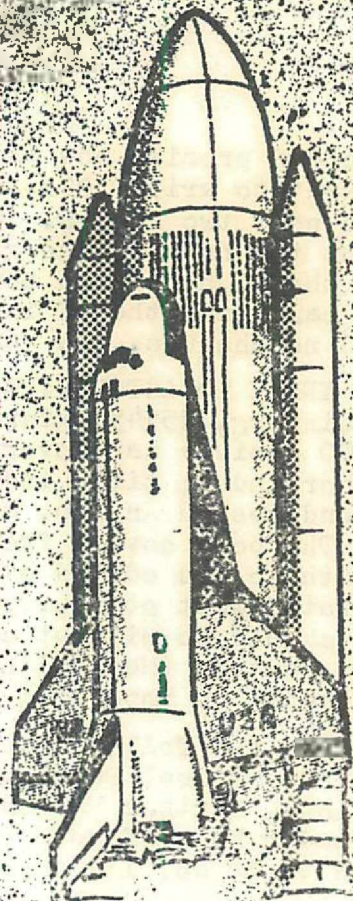
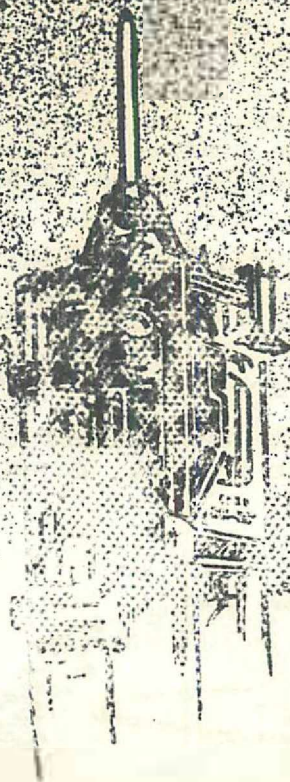


ERG

QUARTERLY



75

July 1981

ERG 75
JULY
1981

Editor. Terry Jeeves
230 Bannerdale Rd.,
Sheffield S11 9TE
South Yorkshire ENGLAND

ERG
QUARTERLY

Greetings ERGbods, The LOC + 30p in stamps to get the next issue seems to be working well..but as ever, there are some unsure of what that means, and others who simply want to sub..so here again..

You can get the next issue by sending a LOC (a Letter Of Comment) plus 30p in stamps if you live in the UK.

From overseas, send the LOC only, but if you care to mail the odd prozine now and then, it would be appreciated. For those who don't want to write LOCs..and prefer to sub, then \$1.00 or \$2.00 will get you the next two issues. Obviously, this costs more than the LOC method...but the name of the game is 'feedback'..and if you don't want to feed..then the higher price covers my getting a nil response from your copy. UK subbers can remit the \$1 in low value stamps if they wish. From the USA, please send no cheques..the bank rip-off is too high.. send dollar bills.

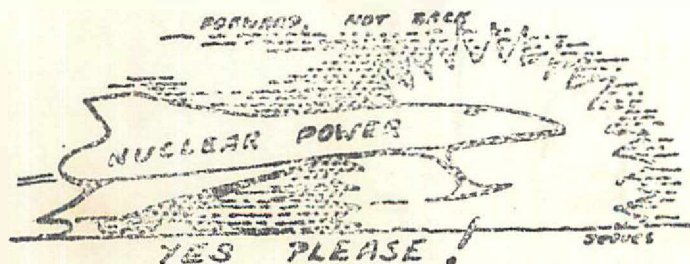
A COMPLETE INDEX TO ASTOUNDING/ANALOG by Ashley (& jeeves) is now available from Rob Weinberg, 15145 Oxford Drive, Oak Forest, Illinois 60452 in a limited (500 copies) hardcover edition for \$29.95. It contains an issue index; author index; title index; artist index; letter index; Prob Zero index; appendices on An Lab, most popular stories, most prolific contributors; etc. The book covers from Jan.1930 to December 1979, plus the three original anthologies edited by Harrison and Bova. It covers all editorials, who illustrated what story...you name it, it's there. No serious Analog-ASF reader should be without a copy. If you have no Stateside contact, try Ken Slater, Fantast (Medway) Ltd, 39 West St., Wisbech, Cambs PE13 2LX as he will probably be importing a copy or two.

