tim Lukeman
Timescape, $13.95

Somewhere under *Witchwood* by Tim Lukeman, there's a good idea, but the underbrush is so thick that it's a bit hard to find. (This seems to be the month for trees, groves, and collective flora.) It's another magic world; *this* one has stars that fall and ooze gold and the smell of ginger, and is distinctly Celtic in flavor.

The ancient kingdom of Therrilyn had conquered and sorcerously bound all sorts of nasty things. When it in turn fell, there was a long Dark Age when knowledge was precariously held by a few. Now the population is slowly beating its way toward the Age of Reason—they have orphanages, flintlock pistols, mills, and social unrest (workers against the Gentry).

But the nasties that were squelched long ago are stirring, and only the Mark, the holders of the old knowledge, can prevent their rising again. Orphan Fiona has Powers of which she is unaware, and she is therefore dragooned into the Mark against her will (considering the Dickensian orphanage in which she is incarcerated, one wonders at her reluctance). In the process, the manor in which she is living gets blown up by some sort of residual force, and then she must go and open the gates of Mymmore, which also blow up because of a falling star. Then the members of the Mark who betrayed her into it are in turn betrayed by some other Marksmen who are even nastier than the nasties. All in all, it's just one thing after another.

The story lurches from event to event, and characters appear and disappear arbitrarily. Several of the major figures use other names now and then such as Greylock and Dame Cracklecane, which doesn't help in sorting them out. There's a wavery goddess called (you guessed it) "The Lady" and endless talk of unspecified prophecies that may or may not be coming to pass (including the remark that "It is in the nature of prophecies that nothing may stay their fulfillment" which is one of those sweeping

statements that gives the reader pause).

This reader was soon as confused as Fiona as to what was happening, and could certainly sympathize with what seemed to be her major ambition, which was to head south and buy a farm. But people and events *will* keep dragging her back into the action. Certainly some of the confusion is caused by the fact that this is the first part of a tetralogy, and presumably all (or at least some?) will be made clear by the end of the fourth book. I think, however, that I will be elsewhere, searching for other magic worlds that are a bit more coherent and where the falling stars don't smell of ginger.

Men, Martians and Machines
By Eric Frank Russell
Crown Publishers, $7.95

Eric Frank Russell is one of the writers of the "Golden Age" whose reputation has dimmed; at least he's been out of print for some time now, which is only possibly a sign of unpopularity given the lack of savvy of much of the publishing community. *Men, Martians and Machines* is a collection of four linked stories which *has* been republished, finally. The adventures of the exploratory ship *Marathon* and its crew, variously human, Martian, and robot, have dated, but readably so.

One's teeth are slightly put on edge by the evocation of *Star Trek* on the jacket, and in the introduction by George Zebrowski; certainly it's no great revelation to any literate SF reader that "long before *Star Trek* . . . science fiction writers were already exploring the known universe." On the other hand, a comparison is not totally out of line—the *Marathon* and its crew were certainly boldly going off to find new worlds and get into all sorts of trouble thereon, from a totally mechanical culture in "Mechanistria" to the giant trees (here we go again—it's Arbor Month) and animated vegetation of "Symbiotica." The tone can only be described as rollicking (" . . . a gob of meteoric nickel-iron ambling along at the characteristic speed of *pssst*!") given the jolly fellows of the crew and the intramural sniping between the humans and the tentacled (of course) Martians, who are great snobs.

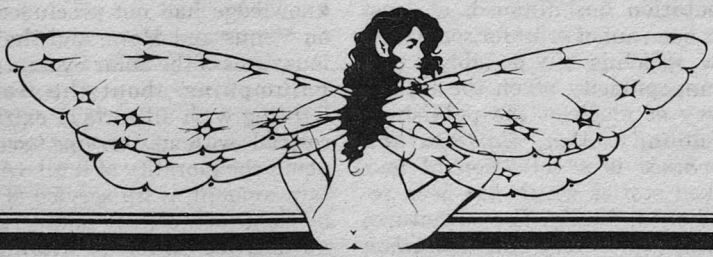
By contemporary standards, it's pretty simple-minded, but if your tastes are below or above a certain point of sophistication, it's refreshing to visit an earlier period of science fiction when advancing knowledge had not precluded life on Venus and Mars, and the various races of the Solar System went galumphing about the Galaxy fighting with all sorts of extraterrestrials without worrying too much about the morality of it all. (A certain amount of lip service *is* paid by Captain McNulty to the Terran authorities' order to attempt to communicate with the natives, but they always shoot first.)

