EVOLUTION

@INTERSECTION

EVOLUTION
THE NEXT STEP

Welcome to *Evolution at Intersection* – a special publication created to celebrate our guests of honour and tell you about Evolution.

Evolution is the 1996 *Eastercon*, the Annual British Science Fiction Convention, and it'll be held over Easter 1996, 5-8th April in the Radisson Edwardian Hotel at Heathrow. Until the end of *Intersection* you can join *Evolution* for just £24 ($36) attending membership (£14 ($21) for a supporting membership or for children aged between 5 and 14 on 5th April 1996 – children under 5 are free); after August 29th this goes up to £28 ($42) attending and £16 ($24) supporting. You'll find full details of how to join, plus hotel prices, on the last page of this booklet.

Inside you'll find discussions of our guests by fellow writers, much of it original writing. Returning the favour of *Death Is No Obstacle*. Michael Moorcock offers an appreciation of Colin Greenland, as does Geoff Ryman. Larry Niven and Jerry Pournelle explain what Jack Cohen actually does when he helps writers design alien ecologies. Neil Gaiman tells us how Bryan Talbot's art and writing is special and Chris Priest and David Langford discuss why Maureen Speller and Paul Kincaid are our fan Guests of Honour. We also have Marvin Minsky's afterword to Vernor Vinge's *True Names*. The cephalopods progressing from page to page come from the skillful pen of SMS and our cover art by Jim Porter, *Wrong Side of the Looking Glass*, combines some thoughts of what might evolve with a tribute to the Scottish scenery we're enjoying at *Intersection*. Jim describes it as "the famous bit of Skye, minus the famous bit, chosen as a very attractive bit of the real world to contrast with the implausible gathering assembled in front of it. I tend towards the phrase *playing God* when taking liberties with nature but my pictures often change quite drastically of their own accord in the process of completion. An artist friend coined the term *organic surrealism* to describe this side of my work, which certainly sounds more impressive than *buggering about with nature*."

I hope you enjoy *Evolution at Intersection*, and indeed *Intersection* itself. I also hope that we'll have the pleasure of welcoming many of you at *Evolution* next Easter!

– *Mary Branscombe*, **Publications Manager**

EVOLUTION AT INTERSECTION

CONTENTS

Neil Gaiman has known and worked with Bryan Talbot for years. Neil has a wicked and wonderful sense of humour and a frightening knowledge of everything and everything, especially myth, legend and the human psyche, but he scratched his head when we asked him how he first met Bryan…

Of course, it would be much easier if it were Professor Jack Cohen, or even Professor Colin Greenland. There is no doubt in my mind about them. The first time I met Jack Cohen was at an Eastercon in Liverpool, in the bar, on a Sunday afternoon: he was wearing his sweater with the copulating sheep on it, and he told me everything I have ever been told about two-headed babies. Colin Greenland I met in September of 1983, in the bar of the Red Lion after a Brian Aldiss signing, and I thought he looked like the young Gandalf, and he helped me sell my first short story (to *Imagine Magazine*, as it happens, which is almost relevant).

But Bryan Talbot… that's a lot harder. I suppose I first encountered him in my cousin Adam's bedroom, when I was much younger — too young to buy my own underground comics, anyway — and I got to read the three *Brainstorm Comix*, featuring Chester P. Hackenbush (Cosmic Alchemist). "Bet he's a hippy," I thought, as only a fourteen year old proto-punk can think. But hippy or not, and earliest work or not, there was a tremendous vivacity in the work — an enthusiasm and a drive, which meant that I remembered Bryan Talbot's name and art when the names of a hundred other young underground artists had fled.

I first bought something by him in a comic called *Mixed Bunch*, the first Luther Arkwright prototype story, when I was fifteen.

I first saw him, Bryan the man, at a 1983 cabaret benefit for Knockabout Comix, who were having one of their semi-annual tussles with the law. We were introduced, I think, by Hunt Emerson, or maybe he just pointed Bryan out for me — Bryan was tall and had
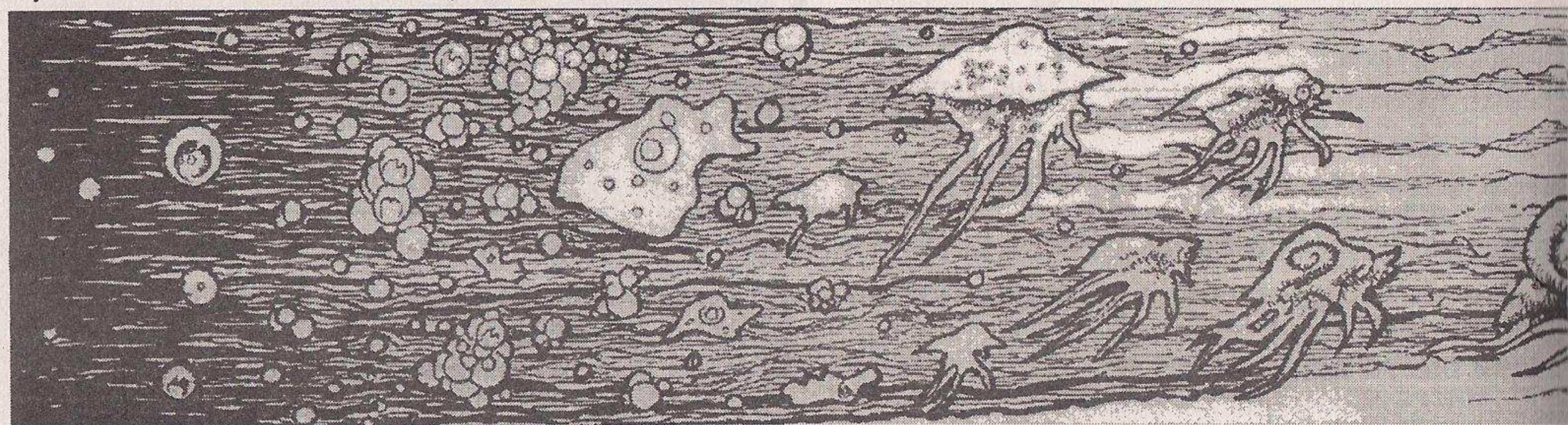
red hair and a flying jacket. Bryan does not remember this meeting, if in fact it occurred. He remembers meeting me at a SSI meeting, the old Society of Strip Illustration, in 1986, and says we met in the bar, which is not unlikely, and would mean that he had something else in common with Colin Greenland and Jack Cohen.

Which reminds me, the *Imagine Magazine* with my first short story in — the one Colin Greenland helped me sell — had a cover by Bryan Talbot, and an article on Luther Arkwright role-playing, which means my professional relationship with Bryan Talbot began in 1984, before either of us noticed it.

So. Years passed. Bryan persuaded me to go to Preston, where he is one of the mainstays and bastions of the local SF society, and give a talk. I stayed at Bryan's house. My most vivid memory is of surfacing on Bryan's kitchen floor, and Bryan saying *"Neil? Should I call an ambulance?"* Despite this, we became firm friends, and our professional relationship continued to flourish.

You see, Bryan is…

Hang on. As they used to say on *Blue Peter*, back before the Flood, Here's One I Prepared Earlier. (Goes off to rummage on the hard disk, and emerges triumphantly a few hours later, bearing the introduction written for Bryan's wonderful *Tale Of One Bad Rat*.)

"Bryan is soft-spoken, enthusiastic, thoughtful, a fine artist and a fine storyteller. His hair is red and grey; he wears a brown leather flying jacket. He lives in Preston, in Lancashire. If you met him, you would like him.

"Our paths are forever crossing: Bryan drew the cover to the magazine that contained one of my earliest stories; he's worked with me on *Sandman*; on a political polemic; he even illustrated our favourite sin (it was Sloth, I'm afraid) in Knockabout Comics' *Seven*

Deadly Sins. Bryan is a writer's dream artist – he somehow squeezes all the detail you ask for into every panel, and then adds a dozen more tiny touches all of his own.

"One of the things that makes Bryan Talbot interesting as a creative force is the fact he keeps moving, keeps evolving, keeps challenging himself. He doesn't stop learning; he hones new techniques, new skills. He began as a young underground artist, progressed into a major creator, working for *Sounds*, for *2000AD* (his *Nemesis The Warlock* work was the only Nemesis that, in my opinion, gave Kevin O'Neill's a run for its money), for DC. Each project he does is recognisably Bryan. Each project is unique, and with each project you can watch Bryan demonstrate new ways of pencilling, of inking, of painting. He cares enormously about what he does, and it shows in the end product. He's always been ahead of the pack – *The Adventures of Luther Arkwright*, his first graphic novel, was an ambitious tale of parallel worlds that was, literally, years ahead of its time."

That's all true. It doesn't tell you the other important things about Bryan, though. Like where the Rats come from; it tells you nothing about his wife Mary, who is one of the great and good and a professor of linguistics besides, somewhere in Scandinavia (which must be a bugger of a commute from Preston), and says nothing of Bryan's studio, where he works, filled with Astonishing Stuff of Variety and Interest.

And it doesn't say the most important thing about Bryan, either. The man is *nice* – terrifyingly, enthusiastically, nightmarishly nice. He loves to talk. And he is, in the great, cosmic sense of the word, despite having won most of the awards you can win around the world, a fan.

You'll see. Go and find him at *Evolution*. Buy him a drink. Say hello.

See what happens.

Neil Gaiman
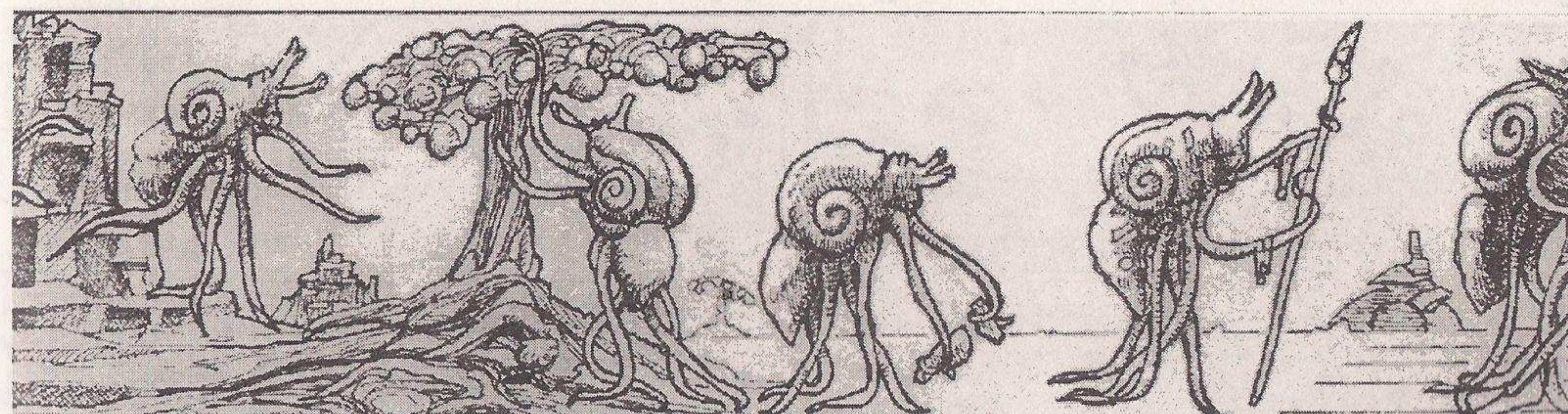
If you want to know how aliens could evolve, ask a reproductive biologist with an interest in the bizarre. Larry Niven and Jerry Pournelle told us how much they've learned from Dr Jack Cohen.

Niven speaking. I first met Jack Cohen in the early 1970s, at *Chestercon* in England. He and I and James White wanted to talk shop – alien biology, cosmology, plasma physics, like that – so the Committee gave us one of the function rooms.

We spent an hour in there; maybe two. I've been trying to remember everything we discussed, but it's impossible. But when I described Moties, I was told about left-handedness as opposed to left-heartedness.

This is fascinating stuff. There are left-handed humans, but when did you last meet anyone whose heart beats on the right? Whose intestinal tract is reversed? Why not?

It's evolution, of course, but not the evolution of a baby. What has evolved is the pattern of blood vessels in Mommy's uterus. It feeds a left-hearted baby better than a reversed baby.

And that meant that I could show that the Moties are recently evolved! All I had to do was introduce a left-handed Able Spacer to the embassy on Mote Prime. The Moties gave him a body-reversed Mediator: two left arms, one massive right arm, a left ear and no right.

That was then, this is now. Now there's a price on what he used to give for free.

Jack Cohen is the only person we know who might win a Nobel Prize for knowledge about human fertility and sexuality. But he's also a rabid science fiction fan! Naturally he spins off ideas, particularly for alien life forms, at a furious rate. Naturally he's been giving them away to the nearest writer for decades. The nearest writer has often been James White, and the poor little alien generally gets sick.

But once there was an African frog with nasty dietary habits. Jack and Jerry Pournelle and I talked long into the night about that one, and the grendels of Avalon evolved from that. Ultimately there was a triple collaboration, *The Legacy of Heorot*, and a sequel, *Dragons of Heorot* (US title, *Beowulf's Children*).
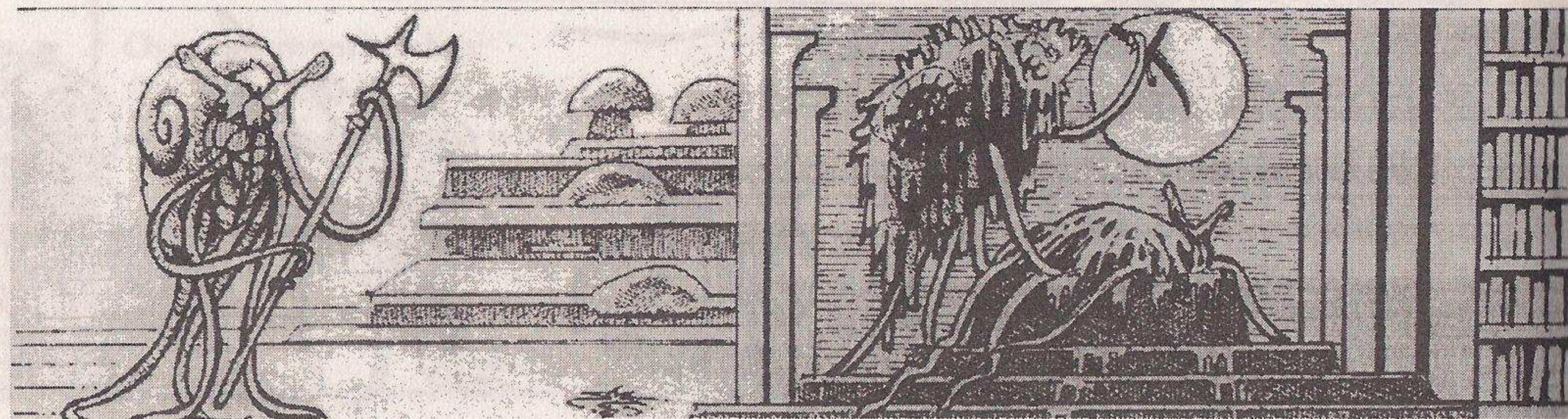
(The biologist who wrote about that frog read *The Legacy of Heorot* and wrote me. His problem, he said, was making his colleagues believe it at all! At the time of writing he was working on snakes.)