I have the following books by Martin Gardner...The Ambidextrous Universe, Mathematical Puzzles and Diversions, More Mathematical Puzzles and Diversions, Further Mathematical Diversions, Mathematical Carnival.. does any reader know of more books of Gardner's in this line which I may have missed? If so, I'd appreciate hearing from you.

THE COMPLETE TRIP REPORT...is now ready. It contains all the pages from ERGs 73, 74 and 75 together with the cover from No. 73. 24 pages and you can get it for 75p in the U.K. or \$2.00 to the U.S.A. (U.K. readers can send small value stamps)

Those who have ordered copies should be getting them along with this issue of ERG. Otherwise, it's a limited edition of 46 copies...first come, first served. Hope to hear from you...all the best.

Terry



BOSTON 1980



Having sailed gaily through the main trip report, I am now in the process of saying to myself (because no one else will listen), "Now why on earth did I forget to write about so-and-so?". To sit down and re-write the whole thing would be rather daft...and in any case, in addition to the limited run of copies available from me, Harry Andruschak is also going to re-issue the whole thing in the USA. The solution is to round the whole thing off with a raft of postscript type afterthoughts. Here then are all the things which I forgot the first time round, the random impressions and the odds and end which didn't fit into the main story. I'm putting them down as they come, so if anything is dislocated in time...take a pair of scissors and edit to taste.

Despite all the gloomy predictions of friends, British Airways looked after us superbly. Despite having booked almost a year earlier, our flight number and departure time had remained unchanged (unlike the more recently booked American Airlines flight to Detroit..where they had lost me, the time and the flight number). For once, Heathrow was open to the public, one of those rare occurrences which happen occasionally, so we had the good luck to see everything working more or less normally. This enabled us to dump our bags and wander round the complex sampling the shops, escalators, rotating signs and other amusements. Despite the thousands of people using the place, both coming and going, it seemed less crowded than infamous Luton. Regular correspondents will no doubt remember my choice words about that foggy place and how they mis-directed me up and down the M1 FOUR TIMES in one night!

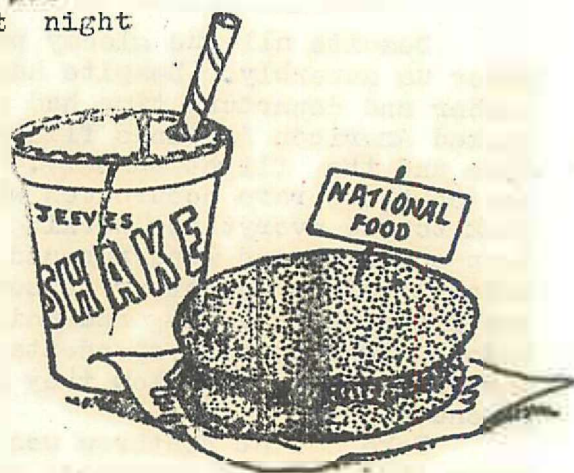
Take off at Heathrow was as smooth as ever. (Well, I've never had any bumpy take-offs) I unearthed my cine camera from its hiding place beneath my seat where I had camouflaged it as a Mac West. I was able to get the whole run from brakes off to rotation and climb out onto film. With the addition of sound that part of the film really comes to life.

What doesn't come to life is the sheer boredom of such flights. The trip across took about seven hours. I have flown longer.. on two or three 12 hour flights in and out of the Cosos Island while cramped in a B-24.. and that was even more boring. This time, the stewardess helped to pass the time along. Drinks and food were served, films screened for those who wanted them, but for the rest of the time, you are on your own. No doubt strong, outdoor energetic types can while away the odd hour by hiking a few miles up and down the aisles...but since this also involves climbing over the drinks trolleys and/or people coming the other way, this pastime soon palls. My own personal system is to take along a book of Guardian Crosswords. You can break off for food, drinks, cabin announcements and the odd nap, and without losing the thread of what you are doing. If the clues prove too hard, one simply gives a smile of satisfaction, scribbles rubbish in the margin and everyone else thinks you're a genius. Pity aircraft don't copy ocean liners and run crossing-the-line ceremonies or sweepstakes on the miles flown, bumps encountered, passengers using the dinky brown paper bags, or even how many times the loos get used. Just think of the joy of pocketing the 'loo lottery prize' as you disembark.