Shoptalk . . . The above mentioned Eric Frank Russell work is one of four books published as the openers of a series called "Classics of Modern Science Fiction." They are worth mentioning because it could be a very neat little series to

collect. The form is a pleasingly compact hardcover, and for hardcovers, they are very inexpensive. The other three are *The Joy Makers* by James Gunn, *The Shores of Another Sea* by Chad Oliver and *The Classic Philip Jose Farmer: 1952-1964* (Crown, $7.95 each) . . . The fourth of David Eddings' jolly fantasy series, "The Belgariad," had been published. Bearing the uninspired title of *Castle of Wizardry*, it continues the lively inventiveness of the first three . . . Ray Bradbury's *The Martian Chronicles* is continually in print, and a new paperback edition is no big news. However, this latest one should be noted because of an extraordinarily beautiful cover, worth buying the book all over again for. The cover, a landscape, is reminiscent of the work of the great mid-century SF artist, Hannes Bok; it is by Michael Embden . . . Two wonderful "lost" classics have just been republished by an enterprising small publisher in paperback. They are Francis Stevens' *Citadel of Fear* (very Merrittesque) from 1918 and *Om, the Secret of Abhor Valley* by that Old Master of pulp exotica, Talbot Mundy, first published in 1924 (Carrol & Graf Publishers, $3.50 and $3.95 respectively).

Recently published by those associated with this magazine: *Isaac Asimov's Magical World of Fantasy #2: Witches* edited by Isaac Asimov, Martin H. Greenberg, and Charles G. Waugh, NAL, $3.50 (paper); *Isaac Asimov Presents the Great SF Stories: 11 (1949)* edited by Isaac Asimov and Charles G. Waugh, DAW, $3.50 (paper).

Books to be considered for review in this column should be submitted to Baird Searles, % The Science Fiction Shop, 56 8th Ave., New York, N.Y. 10014 ●



NEXT ISSUE

October's cover story, "Trinity," is a strong and complex tale of madness and the scientific method by Nancy Kress. Tanith Lee returns with another beautiful story, "Bite-Me-Not or, Fleur de Feu," and we have a fascinating novelette, "Bad Medicine," by Jack Dann. You won't want to miss this or our other stories and columns. Pick up a copy. It's on sale August 28, 1984.

CLASSIFIED MARKET PLACE

ISAAC ASIMOV — is published 13 times a year. The rate for CLASSIFIED ADVERTISEMENTS is $2.20 per word — payable in advance — minimum ad $44.00. Capitalized words 40¢ per word additional. To be included in the next issue please send order and remittance to I. M. Bozoki, Classified Ad Manager, DAVIS PUBLICATIONS, INC., 380 Lexington Ave., New York, N.Y. 10017.

AUTHOR'S SERVICE

SCIENCE Fiction makes for many successful self-published books. Get personalized assistance publishing it yourself. Lowell Moss Creative Services, 760 Market #1036A, San Francisco, CA 94102.

BOOKS & PERIODICALS

ALL available paperbacks, hardcovers supplied quickly & efficiently. World-wide service since 1973. Quarterly catalogue, free US/CANADA; $1 elsewhere. THE SCIENCE FICTION SHOP, 56 EIGHTH AVE., N.Y., N.Y. 10014.

MAKE YOUR OWN CLASSIFIED AD PAY. Get "How to Write A Classified Ad That Pulls." Includes certificate worth $2.00 towards a classified ad. Send $2.25 (includes postage) to I.M. Bozoki, Davis Publications, Inc., 380 Lexington Ave., New York, NY 10017.