Now Jack has begun doing consultation work for science fiction writers.

He did some work for Anne McCaffrey, and I don't doubt she's talked about that elsewhere. He came across the Atlantic in 1992 to work with a number of us: with David Gerrold re the CHTORR universe, with Steven Barnes on a novel they're still writing, and with Steve, Jerry, and me on a sequel to *The Legacy of Heorot*.

He came armed. He had books and lectures on parasitology. He'd read *Heorot* and he knew where we needed forests and mountains, and somewhere a creature big enough to see from orbit. He had a suggestion regarding necrophagous bees, and he had an innovative design for a crab.

We snatched up the Avalon crab as soon as Jack produced it; and also his work on grendel parasites, and the relation between Avalon bees and coal mines. That crab became the basis for half the life forms on Avalon, including the big critter, the Scribe.

The thing is, you learn globally from Jack Cohen. We four went through some intensive work sessions. What I learned about parasites and reproduction is in my head, and it'll be appearing in books to come.

God knows what else he brought to those meetings that didn't get used. They may infest other books by other writers, forever.

Pournelle here. I met Jack Cohen at the oak tavern of the Old Ship Hotel in Brighton back in 1979. Larry's memory is faulty: that was the night Jack told us of the African frog with nasty habits, but we didn't spend a lot of time talking about it that night. I forget just what it was we did talk about. I do recall that James White, who towers above me, handed me a badge: "SOPOAHWG". Translated that means "Society of People of Average Height with Glasses." I looked down at my 6' 2" and up at him, and he shrugged. *I am prepared to demonstrate that 90% of the human race are dwarves.*

Some months later, Larry said *"Can you tell me Jack Cohen's address? I've forgotten it."*

"You haven't forgotten it," I said. *"You never knew it. And I'm prepared to bet I can convince you of that. Dinner?"*

Niven has a wretched memory. He knows I know he has a wretched memory. He was certain there was no way I could prove he'd never known Cohen's address, so there was no way to lose the bet. *"Sure."*

"His address," I said, *"is 69 Twatting Road, Licking. Now tell me you forgot that."*

It was a good dinner.

When Jack was over here to work on *The Dragons of Heorot* with us, he introduced us to a young lady biochemist who may, just may, have a better theory about HIV and AIDS than anyone else. Just as Jack seems to know more about fertility than anyone in the world, with knowledge ranging from complex biochemistry to how many times you must wash new glass test tubes, Jack seems to collect people with odd and arcane knowledge.

He also gave me some reading assignments, from Dawkins' *Blind Watchmaker* to a highly technical journal article on South American necrophagous bees.
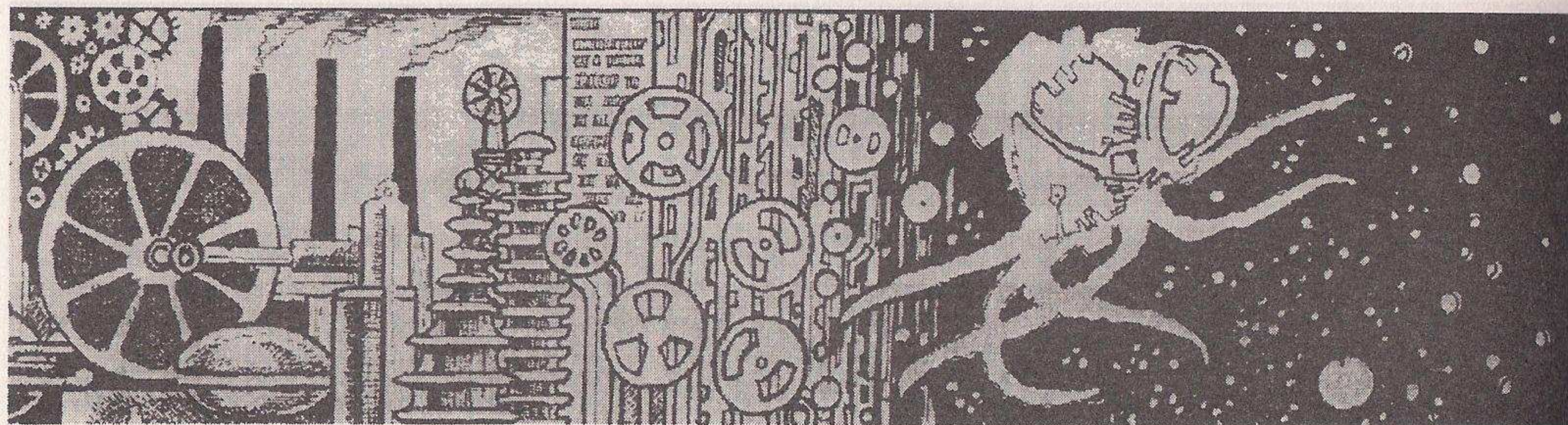
I last saw Jack in London. Roberta and I were only there for a day, so we arranged a dinner with Jack Cohen and another friend, Terry Pratchett. When the evening was over we had an evolutionary history of the planet of Avalon, which I wrote on the back of an old envelope. We also learned a great deal about Discworld, but that's another story.

We've both heard dozens of wonderful stories from Jack.

What makes piranha attack? We used this story in *Dragons of Heorot*: a biologist found that it wasn't blood that caused the fish to go into a frenzy. He put his hand in water seething with the vicious little carnivores. Nothing. Even with blood in the water. What turns them on is the splash. But why would they evolve that behavior? Monkeys falling into the Amazon? It doesn't happen. Monkeys are good at, uh, the business of being monkeys. They just don't fall in the water that often. If you want the explanation, you can read it in our book.

We also learned why filling the ice trays with hot water makes ice faster than if you fill them with cold. It's a well documented story, and a wonderful puzzle.

We had forgotten about this claim. They were making it when we were both kids. Hundreds of people tried it at home, and it worked every time. In office building commissaries, and in the laboratories of refrigerator companies, the trays with cold water made ice faster than the hot water trays. Then in the 1970s everybody just stopped talking about it.

What was different? Well, in office buildings and particularly in refrigerator labs, they were conscientious about keeping the freezers defrosted. Then in the '70s the self-defrosting freezers came on the market…

God knows what we'll learn the next time we see Jack. We can hardly wait.

Larry Niven and Jerry Pournelle.
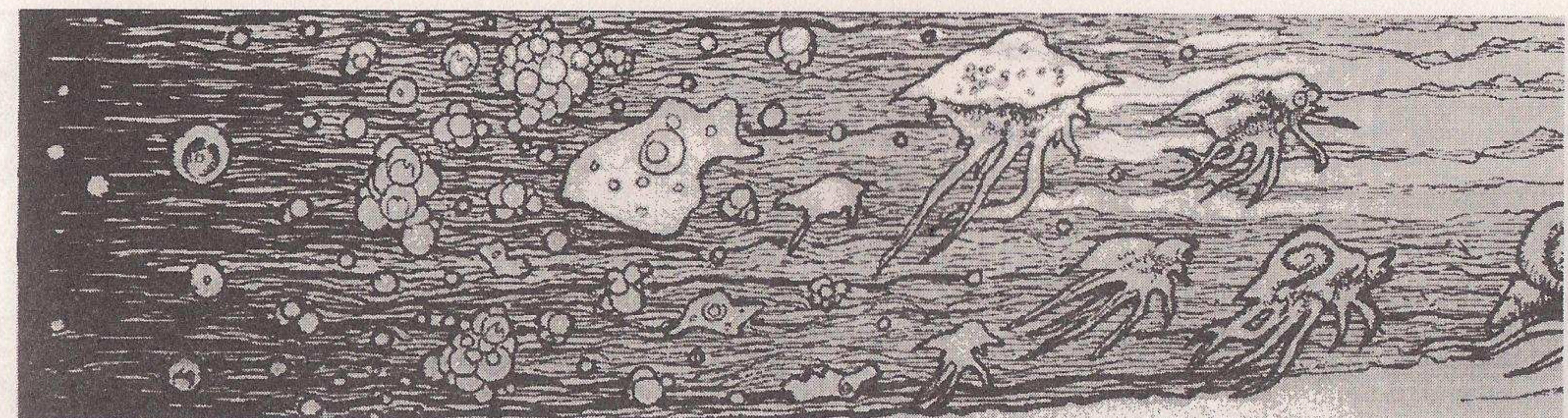
Vernor Vinge's novels explore the possible next stage of Man's evolution and how we might change beyond what we recognise as human. *True Names* explores what it means to be intelligent when no one ever meets you in person. Professor Marvin Minsky of MIT wrote *Society of Mind* as an epilogue to discuss how intelligence – and artificial intelligence – might actually work.

In real life, you often have to deal with things you don't completely understand. You drive a car, not knowing how its engine works. You ride as passenger in someone else's car, not knowing how that driver works. And strangest of all, you sometimes drive yourself to work, not knowing how you work, yourself.

Then, how do we manage to cope with things we don't understand? And, how do we ever understand anything in the first place? Almost always, I think, by using analogies — by pretending that each alien thing we see resembles something we already know. Whenever an object's internal workings are too strange, complicated, or unknown to deal with directly, we try to extract what parts of its behaviour seem familiar — and then represent them by familiar symbols — that is, by the names of things we already know which we think behave in similar ways. That way, we make each novelty at least appear to be like something we already know from our own pasts. It is a great idea, that use of symbols. It lets our minds transform the strange into the commonplace. It is the same with names.

For example, suppose that some architect invented a new way to go from one place to another: a device which serves in some respects the normal functions of a door, but one whose form and mechanism is so entirely outside our past experience that, to see it, we'd never of think of it as a door, nor guess what purposes to use it for. No matter: just superimpose, on its exterior, some decoration which reminds one of a door. We could clothe it in rectangular shape, add to it a waist-high knob, or push-plate, or a sign,
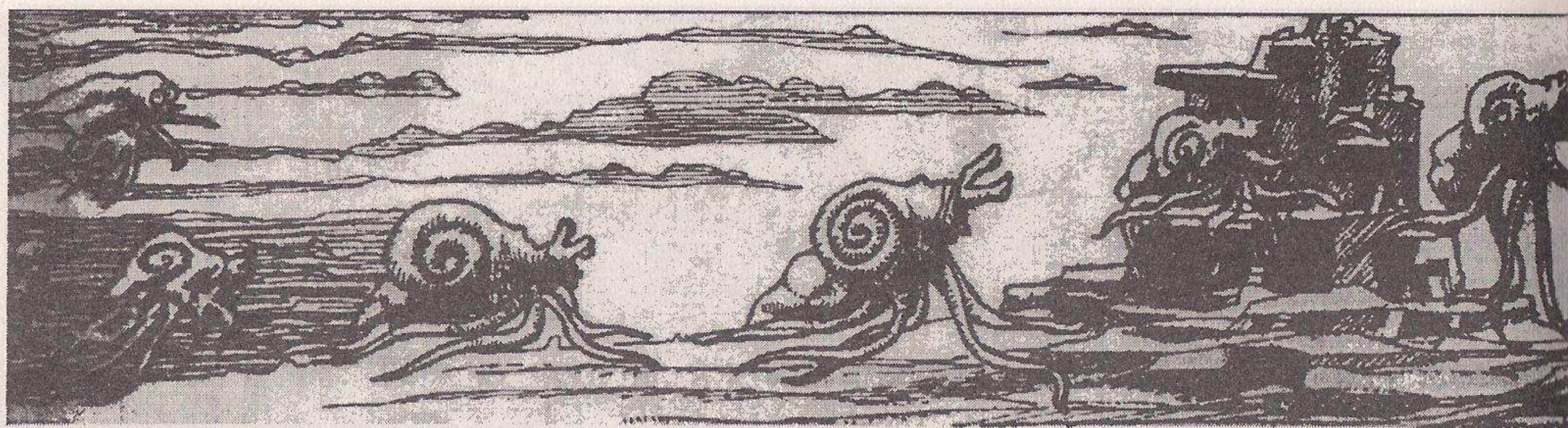
lettered "EXIT" in red and white, or do whatever else may seem appropriate — and every visitor will know, without a conscious thought, that pseudo- portal's purpose, and how to make it do its job.

At first this idea may seem mere trickery. After all, this new invention, which we decorate to look like a door, is not really a door. It is not at all like what we used to mean by door, to wit: hinged, swinging slab of wood, cut into wall. The inner details are all wrong. Names and symbols, like analogies, are only partial truths; they work by taking many-levelled descriptions of different things and chopping off all of what seem the small details — that is the one's which matter least to our presently intended purposes. But, still, what matters is that whatever symbol or icon, token or sign we choose should re-mind us of the use we seek — which, for that not-quite-door, should represent some way to go from one place to another. Who cares how it works, so long as it works! It does not even matter if that "door" leads to anywhere: in *True Names*, nothing ever leads anywhere; instead, the protagonists' bodies never move at all, but remain plugged-in to the network while programs change their representations of the simulated realities!