Once in Boston, the first thing that struck us was the vast acreage of dent-covered car surface. Indeed, one gets the impression that the (Don't) Dodge car was invented in this city. Finding a vehicle unsullied by bumps, bangs or the slings and arrows of outrageous fortune was akin to hunting out the proverbial needle in the jolly old haystack. Heck, they even sell postcards advertising the fact. Don't ask me why, Boston has no more traffic than other cities, in fact I'd suggest it had less than London or Sheffield. Boston's drivers seem less furious and frenetic than their UK counterparts, and much better behaved than Belgian or Italian buggy pushers. Despite all this, their cars must be the world's most battered collection of runabouts. Guinness Book, please take note.

Street corners of the ghetto area were cluttered with double-parked autos and people holding up the walls of the sign-spattered buildings. A complete contrast to the clean, sleek reclamation areas around the Sheraton Hotel. Room 2357 was excellent..egad, it was superb when rated against its cost of \$49 a night. A price which equated to around £20 at the rate of conversion then operating...and a delightful surprise when we had expected to be charged the full \$80 a day for the pre-convention week. Our first night in that room led to us giving an inpromptu strip-tease display to any late night workers in the Christian Science Admin Block across the way...we didn't discover the cord-operated blinds behind the mesh curtain until the following morning.

We quickly became accustomed to the American National Food...dishes such as milk shakes (terrific), hamburgers (great) and French Fries became our staple diet. I don't know if I would like to eat such short order fare out of its plastic cartons as an all-the-year-round experience, but for a holiday stay, it was just the job.



Each floor of the hotel had its own free, ice-making machine and a coin-operated drinks vendor. Down in the foyer was a battery of telephones..including one sited at a lower level for the use of children and short people. A very thoughtful idea which Britain could well copy. I wasn't so keen on the wide use of answering machines and their built-in commercials though. Each time I got through to the American Airlines number a machine would explain just how tired and busy all the other people were and would then wind up saying.. "Please hold". Now that part was fair enough, but while holding, you were treated as a captive audience and fed a load of airline information. On the credit side I discovered that American had their own check-in desk at the Sheraton and this made it much easier when they managed to lose my flight.

The hotel adjoins, and connects with, the Prudential Tower shopping complex. That means you can go for a meal, do your shopping or just wander around..all while staying under cover. There are various levels, and not a great deal of signposting. Escalators rising and descending add to the mixture. A mooch around the complex is a minor adventure. We got talking to one of the security guards who patrol the place, a very friendly black who had a brither in Birmingham (UK, not Alabama). These guards looked a bit like Christmas keys with holstered guns, nightsticks, handcuffs and bunches of keys dangling around their anatomy.