PULPS (Shadow, Doc Savage, SF), Paperbacks, Hardcover Books, (MU, Swift, Movie), Dark Shadows, TV Guides, TV Avengers, James Bond, Comic Books, Magazines, Movie Items, etc. 1900-1984, Catalogs $1.00: Rogofsky, Box 107-D, Glen Oaks, New York 11004.

1,000's of Science Fiction, horror, occult, UFO paperbacks, hardcovers. Low prices, free catalog. Lamira, Box 12093, Dept. 82, Baltimore, MD 21281.

EDUCATION AND INSTRUCTION

UNIVERSITY Degrees! Economical home study for Bachelor's, Master's, Doctorate. Prestigious faculty counsels for independent study and life experience credits. Free proof—Richard Crews, M.D. (Harvard), President, Columbia Pacific University, 1415 Third Street, Suite Q509, San Rafael, CA 94901; Toll Free: 800/227-1617, Ext. 480; California: 800/772-3545, Ext. 480.

JEWELRY

FANTASY JEWELRY! Free catalog. Dragons, Unicorns, Medieval Weapons, Etc. SASE: The Silver Dragon, Dept. A. 36 Stadden St., Prov., R.I. 02907.

MISCELLANEOUS

OLDTIME radio programs. Suspense, drama, science fiction, comedies. Highly enjoyable tapes. Free catalogue. Carl D. Froelich, Route One, New Freedom, Pennsylvania 17349.

MONEYMAKING OPPORTUNITIES

GOOD MONEY! Weekly! Processing Mail! Free Supplies, Postage! No Selling! No Running Ads! Information? Rush stamped envelope! Foodmaster-SCM, Burnt Hills, NY 12027.

PERSONAL

SINGLE? Widowed? Divorced? Nationwide introductions! Hundreds of sincere members! All Ages! Free information! Write: Identity, Box 315-DT, Royal Oak, Michigan 48068.

ORIENTAL Ladies. Faithful, traditional, affectionate. Thousands seeking marriage, now! Cherry Blossoms, Box 1021DA, Honokaa, Hawaii 96727.

THERE IS NO CHARGE FOR THE ZIP CODE; please be sure to include your zip code when ordering merchandise from classified advertisements. You'll receive faster delivery.

START YOUR OWN BUSINESS

START your own MAIL ORDER BUSINESS. All the information you need. Only $10. complete. MIKE DANT, 2224 Elmcrest, Bardstown, KY 40004.

SF CONVENTIONAL CALENDAR

by Erwin S. Strauss

There's sort of a lull in con(vention)s leading up to the WorldCon in LA (after the Olympics), so now's a chance to look at the fall lineup. Make plans now for social weekends with your favorite SF authors, editors, artists and fellow fans. For a longer, later list, an explanation of cons, and a sample of SF folksongs, send me an SASE (addressed, stamped #10 (long) envelope) at 9850 Fairfax Sq. #232, Fairfax VA 22031. (703) 273-6111 is the hot line. If a machine answers, leave your area code and number. I'll call back on my nickel. Send a #10 SASE when writing. Look for me behind the Filthy Pierre badge at cons.

AUGUST, 1984

3-5—**MystiCon.** For info, write: **Box 1367, Salem VA 24153.** Or phone: **(703) 342-6064** (10 am to 10 pm only, not collect). Con will be held in: Roanoke VA (if city omitted, same as in address) at the Tanglewood Holiday Inn. Guests will include: Karl Edward Wagner, Rudy Rucker, Paul Dellinger.

3-5—**Atlanta Fantasy Fair.** Omni Hotel, Atlanta GA. Larry (Ringworld) Niven, Robert ("Psycho") Bloch, Forrest J. Ackerman, Sharon Webb. Over 3000 fans expected at this media-oriented event.

3-5—**OmaCon.** Holiday Inn Old Mill, Omaha NE. Poul, Karen & David Lee Anderson, M. S. Murdock, Dell Harris. The emphasis is on space exploration and gaming at this fourth annual affair.

10-12—**PimaCon, Box 42036, Tucson AZ 85733.** I don't have any more information about this con.