Isn't it interesting how the ordinary brain lacks any real sense of where it is! To be sure, most modern, educated people know that thought proceeds inside the head — but that is something brains don't know, unless they're told. In fact, without the help of education, brains don't even know that brains exist. Perhaps we tend to place the seat of thought behind the face, because that's where so many sense-organs are located. And even that impression is somewhat wrong: for example, the brain-centres for vision are far away from the eyes, away in the very back of the head, where no unaided brain would ever expect them to be.
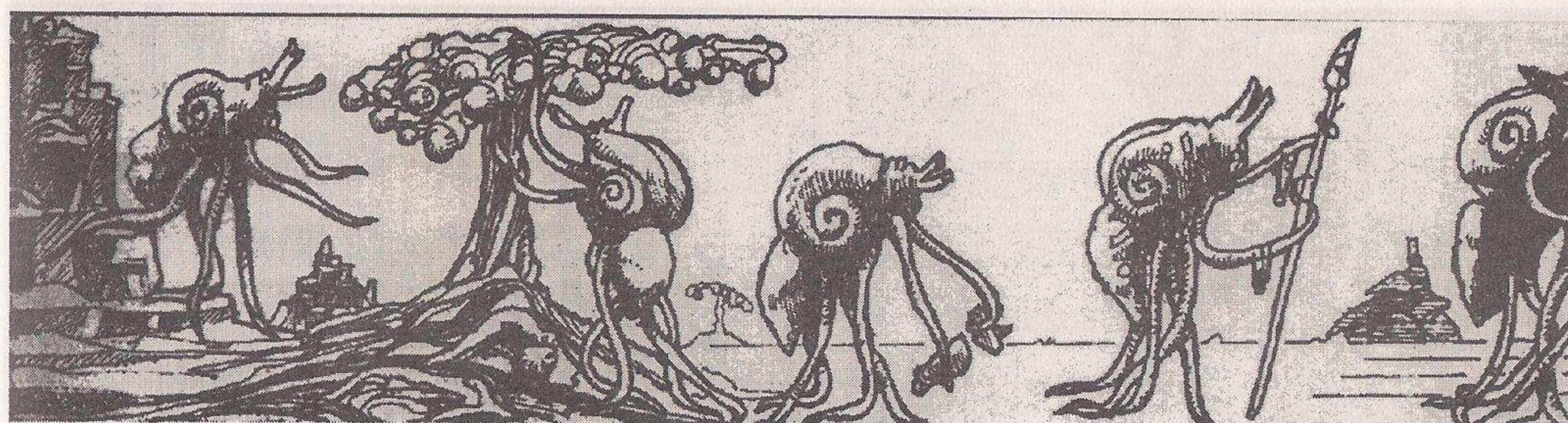
An icon's job is not at all to represent the truth — that is, the truth of how the designated object, or program, works. An icon's purpose is, instead, to represent a way an object or a program can be used! And, since the idea of a use is in the user's mind — and not inside the thing, itself — the form and figure of the icon must be suited to the symbols that the user has acquired in it's own development. That is, it has to be connected to whatever mental processes are already one's most fluent, expressive, tools for expressing intentions.

This principle, of choosing symbols and icons which express the functions of things — or rather, their users' intended attitudes toward them — was already second nature to the designers of earliest fast-interaction computer systems, namely, the early computer games. In the 1970's the meaningful-icon idea was developed for personal computers by Alan Kay's research group at Xerox, but it was only in the early 1980's, after further work by Steven Jobs' research group at Apple Computer, that this concept entered the mainstream of the computer revolution, in the body of the Macintosh computer.

There have also been a few less-publicised attempts to find iconic ways to represent, rather than the programs' uses, more information about how the programs work, themselves. That would have value for the different kind of enterprise, of making it easier for a programmer to construct new programs by modifying old ones, by making representations which reveal more about the program's structures rather than their functions. Such attempts have been less successful, on the whole, perhaps because one is forced to delve too far inside the lower-level details of how the programs work.

But I am convinced that the days of programming as we know it are numbered, and that eventually we will construct large computer systems not by anything resembling today's meticulous but conceptually-impoverished procedural specifications. Instead,

we'll express our intentions about what should be done, in terms, or gestures, or examples, at least as resourceful as our ordinary, everyday methods for expressing our wishes and convictions. Then these expressions will be submitted to immense, intelligent, intention-understanding programs which will themselves construct the actual, new programs. We shall no longer be burdened with the need to understand all the smaller details of how computer codes work. All of that will be left to those great utility programs, which will perform the arduous tasks of of applying what we have embodied in them, once and for all, of what we know about the arts of lower-level programming. Then, once we learn better ways to tell computers what we want them to get done, we will be able to return to the more familiar realm of expressing our own wants and needs. *For, in the end, no user really cares about how a program works, but only about what it does — in the sense of the intelligible effects it has on other things with which the user is concerned.*

In order for that to happen, though, we will have to invent and learn to use new technologies for "expressing intentions". To do this, we will have to break away from our old, though still evolving, programming languages, which are useful only for describing processes. But this brings with it some very serious risks!

The first risk is that it is always dangerous to try to relieve ourselves of the responsibility of understanding exactly how our wishes will be realised — when we leave the choice of means to any servants we may choose — no matter whether we program them or not. For, the greater the range of possible methods we leave to them, the more we expose ourselves, to accidents and incidents in which we may not realise, perhaps until it is too late to turn back, that our goals were misinterpreted, perhaps even maliciously. We see this in such classic tales of fate as Faust, the Sorcerer's
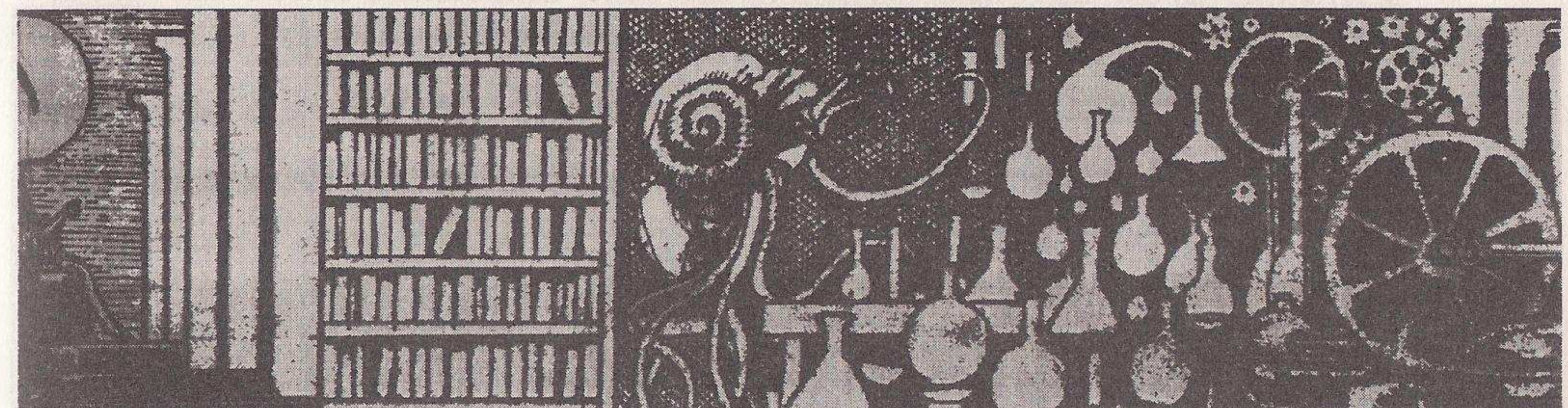
Apprentice, or *The Monkey's Paw* (W.W. Jacobs).

A second risk is exposure to the consequences of self-deception. It is always tempting to say to oneself, when writing a program, or writing an essay, or, for that matter, doing almost anything, that "*I know what I would like to happen, but I can't quite express it clearly enough*". However, that concept itself reflects a too- simplistic self-image, which portrays one's own self as existing, somewhere in the heart of one's mind (so to speak), in the form of a pure, uncomplicated entity which has pure and unmixed wishes, intentions, and goals. This pre-Freudian image serves to excuse our frequent appearances of ambivalence; we convince ourselves that clarifying our intentions is a mere matter of straightening-out the input-output channels between our inner and outer selves. The trouble is, we simply aren't made that way, no matter how we may wish we were.

The ultimate risk comes when we greedy, lazy, master-minds are able at last to take that final step — to design goal-achieving programs which are programmed to make themselves grow increasingly powerful, by using learning and self-evolution methods which augment and enhance their own capabilities. It will be tempting to do this, not just for the gain in power, but just to decrease our own human effort in the consideration and formulation of our own desires. If some genie offered you three wishes, would not your first one be, "*Tell me, please, what is it that I want the most!*" The problem is that, with such powerful machines, it would require but the slightest accident of careless design for them to place their goals ahead of ours. The machines goals may be allegedly benevolent, as with the robots of *With Folded Hands*, by Jack Williamson, whose purpose is to protect us from ourselves. It may be seemingly on our behalf, as in *Colossus*, by D.H.Jones, who takes it on itself to save us from an
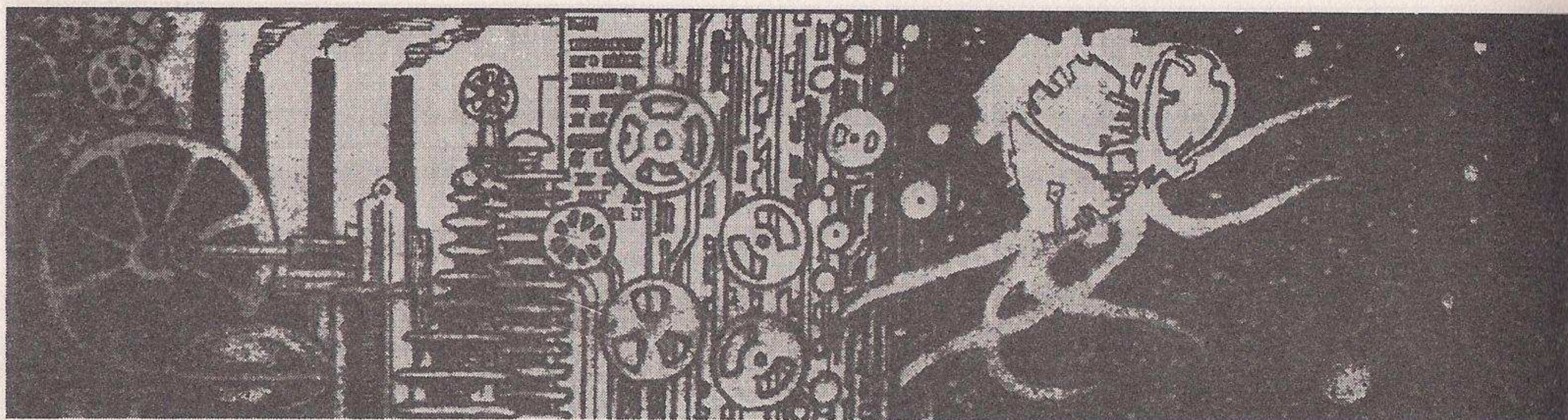
unsuspected enemy. In the case of Arthur C.Clarke's HAL, the machine we build decides that the mission we have given it is one we cannot properly appreciate. And in Vernor Vinge's computer-game fantasy, *True Names*, the dreaded Mailman (who teletypes its messages because it cannot spare the time to don disguises of dissimulated flesh) simply has ambitious motives of its very own.

Can a human user build itself a second, larger Self inside the machine? Is anything like that conceivable? And if it were, then would those simulated computer-people be in any sense the same as their humans models before them; would they be genuine extensions of those real people? Or would they merely be new, artificial, person-things which resemble their originals only through some sort of structural coincidence? What would those super- beings share with those whom they were based upon? To answer that, we have to think more carefully about what people are — about the nature of our selves.

Inside every normal person's mind there is a certain portion, which we call the Self, which uses symbols and representations very much like the magical signs and symbols used by sorcerers to work their spells. For do we not use magic incantations, in much the same ways, to control those hosts of systems within ourselves? How else can one do things one doesn't understand?

To begin with, we humans know less about the insides of our minds than we know about the outside world. Let me spell that out: compared to what we understand about how real objects work, we understand virtually nothing about what happens in the great computers inside our brains. Doesn't it seem strange that we can think, not knowing what it means to think? Isn't it bizarre that we can get ideas, yet not be able to explain what ideas are, or how they're found, or grown, or made? Isn't it strange how often we can better understand what our friends do than what we do ourselves?
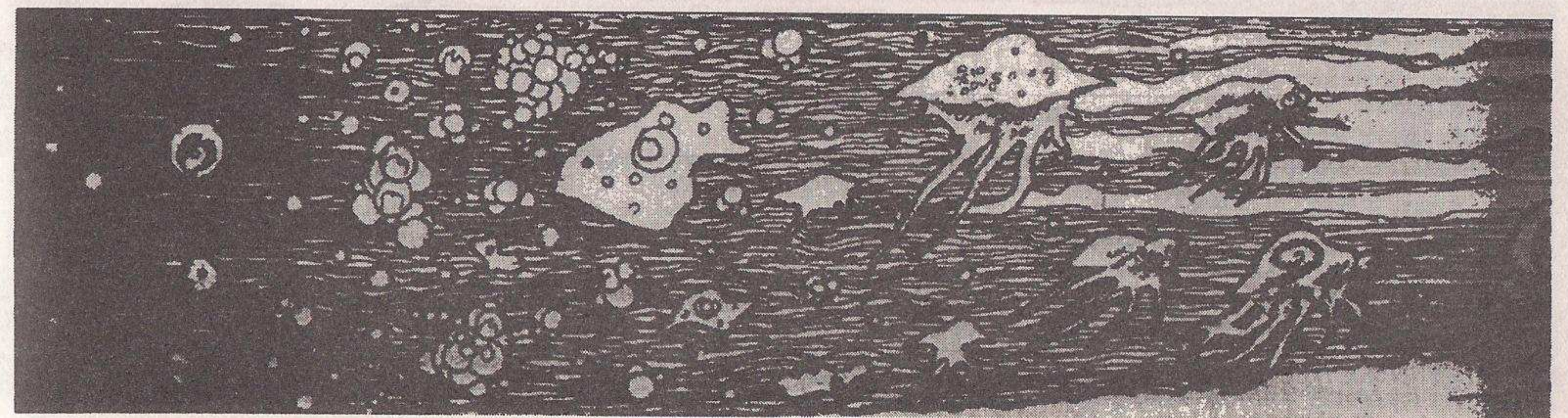
Consider again, how, when you drive, you guide the immense momentum of a car, not knowing how its engine works, or how its steering-wheel directs the vehicle toward left or right. Yet, when one comes to think of it, it is the same with our own bodies; so far as conscious thought is concerned, the way you operate your mind is very similar: you set yourself in a certain goal-direction — much as though to turn a mental steering wheel to set a course for your thoughts to take. All you are aware of is some general intention — *"It's time to go: where is the door?"* — and all the rest takes care of itself. But did you ever consider the complicated processes involved in such an ordinary act as, when you walk, to change the direction you're going in? It is not just a matter of, say, taking a larger or smaller step on one side, the way one changes course when rowing a boat. If that were all you did, when walking, you would tip over and fall toward the outside of the turn.