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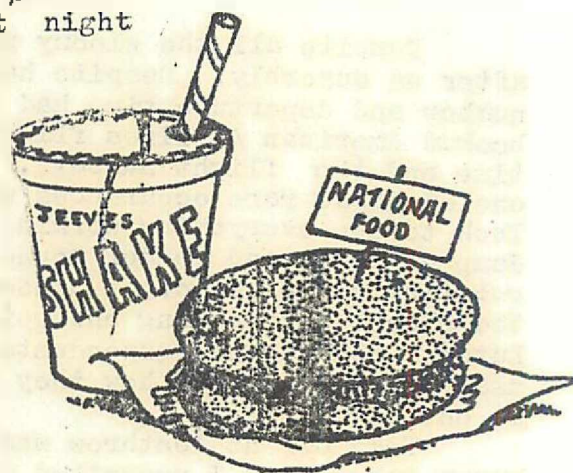
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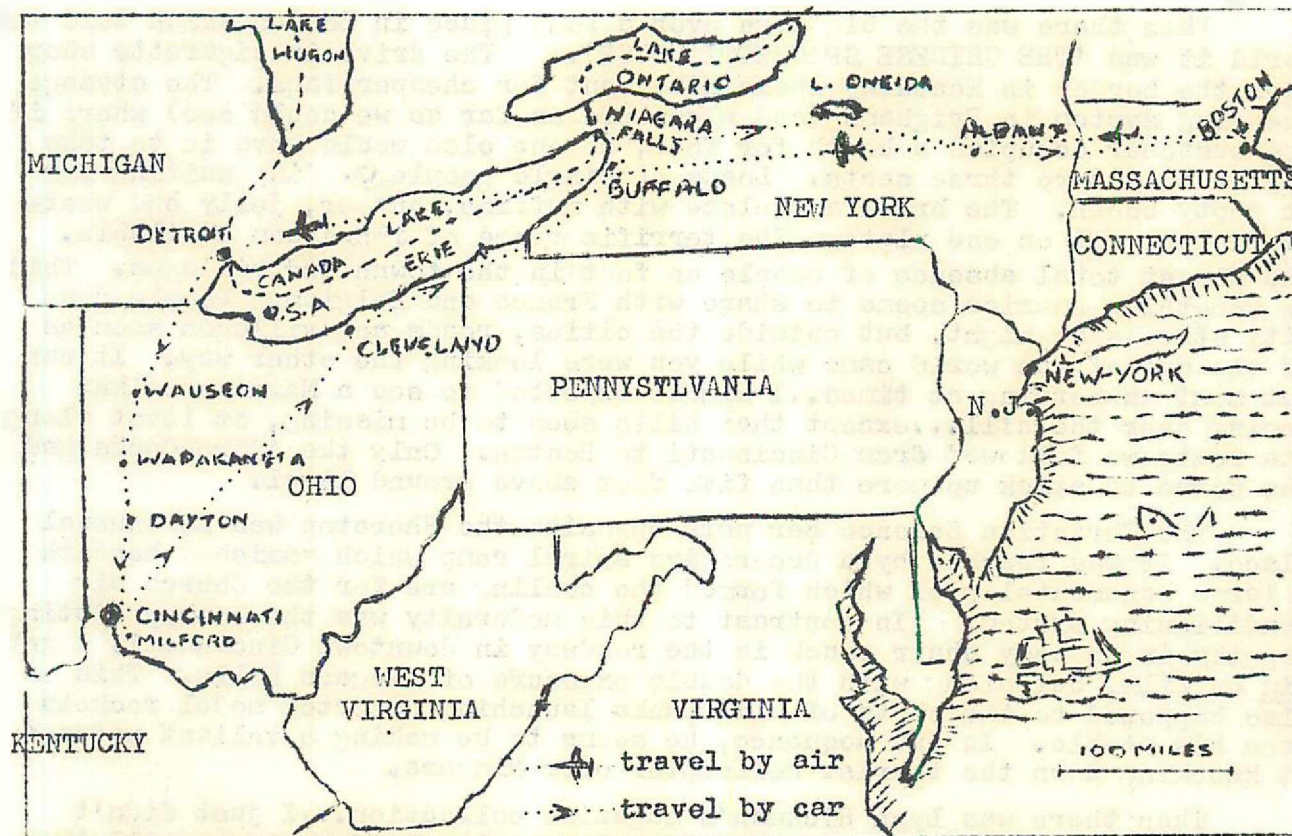
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This guard, a war veteran who came and chatted to us, then took a photograph of us; the business manager who introduced himself in Brighams, the pool sharks round the table in Wauseon..in fact wherever we went, everyone was so friendly and helpful. This was THE greatest single impression we brought back of America..its friendliness..and that's why we want to go again if we can make it. (Any G.O.H. vacancies?)

Take a look at a large scale map of the USA and you see the State borders use plenty of straight lines. Enlarge the scale to include roads and you find pretty much the same thing, even in the cities. In general, roads are laid out in grids..which makes navigation much simpler than in the UK where it is a cardinal sin in the road maker's book to continue a line for more than half a mile on penalty of excommunication from the guild of harrassers of motor vehicles.

As can be seen from the map above, the trip took in only six of the fifty odd States of the U.S.A. and covered around 1800 miles with over 1000 of that by car. The State Thruways proved wider and less densely populated than British motorways and the 55 mph speed limit made for more relaxed travel..as did the numerous 'rest stops' along the way..these were picnic and leg-stretching areas in addition to (and without the) short order cafes and gas stations. Getting in and out of them, and the gas stops was a much simpler proposition than our race-down-the-ramp and hope for the best system. Speaking generally, I also thought the eating places seemed in better state than ours..but the choice of food was more limited and more highly mechanised. The aim was to deal with people quickly and efficiently and it succeeded...unless of course you wanted to kill an hour or so over a multi course meal....and how many travellers want to do that?