10-12—**ParaCon.** Sheraton Penn State Inn, State College PA. Marvin Kaye, P. R. Pavlat. Low key.

10-13—**MythCon.** Mills College, Oakland CA. For fans of Tolkien, C. S. Lewis, Charles Williams.

24-27—**OxCon, c/o Porter, 28 Asquith Rd., Rose Hill, Oxford OX4 4RH, England, UK.** Brian Aldiss.

30-Sep. 3—**LACon 2.** Anaheim Convention Center, Anaheim CA. WorldCon '84. Join there for $75.

SEPTEMBER, 1984

7-9—**CopperCon, Box 11743, Phoenix AZ 85061.** S. Sucharitkul, S. E. Konkin III. SunBurst Resort.

7-9—**EarthCon, Box 5641, Cleveland OH 44101.** Poul Anderson, Steve Jackson. Media-oriented con.

21-23—**September Party, 2508 W. 9th, Panama City FL 32401.** Beach cookout. Verrrrry relaxed.

21-23—**MosCon, Box 8521, Moscow ID 83843** Artist Alicia Austin, W. R. Warren Jr. Lensman Awards.

28-30—**Ad Astra, Box 7276, Stn. A, Toronto ON M5W 1X9.** Dean Ing, fan Robert (Doc) Passovoy.

OCTOBER, 1984

5-7—**Contradiction, 147 Huntington Ave. Buffalo NY 14214.** Donald Kingsbury, Samuel R. Delany. Masquerade. Chocolate symposium/pigout. Batsu breakfast. People auction. Last fling before winter.

12-14—**World Fantasy Con, Box 4911 Stn. E, Ottawa ON K1S 5J1.** Tanith Lee, Jane Yolen, Jeff Jones, Spider Robinson. Award banquet. The WorldCon for dark fantasy (horror, sword/sorcery, etc.).

AUGUST, 1985

22-26—**AussieCon 2, 11863 W. Jefferson Blvd. #1, Culver City CA 90230.** Melbourne, Australia. The WorldCon for 1985. Gene (New Sun) Wolfe, editor/fan Ted White. Join for $50 until the end of 1984.

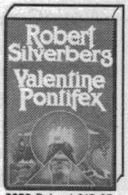
30-Sep. 2—**ChiliCon, Box 9612, Austin TX 78766.** The North American SF Interim Con for 1985 (NASFIC's are held only in years when WorldCon is outside North America). 3000 fans expected.

Explore new worlds beyond the limits of time and space.

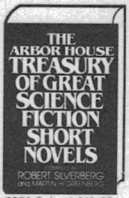
††0984 Spec.ed.

0711 Spec.ed.

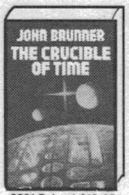
0737 Nonfiction. Spec.ed.



0653 Pub.ed.$15.95



9076 Pub.ed.$19.95

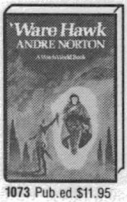


0661 Pub.ed.$12.95

0836 Pub.ed.$11.95

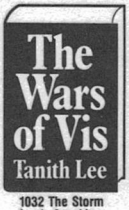
0018 Pub.ed.$7.95

0976 Pub.ed.$13.95

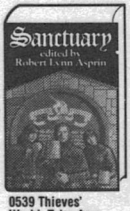


1073 Pub.ed.$11.95

0695 Hiero's Journey; The Unforsaken Hiero. Spec.ed.



1032 The Storm Lord; Anackire. Spec.ed.



0539 Thieves' World; Tales from the Vulgar Unicorn; Shadows of Sanctuary. Spec.ed.

5637 Split Infinity; Blue Adept; Juxtaposition. Comb.pub.ed. $34.40

Take any 5 for $1 WITH MEMBERSHIP.

SEE OTHER SIDE FOR ADDITIONAL SELECTIONS.