Try this experiment: watch yourself carefully while turning — and you'll notice that, before you start the turn, you tip yourself in advance; this makes you start to fall toward the inside of the turn; then, when you catch yourself on the next step, you end up moving in a different direction. When we examine that more closely, it all turns out to be dreadfully complicated: hundreds of interconnected muscles, bones, and joints are all controlled simultaneously, by interacting programs which locomotion-scientists still barely comprehend. Yet all your conscious mind need do, or say, or think, is *"Go that way!"* — assuming that it makes sense to speak of the conscious mind as thinking anything at all. So far as one can see, we guide the vast machines inside ourselves, not by using technical and insightful schemes based on knowing how the underlying mechanisms work, but by tokens, signs, and symbols which are entirely as fanciful as those of Vinge's sorcery. It even makes one wonder if it's fair for us to gain our ends by
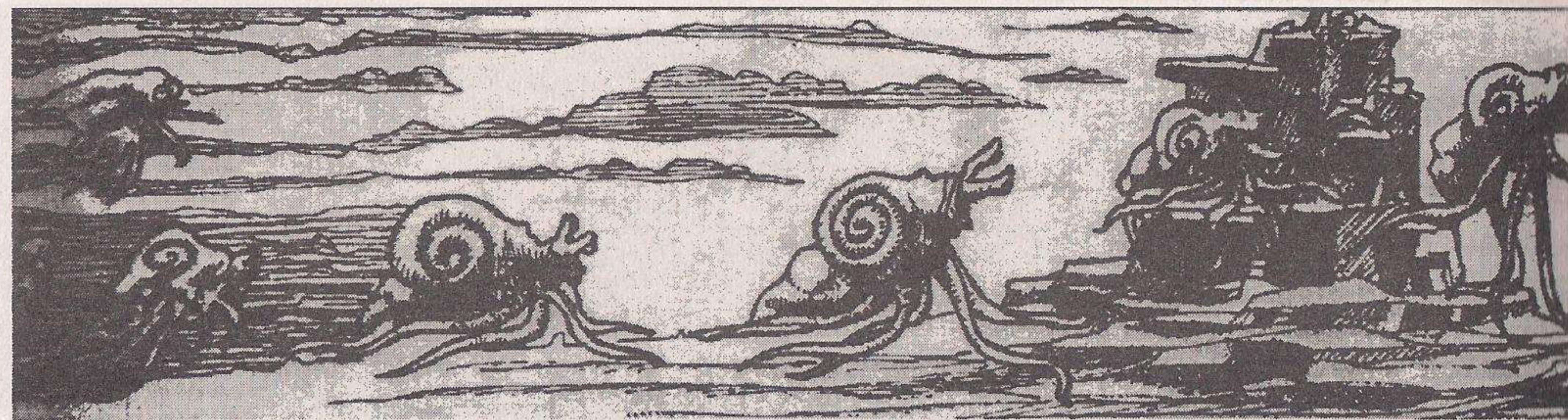
casting spells upon our helpless hordes of mental under-thralls.

Now, if we take this only one more step, we see that, just as we walk without thinking, we also think without thinking! That is, we just as casually exploit the agencies which carry out our mental work. Suppose you have a hard problem. You think about it for a while; then after a time you find a solution. Perhaps the answer comes to you suddenly; you get an idea and say, *"Aha, I've got it. I'll do such and such."* But then, were someone to ask how you did it, how you found the solution, you simply would not know how to reply. People usually are able to say only things like:

"I suddenly realised…"

*"I just got this idea…"*

"It occurred to me that…"

"It came to me…"

If people really knew how their minds work, we wouldn't so often act on motives which we don't suspect, nor would we have such varied theories in Psychology. Why, when we're asked how people come upon their good ideas, are we reduced to superficial reproductive metaphors, to talk about "conceiving" or "gestating", or even "giving birth" to thoughts? We even speak of "ruminating" or "digesting" — as though the mind were anywhere but in the head. And, worst of all, we see ourselves as set adrift upon some chartless mental sea, with minds like floating nets which wait to catch whatever sudden thought-fish may get trapped inside! If we could see inside our minds we'd surely say more useful things than *"Wait. I'm thinking."*

People frequently tell me that they're absolutely certain that no computer could ever be sentient, conscious, self-willed, or in any other way "aware" of itself. They're often shocked when I ask back what makes them sure that that they, themselves, possess
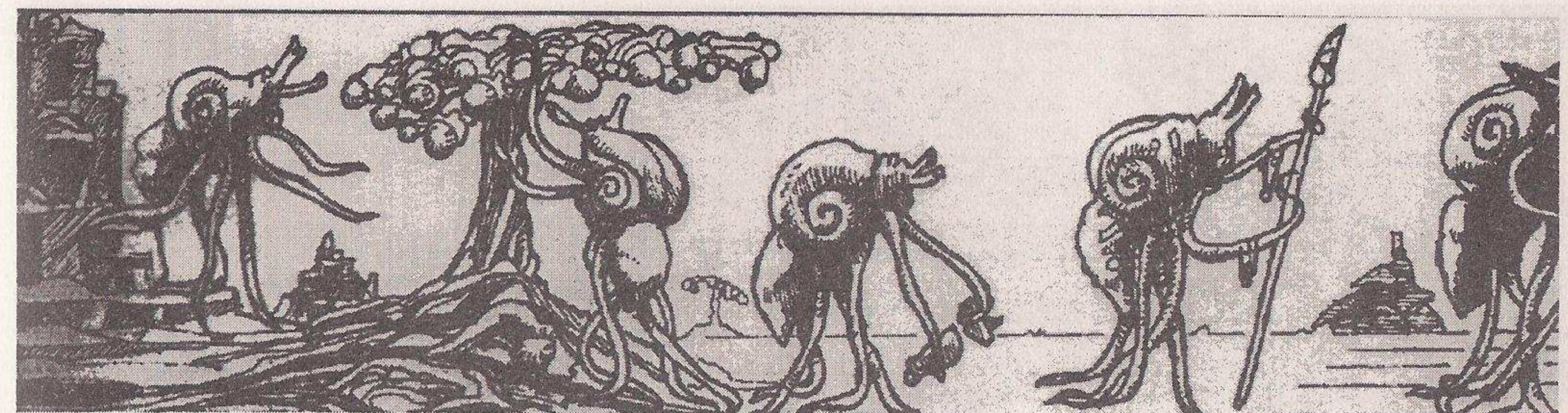
these admirable qualities. The reply is that, if they're sure of anything at all, it is that *"I'm aware — hence I'm aware."*

Yet, what do such convictions really mean? Since "Self-awareness" ought to be an awareness of what's going on within one's mind, no realist could maintain for long that people really have much insight, in the literal sense of seeing-in.

Isn't it remarkable how certainly we feel that we're self-aware — that we have such broad abilities to know what's happening inside ourselves? The evidence for that is weak, indeed. It is true that some people seem to have special excellences, which we sometimes call "insights", for assessing the attitudes and motivations of other people. And certain individuals even sometimes make good evaluations of themselves. But that doesn't justify our using names like insight or self-awareness for such abilities. Why not simply call them "person-sights" or "person- awarenesses?" Is there really reason to suppose that skills like these are very different from the ways we learn the other kinds of things we learn? Instead of seeing them as "seeing-in," we could regard them as quite the opposite: just one more way of "figuring out." Perhaps we learn about ourselves the same ways that we learn about un-Self-ish things.

The fact is, the parts of ourselves which we call "self-aware" are only a small fraction of the entire mind. They work by building simulated worlds of their own — worlds which are greatly simplified, in comparison with either the real world outside, or with the immense computer systems inside the brain: systems which no one can pretend, today, to understand. And our worlds of simulated awareness are worlds of simple magic, wherein each and every imagined object is invested with meanings and purposes. Consider how one can scarcely but see a hammer except as something to hammer with, or see a ball except as something to throw and catch. Why are we so constrained to

perceive things, not as they are, but as they can be used? *Because the highest levels of our mind are goal-directed problem-solvers.* That is to say that all the machines inside our heads evolved, originally, to meet various built- in or acquired needs, for comfort and nutrition, for defence and for reproduction. Later, over the past few million years, we evolved even more powerful sub-machines which, in ways we don't yet understand, seem to correlate and analyse to discover which kinds of actions cause which sorts of effects; in a word, to discover what we call knowledge. And though we often like to think that knowledge is abstract, and that our search for it is pure and good in itself — still, we ultimately use it for its ability to tell us what to do to to gain whichever ends we seek (even when we conclude that in order to do that, we may first need to gain yet more and more knowledge). Thus, because, as we say, "knowledge is power", our knowledge itself is enmeshed in those webs of ways we reach our goals. And that's the key: it isn't any use for us to know, unless our knowledge tells us what to do. This is so wrought into the conscious mind's machinery that it seems foolishness to say it: *no knowledge is of any use unless we have a use for it.*

Now we come to the point of consciousness: it is the part of the mind most specialised for knowing how to use the other systems which lie hidden in the mind. But it is not a specialist in knowing how those systems actually work, inside themselves. Sometimes, of course, it pays to know such things: if you know how something works then you'll be better at repairing it when it breaks; furthermore, the better you understand a mechanism, the easier to find new ways to adapt it to other purposes.

Thus, a person who sustains an injured leg may begin, for the first time, consciously to make theories about how walking works: *"To turn to the left, I'll have to push myself that way"* — and then one has to figure out, *with what*? Similarly, when we're forced to
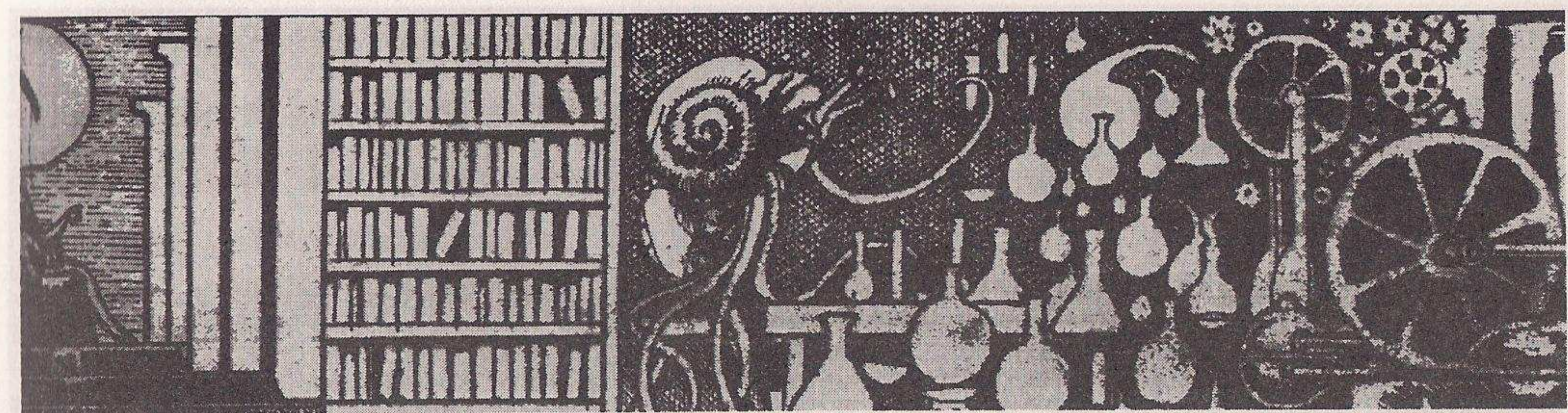
face an unusually hard problem, we sometimes become more reflective, and try to understand something of how the rest of the mind ordinarily solves problems; at such times one finds oneself saying such things as, *"Now I must get organised. Why can't I concentrate on the important questions and not get distracted by those other inessential details?"*

Paradoxically, it is often at those very moments — the times when our minds come closer than usual to comprehending how they themselves work, and we perhaps succeed in engaging what little knowledge we do have about our own mechanisms, so that we can alter or repair them — paradoxically, these are often just the times when, consciously, we think our mental processes are not working so well and, as we say, we feel "confused". Nonetheless, even these more "conscious" attempts at self-inspection still remain mostly confined to the pragmatic, magic world of symbol-signs. No human being seems ever to have succeeded in using self-analysis to discover much about how the programs underneath might really work.

I say again that we, too, drive ourselves — our minds, our cars, our bodies and our games — the self-same ways. The players of our computer-game machines control and guide what happens in their great machines: by using symbols, spells and images — as well as secret, private names. And we, ourselves — that is, the parts of us that we call "consciousness" — do very much the same: in effect, we sit in front of mental computer-terminals, attempting to steer and guide the great unknown engines of the mind, not by understanding how those engines work, but just by selecting simple names from menu-lists of symbols which appear, from time to time, upon our mental screen-displays.