Then there was the big sign over a food place in Boston which told the world it was 'THE CHINESE SPAGHETTI HOUSE'. The drive-in cigarette shop over the border in Kentucky where Mike went for cheaper fags. The strange queuing system in Brighams (and elsewhere as far as we could see) where if one customer occupied a booth for four, no one else would move in to take any of the spare three seats. Loads of single people waiting for an empty booth. The breakfast plate with muffins, butter, jelly and whatever else, all on one plate. The terrific range of ice-cream available. The almost total absence of people on foot in the towns and villages. This is something America seems to share with France and Belgium. People roam city streets at night, but outside the cities, roads and villages seem as if the end of the world came while you were looking the other way. It can get most un-nerving at times..I almost expected to see a Martian walker coming over the hill...except that hills seem to be missing, at least along the route we followed from Cincinnati to Boston. Only the Adirondacks had the nerve to stick up more than five feet above ground level.

The Christian Science car park opposite the Sheraton was an unusual place. It was reached by a decorative spiral ramp which vanished beneath a large ornamental pool which formed the cooling are for the Church air conditioning system. In contrast to this modernity was the cowboy sitting happily in an easy chair snack in the roadway in downtown Cincinnati. I got him on film, but along with the double exposure of Niagara Falls. This also happened to the shots of Mike Banks launching assorted model rockets from his stable. In one sequence, he seems to be making a valiant attempt at knocking down the tourist helicopter over Niagara.

Then there was Lynn Hickman's magazine collection...I just didn't dare to start reading that or I'd never have got out of Wauseon. All those lovely time-binding copies of FLYING ACES, the Shadow, and a host of other pulps. Spoking of pulps..only this morning, I saw a Hawkwind tape on sale and what caught my eye was its 'ASTOUNDING' comet+tail logo. I nearly bought it out of nostalgia...and I hate pop!

Similar to Lynn Hickman's collection, but even larger, was that of Howard DeVore...and his was accompanied by heaps of typewriters and photolith machines so that his car couldn't enter the garage.

One item of interest in the Dayton Aerospace Museum was the aircraft runway which rose up like a ski-jump at the starting end. Apparently the idea was to give heavil loaded bombers a good rolling start to their take-off run. It was abandoned as being no use. Rather funny that the Royal Navy should now be using a similar system, but with the hump at the far end of the run, so that the speeding aircraft is lobbed up into the air. I don't know if it would work on fixed wing aircraft, but it has done wonders for the VTOL Harrier.

Perhaps the best part of the whole visit, was meeting up with all the members of First Fandom who had worked to make the trip come about. To mix with Sprague de Camp, Carol Pohl, Lou Tabakow, Dave Kyle, Ruth, Kerry and all the other wonderful people. I know I didn't meet a fraction of the people I have corresponded with over the years...but that makes it all the more desirable to get over there again.

Many thanks to all of you from Val and I.

Sheffield 1981



Look, it's all very simple. Microsoft Basic is usually addressed to the top of the memory, so as the Z80 restarts are to 00H requiring the monitor to occupy the lower 4K of store.....

NOT simple ? Well, I think it is, so let's try again.

A computer is a large box of wires, we don't need to know what any of them do except for three..and one of those is the power input. Plug in, turn on.

Your box will do nothing of course, until you enter some information, either data or a program. This requires a keyboard.

There are two classes, TOUCH KEYS (electrostatic/thermal/pressure sensitive/touch) and KEYBOARD KEYS (Typewriter/mechanical). The latter are tougher, less liable to break down and can drive the wife crazy with tapping. You may also be offered the choice between typewriter or calculator-style keyboards.... keys arranged like a typewriter or like a calculator. The former is far, far better for programming, and is almost universal.

Your box now has a keyboard, on which you proudly type the letter 'b'. Of course, nothing happens. You need a display before you can see anything happening. This is usually a TV tube, either included (VDU included) or you TV. If the latter, the ads will croon over 'TV Interface', which allows you to use your second wire to plug the computer straight into the TV. Fiddle a bit, and 'Bingo', it's a VDU (Visual Display Unit) for your machine. Note therefore, you lucky few without a TV will need to add the price of one to your final computer's cost if the system demands it.