How the Club Works:

You'll receive your 5 books for only $1 (plus shipping and handling) after your application for membership is accepted. We reserve the right to reject any application. However, once accepted as a member, you may examine the books in your home and, if not completely satisfied, return them within 10 days at Club expense. Your membership will be cancelled and you'll owe nothing.

About every 4 weeks (14 times a year), we'll send you the Club's bulletin, *Things to Come*, describing the 2 coming Selections and a variety of Alternate choices. In addition, up to 4 times a year you may receive offers of special Selections, always at low Club prices. If you want the 2 Selections, you need do nothing; they'll be shipped automatically.

If you don't want a Selection, prefer an Alternate, or no book at all, just fill out the convenient form always provided and return it to us by the date specified.

We allow you at least 10 days for making your decision. If you do not receive the form in time to respond within 10 days and receive an unwanted Selection, you may return it at our expense.

As a member you need take only 4 Selections or Alternates during the coming year. You may resign any time thereafter or continue to enjoy Club benefits for as long as you wish. One of the 2 Selections each month is only $4.98. Other Selections are higher, but always much less than hardcover publishers' editions —up to 65% off. The Club offers more than 300 books to choose from. A shipping and handling charge is added to all shipments. Send no money now, but do mail the coupon today!

Note: Prices shown are publishers' edition prices.

SCIENCE FICTION BOOK CLUB®

Dept. RR-095, Garden City, N.Y. 11530

I want the best SF in or out of this world! Please accept my application for membership in the Science Fiction Book Club. Send me the 5 books I have numbered in the boxes below, and bill me just $1 (plus shipping and handling). I agree to the Club Plan as described in this ad. I will take 4 more books at regular low Club prices in the coming year and may resign any time thereafter. SFBC offers serious works for mature readers.

1.	2.	3.	4.	5.

Mr.
Ms. _____
(Please print)

Address _____ Apt. # _____

City _____

State _____ Zip _____

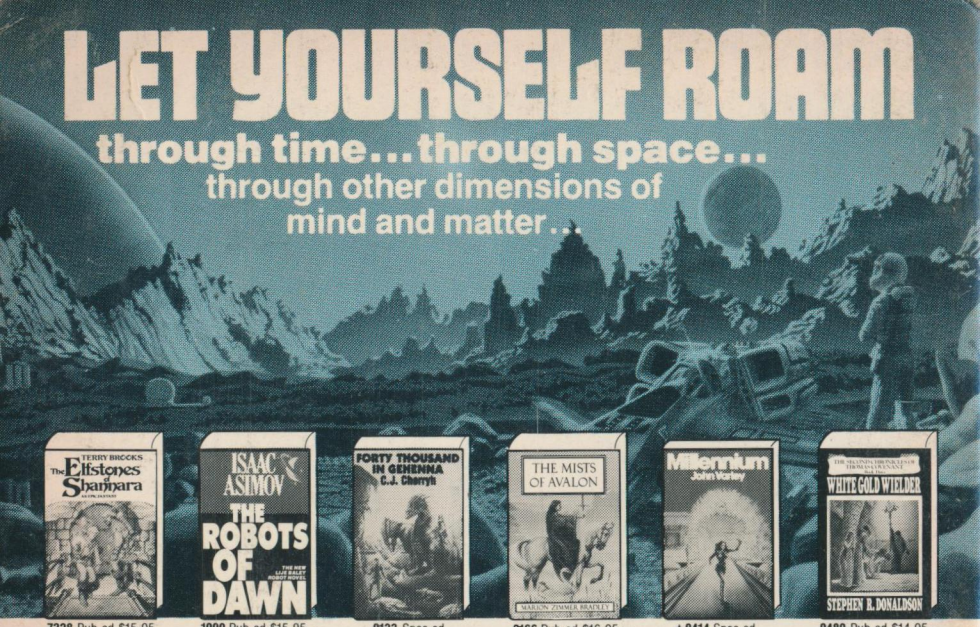
If under 18, parent must sign. _____

The Science Fiction Book Club offers its own complete hardbound editions sometimes altered in size to fit special presses and save you even more. Members accepted in U.S.A. and Canada only. Canadian members will be serviced from Canada. Offer slightly different in Canada.