But really, when one thinks of it, it scarcely could be otherwise! Consider what would
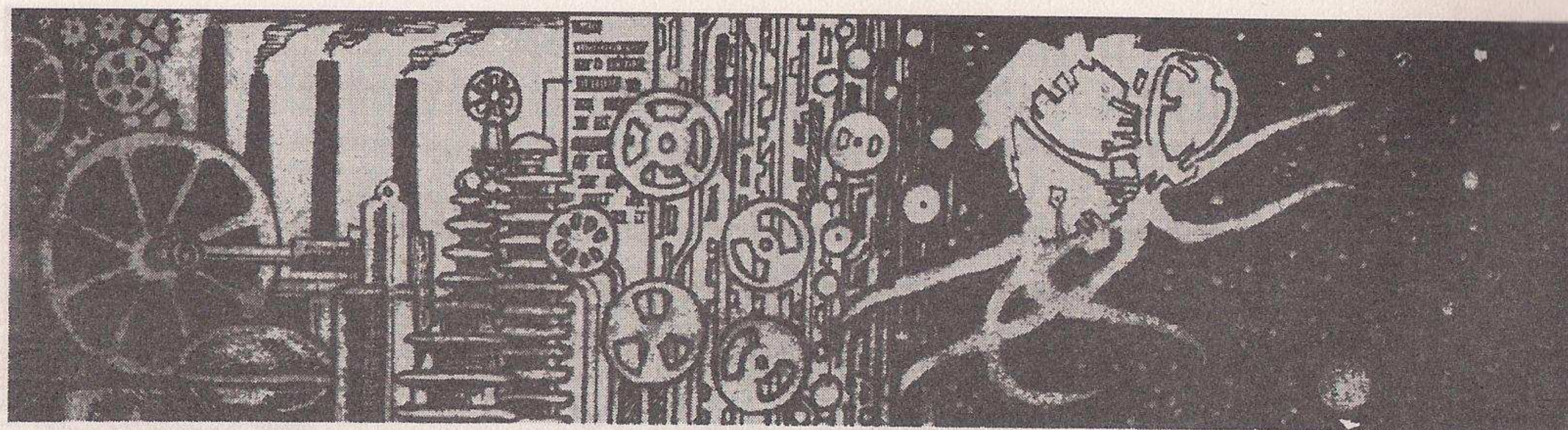
happen if our minds indeed could really see inside themselves. What could possibly be worse than to be presented with a clear view of the trillion-wire networks of our nerve-cell connections? Our scientists have peered at those structures for years with powerful microscopes, yet failed to come up with comprehensive theories of what those networks do and how.

What about the claims of mystical thinkers that there are other, better ways to see the mind? One way they recommend is learning how to train the conscious mind to stop its usual sorts of thoughts and then attempt (by holding very still) to see and hear the fine details of mental life. Would that be any different, or better, than seeing them through instruments? Perhaps — except that it doesn't face the fundamental problem of how to understand a complicated thing! For, if we suspend our usual ways of thinking, we'll be bereft of all the parts of mind already trained to interpret complicated phenomena. Anyway, even if one could observe and detect the signals which emerge from other, normally inaccessible portions of the mind, these would probably make no sense to the systems involved with consciousness. To see why not, let's return once more to understanding such simple things as how we walk.

Suppose that, when you walk about, you were indeed able to see and hear the signals in your spinal chord and lower brain. Would you be able to make any sense of them? Perhaps, but not easily. Indeed, it is easy to do such experiments, using simple bio-feedback devices to make those signals audible and visible; the result is that one may indeed more quickly learn to perform a new skill, such as using an injured limb better. However, just as before, this does not appear to work through gaining a conscious understanding of how those circuits work; instead the experience is very much like business as usual; we gain control by acquiring just one more form of semi-conscious
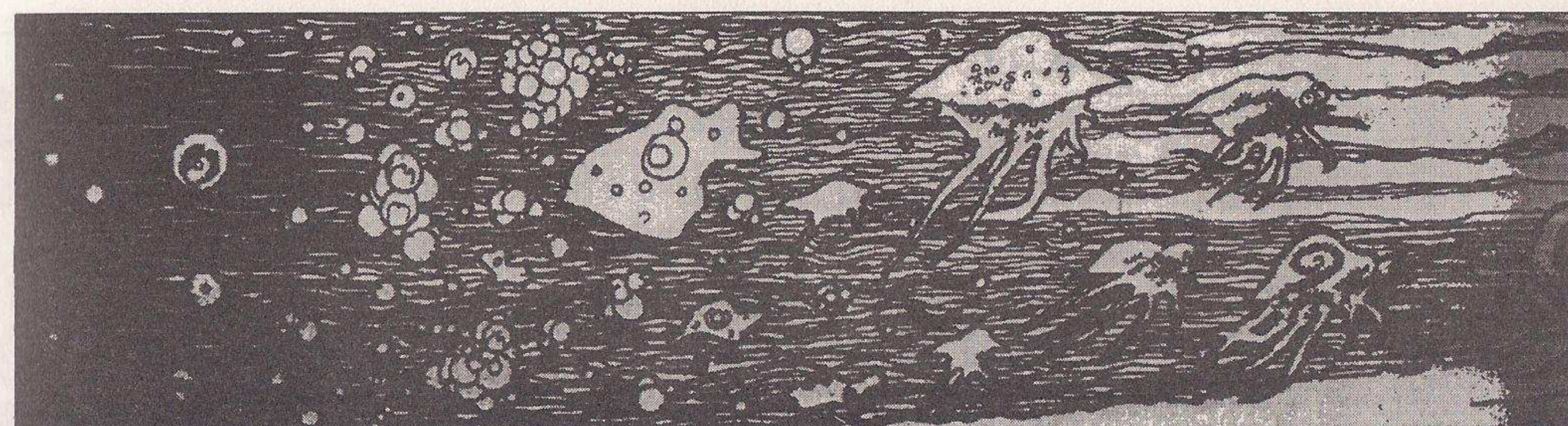
symbol-magic. Presumably what happens is that a new control system is assembled somewhere in the nervous system, and interfaced with superficial signals we can know about. However, bio-feedback doe not appear to provide any different insights into how learning works than do our ordinary, built-in senses.

In any case, our locomotion-scientists have been tapping such signals for decades, using electronic instruments. Using that data, they, they have been able to develop various partial theories about the kinds of interactions and regulation-systems which are involved. However, these theories have not emerged from relaxed meditation about, or passive observation of those complicated biological signals; what little we have learned has come from deliberate and intense exploitation of the accumulated discoveries of three centuries of our scientists' and mathematicians' study of analytical mechanics and a century of newer theories about servo-control engineering. It is generally true in science that mere observational "insights" rarely leads to new understandings. One must first have some glimmerings of the form of some new theory, or of a novel method for describing processes: one needs a "new idea". Some other avenue must supply new magic tokens for us to use to represent the "causes" and the "purposes" of those phenomena.

But where do we get the new ideas we need? For any single individual, of course, most concepts come from the societies and cultures that one grows up in. As for the rest of our ideas, the ones we "get" all by ourselves, these, too, come from societies — but, now, the ones inside our individual minds. For, a human mind is not in any real sense a single entity, nor does a brain have a single, central way to work. Brains do not secrete thought the way livers secrete bile; a brain consists of a huge assembly different sorts of sub-machines parts which each do different kinds of jobs — each useful to
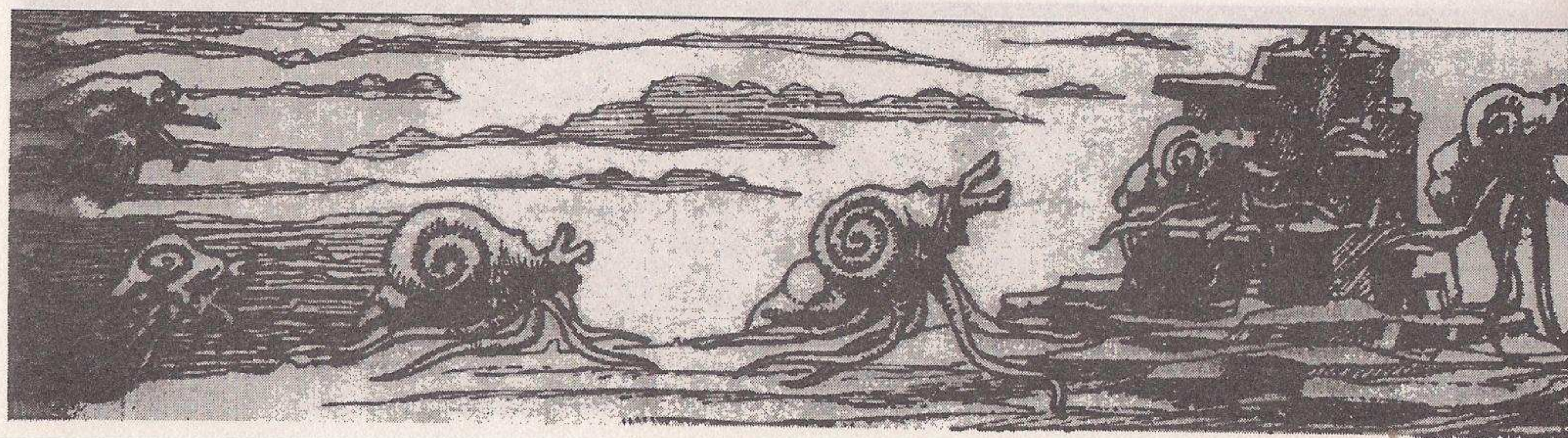
some other parts. For example, we use distinct sections of the brain for hearing the sounds of words, as opposed to recognising other kinds of natural sounds or musical pitches. There is even solid evidence that there is a special part of the brain which is specialised for seeing and recognising faces, as opposed to visual perception of other, ordinary things. I suspect that there are, inside the cranium, perhaps as many as a hundred different kinds of computers, each with a somewhat different basic architecture; these have been accumulating over the past four hundred million years of our evolution. They are wired together into a great multi-resource network of specialists, in which each section knows how to call on certain other sections to get things done which serve their purposes. And each sub-system uses different styles of programming, and different forms of representations; there is no standard language-code.

Accordingly, if one part of that Society of Mind were to inquire about another part, the two would most likely turn out to use substantially different languages and architectures. In such a case, if A were to ask B a question about how it works, then how could B understand that question, and how could A understand the answer? Communication is often difficult enough between two different human tongues. But the signals used by the different portions of the human mind are even less likely to be even remotely as similar as two human dialects with sometimes-corresponding roots. More likely, they are simply too different to communicate at all — except through symbols which initiate their use.

Now, one might ask, *"Then, how do people doing different jobs communicate, when they have different backgrounds, thoughts, and purposes?"* The answer is that this problem is easier, because a person knows so much more than do the smaller fragment of that person's mind. And, besides, we all are raised in similar ways, and this provides a
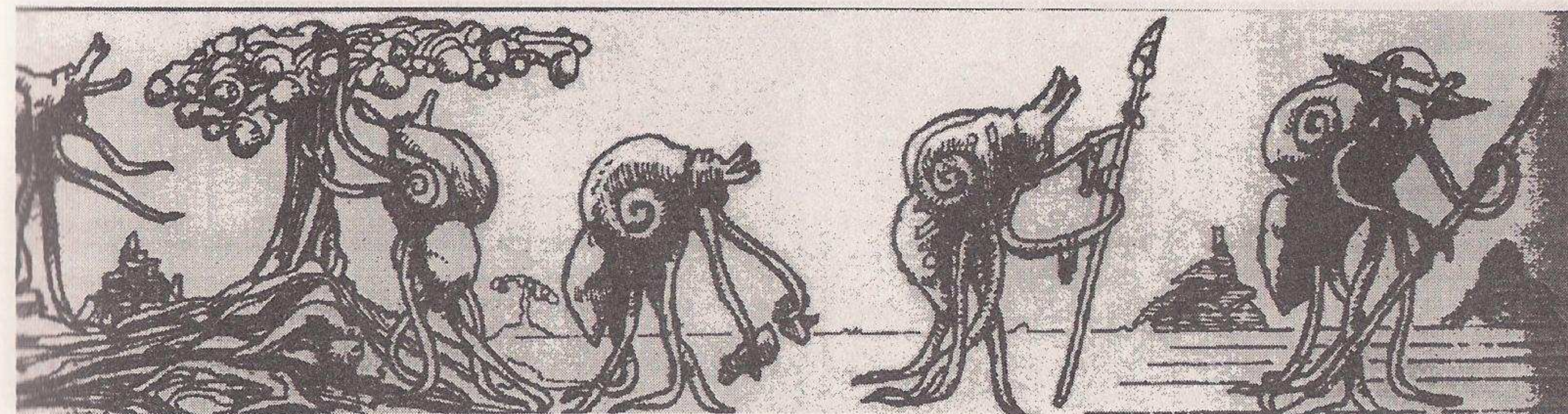
solid base of common knowledge. But, even so, we overestimate how well we actually communicate.

The many jobs that people do may seem different on the surface, but they are all very much the same, to the extent that they all have a common base in what we like to call "common sense" — that is, the knowledge shared by all of us. This means that we do not really need to tell each other as much as we suppose. Often, when we "explain" something, we scarcely explain anything new at all; instead, we merely show some examples of what we mean, and some non-examples; these indicate to the listener how to link up various structures already known. In short, we often just tell "which" instead of "what".

Consider how poorly people can communicate about so many seemingly simple things. We can't say how we balance on a bicycle, or how we tell a shadow from a real thing, or, even how one fetches facts from memory. Again, one might complain, *It isn't fair to complain about our inability to express things about things like seeing or balancing or remembering. Those are things we learned before we even learned to speak!* But, though that criticism is fair in some respects, it also illustrates how hard communication must be for all the sub-parts of the mind which never learned to talk at all — and these are most of what we are. The idea of "meaning" itself is really a matter of size and scale: it only makes sense to ask what something means in a system which is large enough to have many meanings. In very small systems, the idea of something having a meaning becomes as vacuous as saying that a brick is a very small house.