Some machines feature full character LED or LCD displays (often a variant on the calculator '7-segment displays', meaning no TV at all, but a souped up calculator-style display. O.K. for small machines, but would drive you up the wall for serious programming.

The letter 'B' now appears on your TV. Wow! The machine does nothing: we have not yet considered its innards. The key innard is the microprocessor..this is nearly always a 'Z80', the very clever, very complicated 4mm thick lump in the middle of the spaghetti in your box. You may have the slightly less amazing 8080, or 8085. These are inferior in several technical points you will be unable to detect. You may also be enticed by a cycle time of 2 or 4 Megahertz. If you are not, it is because the advertising exec does not understand it. Actually, it refers to the internal timing system in the microcomputer.

So, in goes your 'B' and..smoke starts coming out...oops, we forgot the memory. MEMORY comes in bytes, for reasons lost in the paleozoic. It also comes in bits, eight bits to the byte. Unless the ad says differently, the numbers they quote for memory should be in bytes. They could be in kilobytes..meaning 1024 bytes for reasons obvious to arithmeticians. Thus a machine with 4096 bytes of memory could be described as having ..4096 bytes, or 4 kilobytes, or 4kbytes, or even 4K or 32bits of memory.

Helpful sods aren't they ?

But that isn't all. On-chip Memory comes in two types - lumps you cannot get at (Read Only Memory, ROM, PROM, EPROM) and lumps you can, (Random Access Memory, RAM). Let's take an example. My machine has:- 2K of Monitor ROM, 16K User RAM, 8K BASIC ROM. To translate, it has a total of 26624 bytes of memory (26×1024). 2048 bytes of this (2Kbytes) are taken up by the Monitor program stored in Programmed Read Only Memory..i.e. Memory you cannot erase and whose contents do not vanish when the power is turned off. This program is the basic program needed to make the computer function. It keeps the computer informed about what you are doing when you are not actually running your own program. It also handles input and output, and has a repertoire of simple commands so that you just enter 'B' when you want to run a program written in the Basic language. It may just be called ROM, 4K and 2K monitors are common, 1K and $\frac{1}{2}$ K on smaller machines. Generally, there will be enough ROM for your computer, so less ROM implies less capabilities. Thus 8K of ROM means a machine able to perform more tricks than 1K.

If there is no ROM, then the monitor program you will still need, will have to go into RAM. RAM is where the computer stores your programs, thus if you have to put the monitor program in RAM there will be less RAM left for you to play with, and so in effect, the amount of memory available for your program is smaller than the ad suggests. So, no ROM, 8K RAM is in effect, the same as, say 2KROM, 6KRAM.

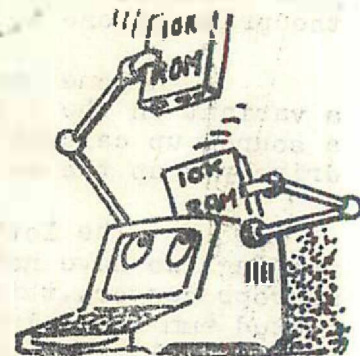
Simple, eh? There can also be video RAM. Just pretend it isn't there - you can't use it. Ask your manual to explain. (It can also be called, TV-memory, VDU-memory display RAM, etc.) Jolly consistent these chaps.

The real RAM is where your programs go. To give a clue, I recently managed to fill the 16K RAM in my machine with a program written in Basic, of about 600 lines. Long lines, too. It was a game: any sensible program is not likely to take up this much space. If you want your computer for (a) indexing, (b) data sorting, (c) very complicated maths, (d) very complicated games, then lots of RAM will be the order of the day. Otherwise the usual 4K or 8K is fine for starters.

Many machines advertise, "can expand to 64K RAM !" which means that you can plug in more memory. Of course, you have to buy it first. Check prices before thinking about expansion.

This leaves us with Basic ROM which inevitably, is the most complicated and what to do with it.