38-S231M

LET YOURSELF ROAM

through time...through space...
through other dimensions of mind and matter...



7328 Pub.ed.$15.95

1099 Pub.ed.$15.95

0133 Spec.ed.

0166 Pub.ed.$16.95

★0414 Spec.ed.

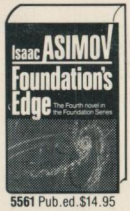
0489 Pub.ed.$14.95

0729 Pub.ed.$13.95

1107 Pub.ed.$14.95

†**1016** Spec.ed.

★0950 Pub.ed.$15.95



5561 Pub.ed.$14.95

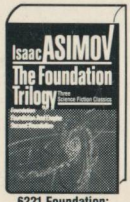
0935 Pub.ed.$14.95

0075 All 5 Amber novels. 2 vols. Comb.pub.ed. $32.30

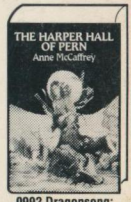
0786 The Guardians of Time; Time Patrolman. Spec.ed.

0752 Elric of Melnibone; The Sailor on the Seas of Fate; The Weird of the White Wolf. Spec.ed.

0943 Another Fine Myth; Myth Conceptions; Myth Directions; Hit or Myth. Spec.ed.



6221 Foundation; Foundation and Empire; Second Foundation. Pub.ed.$17.95



0992 Dragonsong; Dragonsinger; Dragondrums. Comb.pub.ed. $38.85.

TAKE ANY 5 FOR $1

WITH MEMBERSHIP

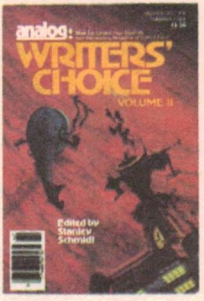
See other side for coupon and additional Selections.

THE SCIENCE FICTION BOOK CLUB®

38-S231M

Note: Prices shown are publishers' edition prices.
★Explicit scenes and/or language may be offensive to some.

YOU'VE CHOSEN WELL!



WRITER'S CHOICE II is our latest in the Analog collection. 288 pages of intriguing tales of science fiction and science fact, each one chosen by its author as his or her own personal favorite. Each of the 11 short stories in this engrossing collection contains a brief introduction by the author relating its creation and its importance. WRITER'S CHOICE II is available now, and can be yours for only $4.50. Don't wait, send for your copy today.

And if you've missed any of these other Analog collector's editions, order them as well.

Please send me the Analog anthologies indicated. Enclosed is a check or money order for $_____ (includes postage and handling) to cover _____ copies.

Mail to: Analog Anthologies,
PO Box 999, Ridgefield, NJ 07657

WRITER'S CHOICE #2_____ (@$4.50) WRITER'S CHOICE #1_____ (@$3.95)
THE LIGHTER SIDE_____ (@$3.95) ALIENS FROM ANALOG_____ (@$3.95)
CHILDREN OF THE FUTURE_____ (@$3.95)

AS94T

NAME_____

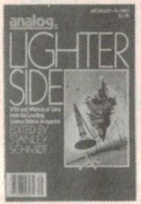
ADDRESS_____

CITY_____ STATE_____ ZIP_____

Please allow 6 to 8 weeks for delivery of your copy. Available only in the U.S.

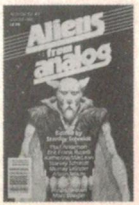
DID YOU MISS ANY OF THESE COLLECTOR'S CLASSICS?

CHILDREN OF THE FUTURE— A look into the future through the eyes of Analog's children. Ten thought-provoking stories spanning centuries.



THE LIGHTER SIDE—Humor has always been an important part of Analog, and this collection proves it. 13 stories—all on "the lighter side."

WRITER'S CHOICE VOLUME I —The first in the series, this is a collection of 11 short stories, each chosen as their author's favorite.



ALIENS FROM ANALOG—DO alien beings exist? Analog tackles the question in this collection of 11 short stories.

Make your science fiction classic library complete by simply indicating your choices on the reverse side.