Now it is easy enough to say that the mind is a society, but that idea by itself is useless unless we can say more about how it is organised. If all those specialised parts were equally competitive, there would be only anarchy, and the more we learned, the less

we'd be able to do. So there must be some kind of administration, perhaps organised roughly in hierarchies, like the divisions and subdivisions of an industry or of a human political society. What would those levels do? In all the large societies we know which work efficiently, the lower levels exercise the more specialised working skills, while the higher levels are concerned with longer-range plans and goals. And this is another fundamental reason why it is so hard to translate between our conscious and unconscious thoughts! The kinds of terms and symbols we use on the conscious level are primarily for expressing our goals and plans for using what we believe we can do — while the workings of those lower level resources are represented in unknown languages of process and mechanism. So when our conscious probes try to descend into the myriads of smaller and smaller sub-machines which make the mind, they encounter alien representations, used for increasingly specialised purposes.

Why is it so hard to translate between conscious and unconscious thoughts? Because their languages are so different. The kinds of terms and symbols we use on the conscious level are primarily for expressing choices between, and uses of, things we know — but those things, themselves, are represented in very different ways. Furthermore, as we descend into the myriads of smaller and smaller sub-machines which make the mind, the representations they use for their concerns become more and more specialised; that is, they must use smaller and smaller inner "languages" — and that makes special problems of a different sort.

The trouble is, these tiny inner "languages" soon become incomprehensible, for a reason which is simple and inescapable. This is not the same as the familiar difficulty of translating between two different human languages; we understand the nature of *that* problem: it is that human languages are so huge and rich that it is hard to narrow
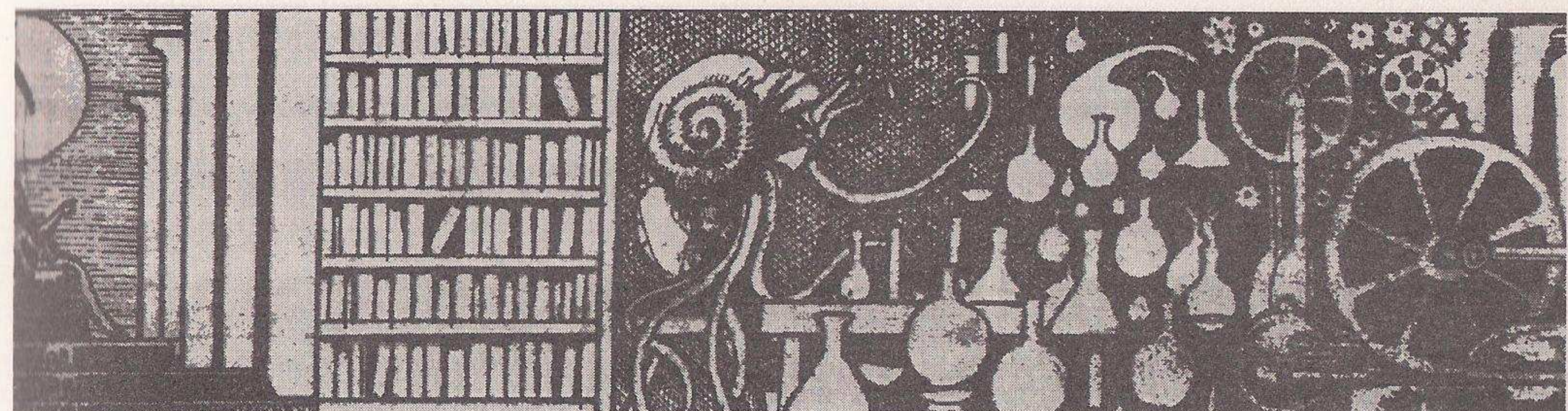
meanings down: we call that "ambiguity". But, when we try to understand the tiny languages at the lowest levels of the mind, we have the opposite problem — because *the smaller be two languages, the harder it will be to translate between them, not because there are too many meanings but too few. The fewer things two systems do, the less likely that something one of them can do will correspond to anything at all the other one can do.* And then, no translation is possible. Why is this worse than when there is much ambiguity? Because, although that problem seems very hard, still, even when a problem seems hopelessly complicated, there always can be hope. But, when a problem is hopelessly simple, there can't be any hope at all.

Now, finally, let's return to the question of how much a simulated life inside a world inside a machine could be like our ordinary, real life, "out here"? My answer, as you know by now, is that it could be very much the same — since we, ourselves, as we've seen, already exist as processes imprisoned in machines inside machines! Our mental worlds are already filled with wondrous, magical, symbol-signs, which add to everything we "see" a meaning and significance. In fact, all educated people have already learned how different are our mental worlds than the "real world" our scientists talk about.

Consider the table in your dining room; your conscious mind sees it as having familiar functions, forms, and purposes. A table is "a thing to put things on". However, our science tells us that this is only in the mind; the only thing all that's "really there" is a society of countless molecules; the table seems to hold its shape, only because some of those molecules are constrained to vibrate near one another, because of certain properties of the force-fields which keep them from pursuing independent. Similarly, when you hear a spoken word, your mind attributes sense and meaning to that sound — whereas, in physics, the word is merely a fluctuating pressure on your ear, caused by
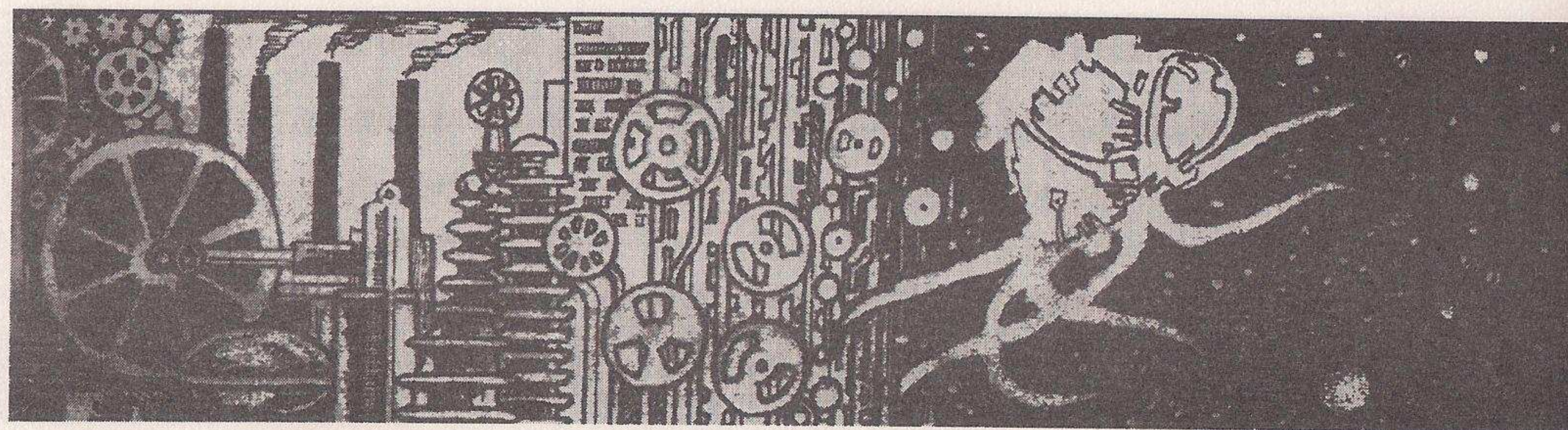
the collisions of myriads of molecules of air — that is, of particles whose distances, this time are less constrained.

And so — let's face it now, once and for all: each one of us already has experienced what it is like to be simulated by a computer!

"Ridiculous," most people say, at first: *"I certainly don't feel like a machine!"*

But what makes us so sure of that? How could one claim to know how something feels, until one has experienced it? Consider that either you are a machine or you're not. Then, if, as you say, you aren't a machine, then you are scarcely in any position of authority to say how it feels to be a machine.

"Very well, but, surely then, if I were a machine, then at least I would be in a position to know that!

Hah. That is a typically human, thoughtless presumption. It amounts to claiming that, *"I think, therefore I know how thinking works."* But as we've seen, there are so many levels of machinery between our conscious thoughts and how they're made that to say such a thing is as absurd as to say, *"I drive, therefore I know how engines work!"*

"Still, even if the brain is a kind of computer, you must admit that its scale is unimaginably large. A human brain contains many billions of brain cells — and, probably, each cell is extremely complicated by itself. Then, each cell is interlinked in complicated ways to thousands or millions of other cells. You can use the word machine for that but, surely, no one could ever build anything of that magnitude!"

I am entirely sympathetic with the spirit of this objection. When one is compared to a machine, one feels belittled, as though one is being regarded as trivial. And, indeed, such a comparison in truly insulting — so long as the name "machine" still carries the same meaning it had in times gone by. For thousands of years, we have used such
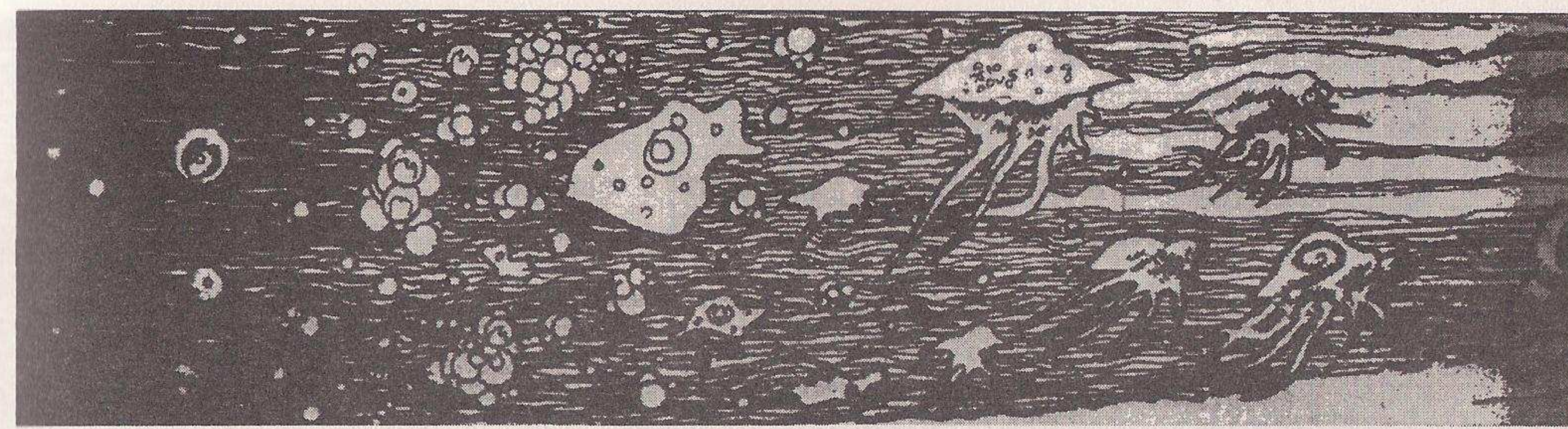
EVOLUTION IN PRACTICE:

1926 = The First Science Fiction Magazine

1930 = The First Science Fiction Fanzine

1937 = The First Science Fiction Convention

1939 = The First World Science Fiction Convention

**1957 = The First European Worldcon**

1987 = The First Issue of CRITICAL WAVE

words to arouse images of pulleys, levers, locomotives, typewriters, and simple other sorts of things; similarly, in modern times, the word "computer" has evoked thoughts about adding and subtracting digits, and storing them unchanged in tiny so-called "memories". However those words no longer serve our new purposes, to describe machines that think like us; for such uses, those old terms have become false names for what we want to say. Just as "house" may stand for either more, or nothing more, than wood and stone, our minds may be described as nothing more, and, yet far more, then just machines.

As to the question of scale itself, those objections are almost wholly out-of-date. They made sense in 1950, before any computer could store even a mere million bits. They still made sense in 1960, when a million bits cost a million dollars. But, today, that same amount of memory costs but a hundred dollars (and our governments have even made the dollars smaller, too) — and there already exist computers with billions of bits. At the moment I am writing this, some of my friends are building a computer which itself includes a million smaller computers. When we finally discover how to make intelligent programs, the task of building the machines for them to inhabit will very likely be a problem already solved. Already, the smallest parts of our present-day machines are approaching the size of cells, and only certain inefficiencies make them too hot to pack together even more closely.

The only thing missing is most of the knowledge we'll need to make such machines intelligent. Indeed, as you might guess from all this, the focus of my own research in Artificial Intelligence is to find ways to connect structures with functions through the use of symbols. When, if ever, will that get done? Never say *"never"*.

Marvin Minsky
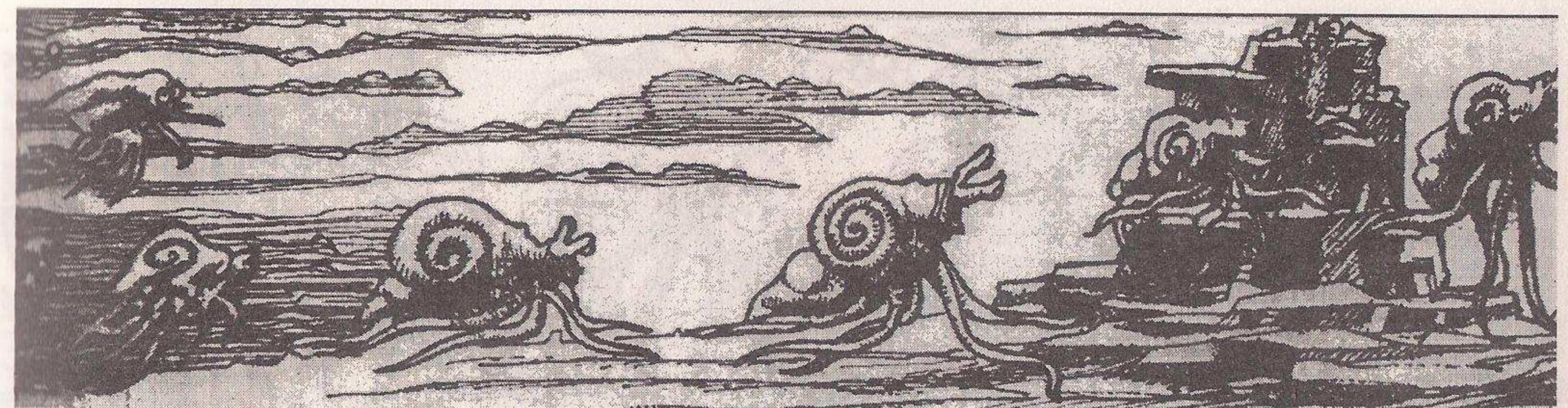
Chris Priest – best known for *A Dream of Wessex* – and Dave Langford – the acerbic man of letters, and indeed entire words in *Ansible*, his invaluable chronicle of the ins and outs of the world of sf – are also renowned for passing on the best gossip in the business. We were intrigued to listen in on them in conversation about *Evolution*'s Fan Guests of Honour…. but what does their title mean?