I mentioned my machine sported Basic ROM. This is also called, mini-basic, tiny-basic, microsoft Basic and is a section of ROM (PROM, EPROM) which holds another, non-erasable program which translates the relatively simple 'Basic' computer language into even simpler terms that your computer can understand. 'K Basic' it is called, because it occupies 8 kilobytes of memory. (You will be amazed to hear that there are exceptions). When you enter your 'B' the monitor says 'over to you, Basic' and lets the program in this chunk of ROM take over. It then reads in your program, operates it, tells you about the mistakes in it and so on.



Basic should be on ROM, which might need to be stored in RAM like the monitor program we mentioned earlier. Thus, if your machine has a dazzling 16K of RAM, what you are actually getting is 16K of RAM less the 8K of which will be occupied with Basic and less 1 or 2K of the Monitor. Leaving you the equivalent of 6K which is not so wonderful. It's free memory that counts.

Things to look for. For a beginner, BASIC is a must. Useful for games are references to the instructions for POKE and PEEK which allow you to get at the computer's memory in binary, and hence its (assembler) language. Most Basic have these commands. Some sort of monitor is a must; it might just be listed as '1K ROM'. And of course, the more RAM, the larger programs you can run. Don't forget program size is measured not only in number of lines or instructions, but also in the amount of memory it needs for 'working'. Thus a program manipulating half a dozen 20x20 matrices will use as much memory as a chess program. Most computers with lots of ROM are sophisticated enough to use plenty of RAM, so will offer facilities to buy more RAM. As a guide:-

1K RAM.....Games/Programs
 2K RAM.....Home-bre rifle-range, racing cars
 4K RAM.....Stupid chequers. Household accounts
 8K RAM.....Complex games, fairly clever chequers, Matrix math
 16K RAM.....Record searching. data ordering, Chess.

Space Invaders and the like (Galaxians, Asteroid) depend on more than just memory capacity, and few computers are suitable for it. To see why, try typing a detailed map on a typewriter. The computer 'prints' letters on a TV screen in the same way as a typewriter types on paper: one letter in the top left slot, the next in the top left +1 slot, and so on. It cannot put one half way in between. This makes 'motion' across the screen rather disjointed. ((Ed. note. The Apple can do this in High Resolution Graphic Mode.)) Also, most computers cannot draw 'little men' on the screen. Some offer 'full graphics' or 'full graph-plotting facilities' which can overcome these problems, but only at the cost of much brain-boggling.

For games like chess and chequers the computer needs two things: lots of RAM for its own use (to 'memorise' possible moves while searching for the best combination) and a very smart programmer.



Far better use is made of your memory and, especially, your computers inherent speed, if you program in assembler (or machine) code. Most computers offer facilities for this. However, this is very complicated. (or looks it. The Monitor and Basic programs will be

written in this code).

So now we type in 'B' and our computer starts the Basic translator program. This in turn waits for us to enter a program written in the Basic language and then runs the program. We enter one to, say, 'add two and three and print out the result'. Hours later, we get it to work, then reach for the OFF switch and... ah. The memory is wiped clean as soon as the power is turned off. (not ROM though). So if we want to store our program, the most common way is on cassette tape.

This uses that third wire which connects the computer 'cassette out' plug to the 'input' of the cassette recorder. The cassette 'In' goes to the recorder's headphone socket. This is a 'cassette interface'. Their operation is complex, but usually amply explained. Some kits offer a £20 recorder with the computer, but any machine, cassette or reel, will do. Connecting wires are standard 'phono' type. There are several speeds at which the computer can load data onto the cassette. The faster it is, the more convenient it is for you. They may be measured in cps (characters per second), i.e. 110 baud = 10 cps. (No, I don't know what baud stands for)

110 Baud or 300 baud are common, some machines can be connected to tone or more, but only with a good cassette recorder.

If your machine does NOT offer cassette interface, then you will have to type in your program every time you want to run it. This can be very tedious. Cassette interface is a must for any real computer.

Some machines offer extra. Good printers and floppy disc drives (a floppy disc drive is a recorder for a floppy disc..the computer's answer to the gramophone record for storing data) Good ones are expensive and cheap ones probably not worth the effort. Similarly 'voice generators' IBM have recently got one of their massive machines to simulate the human voice reasonably well. Yours has little hope. Some offer 'music', i.e., tone generators, which are fine if you are in to \$50 Moogs.