DL: Right, Chris, the *Evolution* people want 800 searing words that will rip the lid off Paul Kincaid and Maureen Porter. Where shall we begin?

CP: By avoiding Maureen ripping the lid off us! Call her Maureen Speller. She sets the cats on you if you say Porter.

DL: Oops. But remember that when they were finally married in June 1993, Maureen instantly didn't change her name again… although to be sure of catching everyone off-balance she did so later, in 1994, so now it's Maureen Kincaid Speller. Now, how about a few quips from your best-man speech at that wedding?

CP: The deal was, no speech necessary. I can't think of anything harder than making up one-line jokes about someone who does it for a living. Not a lot of people know that Paul is the man who gave the world those famous advertising slogans *"Guinness is Not Bad For You"*, *"Old Spice, the Appliance of Science"*, and *"Go To Work on a London Transport Bus"*.

DL: Meanwhile, Maureen freelances as a proofreader and copy-editor, which finally explains Iain M.Banks' *Feersum Endjinn*.

CP: And when *The Number of the Beast* was launched, they collaborated on *"Heinlein: Refreshes The Prats Other Bores Cannot Reach"*.

DL: I suppose we'd better inject a few sordid facts. Paul and Maureen have been staunch pillars of the *British Science Fiction Association* in various capacities for years
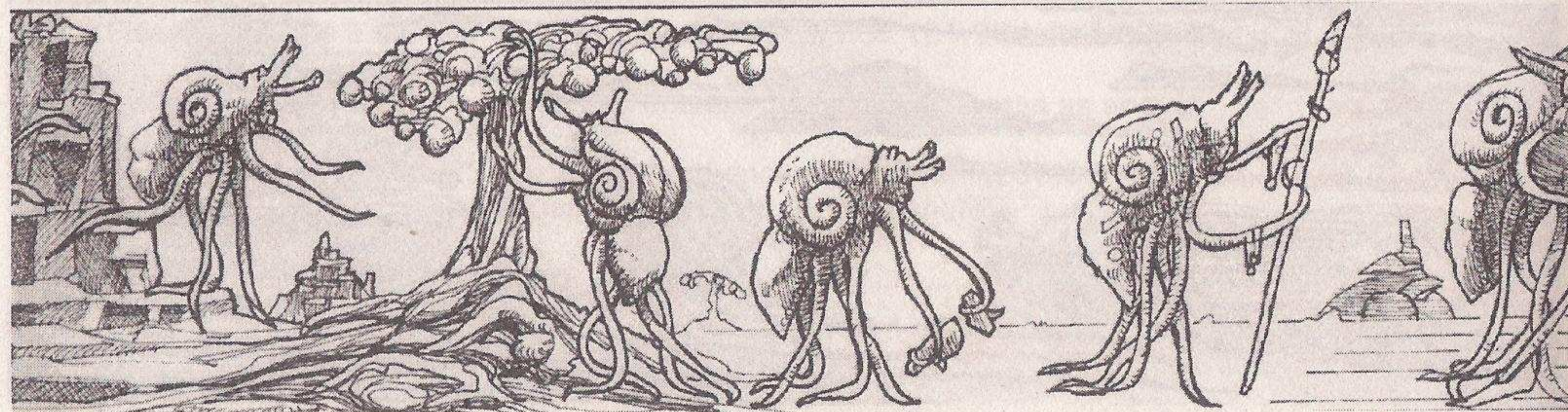
and years, and have kept the dear old organisation going through some difficult times. As Maureen proudly puts it, *"Our BSFA Tombola table has become a regular convention landmark,"* and we all know the way the bar and the main programme instantly empty when the BSFA tombola opens…

CP: This is no good. We want to get cheap laughs by exposing shameful secrets.

DL: I thought we agreed we weren't going to talk about Paul's writing. And as for his sf reviews, he even says *"postmodern"*! He may know what it means!

CP: I was thinking of Maureen's infestation of cats, dozens and dozens of them –

DL: Well, five.

CP: And the way she's carefully trained them to walk over her computer keyboard and delete *Windows* icons so she can't use electronic mail.
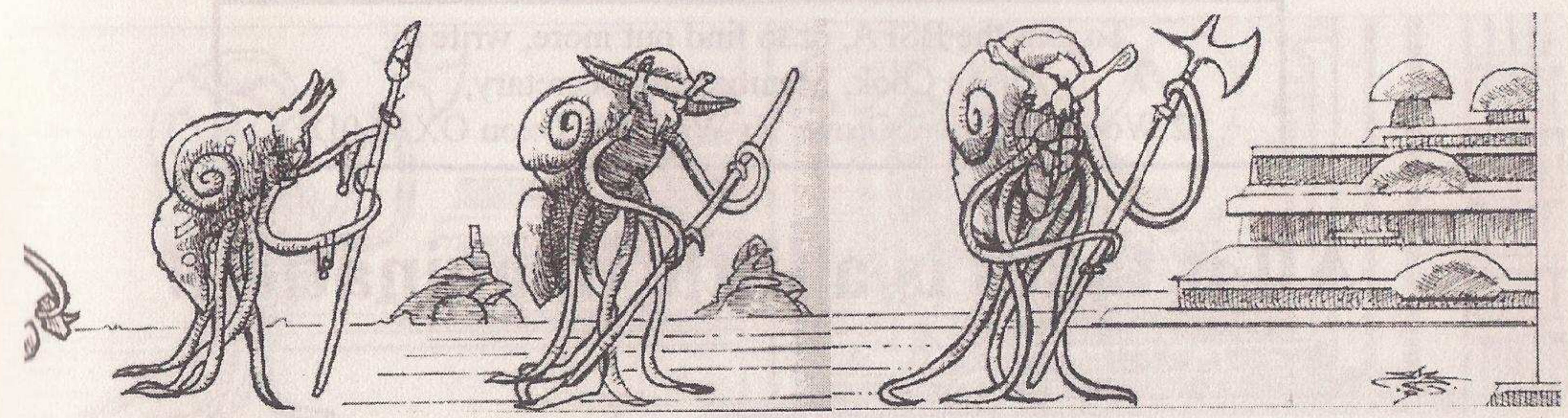
DL: The last e-mail I had from that direction confided her terror of being run over just now, since one fearsome kitten called Snufkin has taken to swinging by its claws from her bare arm — making her look like *"a junkie with very odd habits"*. Just to restore the balance, I should reveal that Paul once did a fanzine called *To Craunch the Marmoset*.
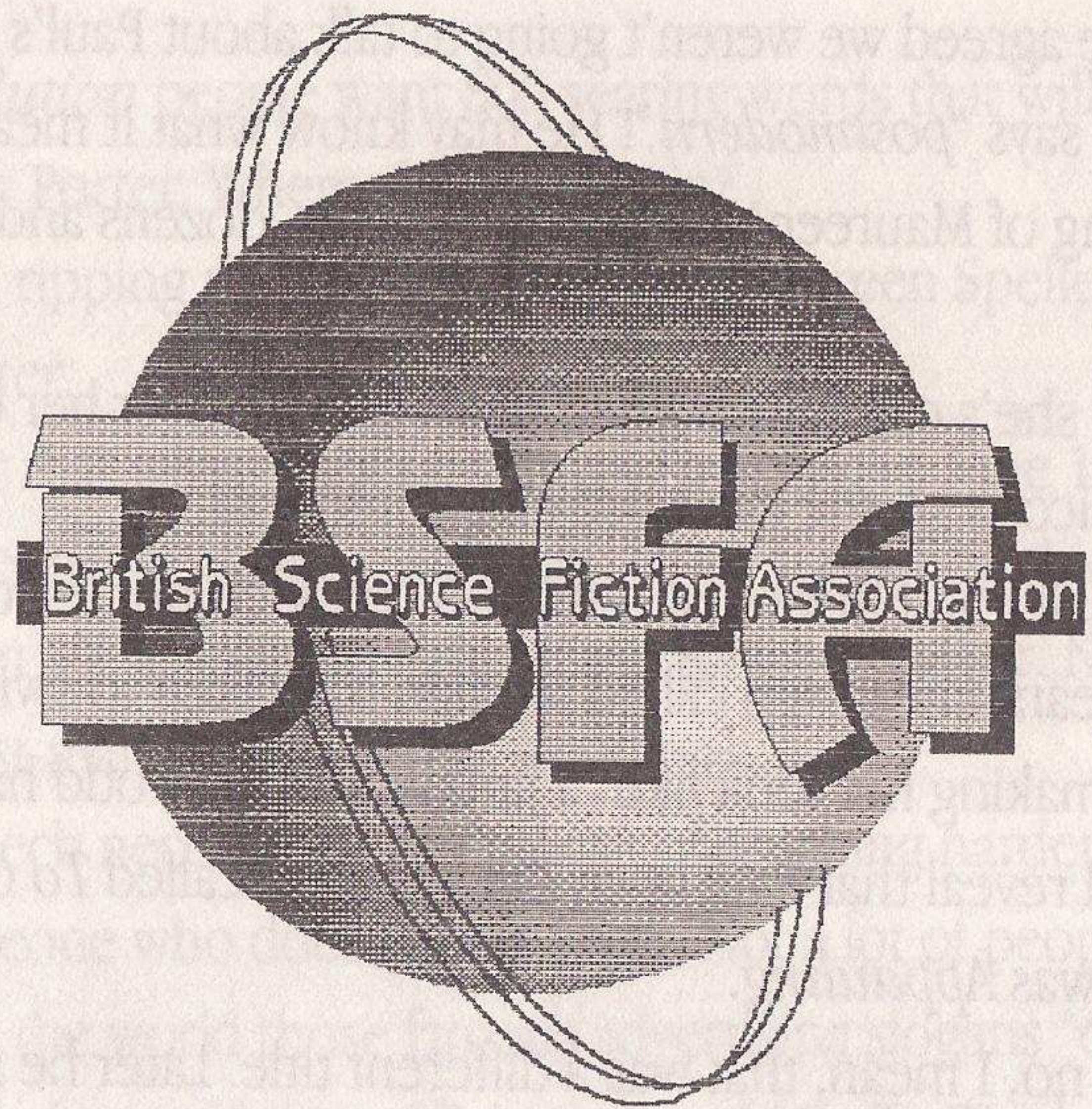
CP: I thought it was *Appauling*.

DL: Yes it was — no, I mean, that was a different title. Later he also puzzled one amateur press association (a literary one run by Maureen — she's much involved with UK APAs) with his title *Sublimity, Grandeur, Sense of the Terrific…* until I rumbled the source, because I have a china phrenology head too.

CP: I don't intend to touch a straight line like that.

DL: Then Paul switched to *Mudsills and Greasy Mechanicals*, a fantastically obscure reference to the period of the US Civil War (one of his great interests). I annoyed him by telling everyone the allusion was to L.Ron Hubbard's theology, and these were the

next two human evolutionary stages after the Boo-Hoo or Grim Weeper — a kind of lachrymose clam which *is* part of the Hubbard nonsense.

CP: I think we should say that Maureen and Paul's place in Folkestone is a most civilized house… enhanced by its haunting, mysterious fragrance of cat-pee, the front door with the broken pane of glass hanging welcomingly over the handle, the pre-19th century plumbing, and everywhere the evidence of the time-saving approach they have shown to house repairs. On the whole, though, I think the Kincaid/Speller residence could do with a few more books. The last time I was there I noticed an entire twelve-inch stretch where you could see not only the wall but also the floor.

DL: Great hospitality there, though. Spiffy curries – tandoori à la cat-pee is a culinary breakthrough. And Paul and Maureen are always good fun to swap evil sf gossip with.

CP: Until they read this.

DL: Chris, before we close we have to explain our title to the palpitating readership.

CP: Title? What title? I see no title.

DL: That nickname you and I have been known to use for Maureen… WP{WP}UK.LEX.

CP: Drat you, Langford. The general public isn't ready for feeble jokes about the file name of *WordPerfect 5.1*'s spelling checker. Or, as they call it, the…

DL: Oh all right. Let's have a drink.

Chris Priest and Dave Langford

The British Science Fiction Association was founded in 1958 and has always aimed to be a way for fans and writers alike to pass on information about what's happening in British sf. It publishes three magazines, *Matrix*, *Vector* and *Focus*, which carry reviews, announcements and all things useful. For more details about how to join, see their advert.
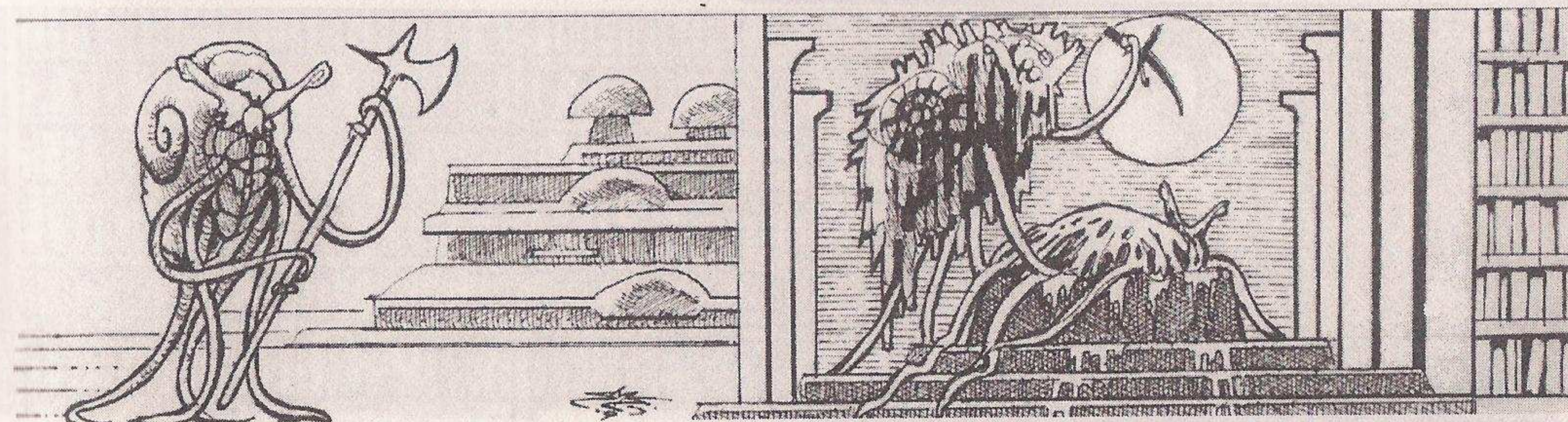
He's often thought of as a British sf writer, but Geoff Ryman, author of *The Child Garden* and *Was…*, is originally Canadian. Since he won the Arthur C Clarke Award the year before Colin Greenland did and his work crosses between fantasy and sf in a similar manner, we asked him why he thought Colin has become so successful — and he told us that the wind changed…

That's how Colin Greenland accounts for the acclamation that has greeted his work since *Take Back Plenty*. *"I chanced to be writing something while everyone was still unaware that they wanted it."*

His earlier novels such as *Hour Of The Thin Ox* and *Other Voices* seem to be almost a different kind of book than *Take Back Plenty*. Yet even while those books were being written, Tabitha Jute was showing up in stories at Milford workshops. It simply became apparent that Tabitha needed a big novel.

> # "I chanced to be writing something while everyone was still unaware that they wanted it"

"If you want to write about space, you need space. The idea was plenty, plenty of everything, lots of locations, lots of little stories and flashbacks so that I could show as much of the universe as possible."

Into that plentitude went many things — techniques learned from travel writing, the liberating effect of feminism, the liberation of post-modernism which meant Colin could have anything in the novel as long as it worked, such as canals on Mars, or a
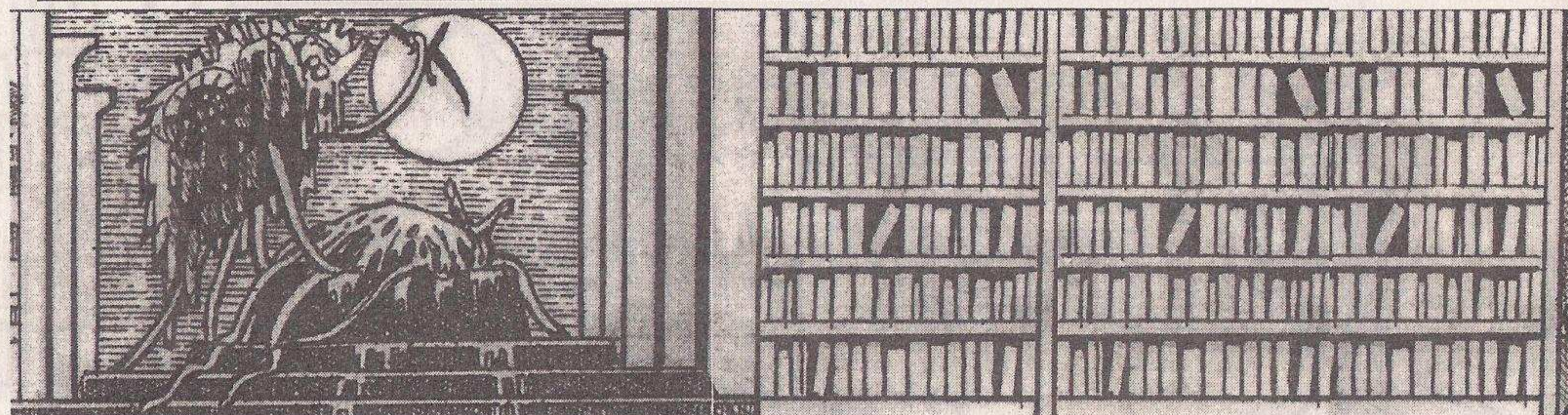
Venus with poisonous jungles. And of course *Alice In Wonderland*, after whom Tabitha's intelligent vessel is named. The result was both a BSFA Award and the Arthur C Clarke Award — the only time both awards have been won by the same book.

After *Take Back Plenty* came *Harm's Way*, a high-concept, Britannia-rules-the-stars alternative universe, with action on Mars, the Moon and Jupiter. Tabitha returned for *Seasons Of Plenty*.

What next? Well, *Mother Of Plenty* is nearing completion. It will definitely be, says Colin, the end of the story. Well, of that story. People are starting to want short stories about Tabitha Jute, which is where she came in. But there will be more novels in Colin's big-canvas mode. As he says, *"There's still plenty of space in space."*

Geoff Ryman

> # "If you want to write about space, you need space. The idea was plenty, plenty of everything, lots of locations, lots of little stories and flashbacks so that I could show as much of the universe as possible"
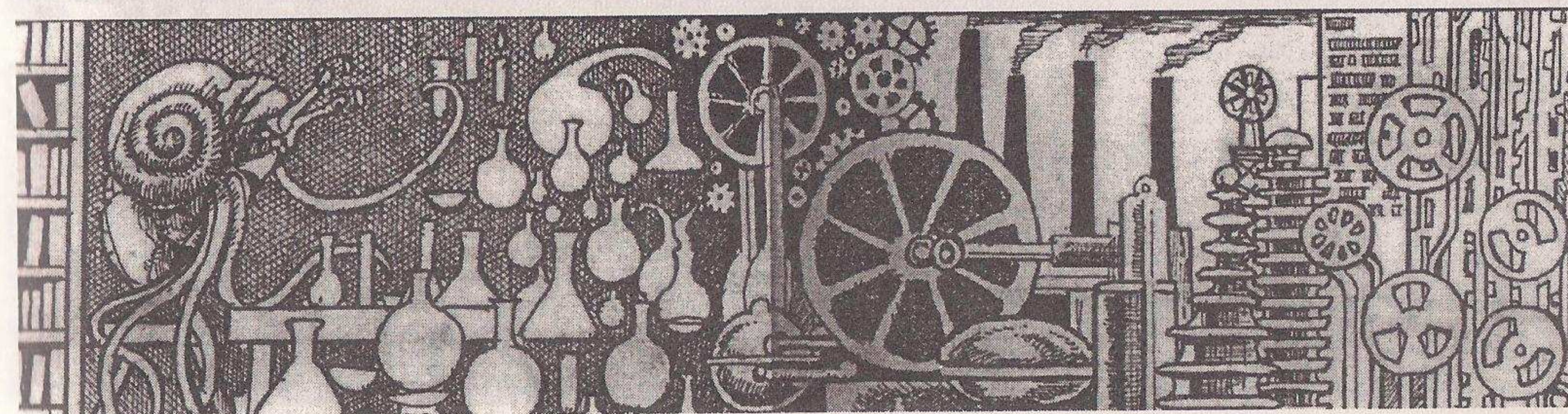
foundation

The Science Fiction Foundation publishes the journal "FOUNDATION: the Review of Science Fiction" and maintains the Science Fiction Research Collection, and is administered by The Friends of Foundation (Reg. Charity 1041052).

The Foundation was set up in the early 1970's to promote Science Fiction in all its forms, and to provide a centre of excellence within Europe to match those in the USA by creating an SF research collection/library to promote SF as an educational tool.

This library is now housed at the University of Liverpool and is administered by Andy Sawyer. It now has over 25,000 items and over the past few years has been growing steadily, due to generous donations of books, magazines and other material.

The "Friends" were set up to help the Foundation in all its stated aims and they have taken over much of the administrative load. For more information, or to offer help and/or material, please contact Andy Sawyer, the Librarian/Administrator, at The Science Fiction Foundation, Sydney Jones Library, University of Liverpool, PO Box 123, Liverpool L69 3DA (Tel: 0151-794 2696 Email: asawyer@liverpool.ac.uk)

Colin Greenland's doctoral thesis became his first published book, *The Entropy Exhibition*, analysing the effect of *New Worlds* (edited by Michael Moorcock) on sf in the late 1960's. He returned to the subject later in *Death Is No Obstacle*, a book-length interview with Moorcock — and we asked Michael Moorcock what he thinks of Colin Greenland's own impact on sf.

One of the most memorable scenes I have ever read in science fiction describes the grotesque rituals of the Emperor of Mars in a vast auditorium with an audience of Victorian ladies and gentlemen. It's a scene as memorable as anything in Wells or Bester (my two favourite sf writers) and it's from *Take Back Plenty* by Colin Greenland. It takes a dedicated New Waver to write the best space operas - and *Harm's Way* is in my view one of the finest pieces of what Brian Aldiss called *'wide-screen baroque'* I've read in quarter of a century.

I'm not given to superlatives, especially about people I've worked so closely with, but that scene, in a very fine book, showed the stuff of Greenland's romantic imagination, unrestrained by the slightly academic caution which once coloured his excellent early work; Greenland's got his corsets off now and there's no looking back. He's a true, original voice and I'm glad to be associated with him. I'm not knocking Greenland's immensely long academic career at my (a payer of immense taxes) expense, largely because he has a sharp insight, a genius for analysis, which was wonderful to work with on *Death Is No Obstacle* and valuable to read in *The Entropy Exhibition*. An all-round man of letters, Colin Greenland is an excellent example of our best romantic *fin de siècle* novelists. I hope he has as much fun with our next century as he has with our last.

Michael Moorcock
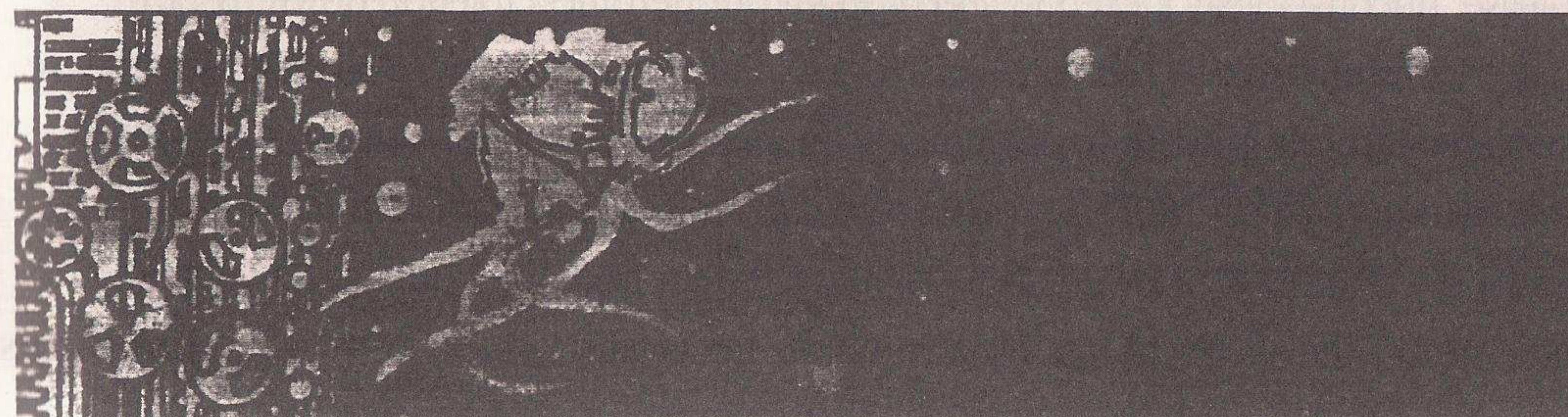
Jim Burns is well known for reading the books he illustrates and getting the covers right. He's a perfectionist though, and he's still not satisfied his cover for *Seasons of Plenty* shows the perfect Tabitha…

Sometimes something gets lost in the strange hinterland between sketch and fully realized rendering. Whilst I was reasonably happy with the full-colour, full detail painfully perfect Tabitha Jute on the book-jacket, there was something about her more spontaneously dashed-off, scribbly progenitor that held a particular appeal which somehow didn't make it fully across to paint. Here she looks a little more arrogant maybe? There's possibly 5% more of what might loosely be termed, feline grace? Her hair works better. Hmmm… it was, I thought, a 100% truthful transition into paint. I thought I was changing nothing… and yet… Actually Colin thought she looked fractionally too glamourous in the sketch. Too much the model — so perhaps that wretched 'desire to please' unconsciously kicked in and brought our heroine a fraction down to earth, more truthfully akin to the real Tabitha. Still, since the artwork came back to me I have started delicately re-working Tabitha. If you look closely at the painting in its current incarnation (*we very much hope Jim Burns will show the original at Evolution – Ed*), you'll see that her hair is very, very slightly different from the book-jacket version. A little nearer the sketch in fact. Next come the freckles!

Jim Burns

EVOLUTION – THE TAILEND

We hope you've enjoyed this book and that it's whetted your appetite to learn more about our guests – and to come along to *Evolution* next Easter and meet them. The convention takes place 5-8th April 1996 in the Radisson Edwardian Hotel at Heathrow, a pleasant five star hotel with a swimming pool, two restaurants, a poolside bar and plenty of programme space. Room rates are £28 per person per night ,sharing a triple room, £32 in a twin or double and £42 in a single room.

Until the end of *Intersection* you can join *Evolution* for just £24 ($36) attending membership (£14 ($21) for a supporting membership or for children aged between 5 and 14 on 5th April 1996 – children under 5 are free); after August 29th this goes up to £28 ($42) attending and £16 ($24) supporting. If you've pre-supported you get a £1 discount and supporting members can convert to attending for the difference in memberships at any time. Mascots and beasts of all kinds £5.

If you're reading this at *Intersection* , come along to our stand in the Fan Fair and buy your membership. If you're reading this afterwards, to join or for more information, send us your name and address along with a cheque made payable to *Evolution* to:

Evolution, 13 Lindfield Gardens, Hampstead, London NW3 6PX, UK.

E-mail bmh@ee.ic.ac.uk   **Web** http://www.tardis.ed.ac.uk/~simon/evolve/

Take the next step – come along to Evolution and find out where fandom can take you next Easter. We look forward to welcoming you to the convention and if you have any ideas or would like to help out, please let us know.