I have not heard of games-adaption kits for computers, but they are bound to come. Personally, I get as much pleasure out of programming the game as I could out of playing it, but you may feel differently. Programming games is very hard, partly because running Basic programs is very slow. (Rapid example: calculating the sum of the log of each of the integers from 1 to 1000 takes about 19 seconds. On a comparable assembler program it would take about 1 I should think. I'll say no more about games, it is more fun to find out for yourself.

Serious applications - many require a lot of RAM. Word processing really needs a printer and a floppy disc..bringing the system cost to at least \$1,000. Graphics (maps, graphs etc.) need special hardware, but Pet, TRS-80, Apple, Nascom, all offer limited graphics as basics with kits for expansion. However, I don't think the Sinclair ZX80 does. Usually, a machine can search a magnetic tape for one among tens of thousands of entries when it does not have enough memory to hold them all in RAM at once. Such tricks can be useful, but ask about them first.

Finally, I would like to scotch this rumour that Terry is thinking of buying a computer. What, the publisher of ERG for 21 continuous years buying a computer? It would be like you or I buying a wife!

~~*****~~ William Bains ~~*****~~

EDITORIAL NOTE. Nevertheless, I am still dithering over whether or not to buy a computer (or a golf ball typer). For the last few weeks, I have been learning how to program an Apple with 32K RAM, two floppies and a printer. Great (and tempting) fun. Here with a graphic program I brewed up while playing:-

```
NEW
5 HGR
10 COLOR = 1
15 FOR I= 10 TO 270 STEP 5
20 FOR J= 1 TO 150 STEP 5
25 HPLOT I,J TO 135,75
30 NEXT J
35 NEXT I
40 END
RUN
```

It may not be highly complicated or a thing of beauty (though it produces the latter), but I got a kick when I pressed RUN and it worked.

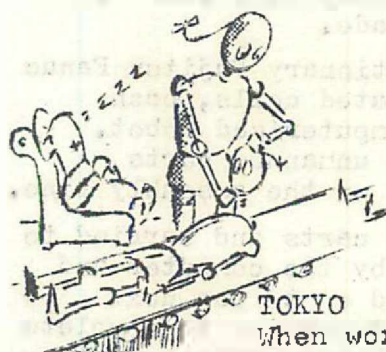
So now, should I get a SHARP with 48K RAM for £520, or wait for prices to drop as dealers get frantic and newer models come on the scene? Problems, always problems.

Terry.

STOP PRESS. I've ordered a Sinclair ZX81 with 16K RAM to tide me over until 16 bit micros come in and prices drop. T

JAPAN: where robots work while the boss sleeps

by GEOFFREY MURRAY



This article originally appeared in the New England Edition of The Christian Science Monitor for Apr. 15 1981. It is reprinted by permission from The Christian Science Publishing Society. All rights reserved.

When workers at the Fujitsu Fanuc factory knock off at 5 p.m., production continues regardless. For 16 hours of every working day, in fact, the factory is run entirely by robots - turning out other robots.

About 100 humans come in for the remaining eight hours, mainly to make sure everything is running smoothly. As a result, Fujitsu Fanuc is close to realising the industrialist's dream: a factory without any workers.

The company, an offshoot of a computer manufacturer, has become the world leader in making the brains for automated (numerically controlled) machine tools as well as industrial robots.

A Fanuc brochure declares it is the ambition of its engineers to "achieve unmanned factories the world over". That came a step closer in November when the company opened a new \$38 million plant near Mt. Fuji to take robots a giant step beyond the realms of science fiction.

The factory employs 100 workers, who oversee production of 100 robots a month as well as the factory's high output of machine tools. This is reckoned to be only one-fifth of the number of workers required in a conventional plant to do the same job.

By 1986, a Fujitsu Fanuc executive says, the plant should be producing nearly four times the number of robots and machine tools with only 200 workers - about one-fifteenth of the work force of an equivalent non-automated factory.

The robots being used bear little resemblance to the bucket of bolts R2 D2 of "Star Wars" fame. But Hitachi, the electronics giant, has just mobilised 500 scientists and engineers to produce a new generation of robots that will be able to see, feel, and walk up and down the factory floor supervising other robots on automatic assembly lines.

Japan is pioneering this development. According to the Japanese Robot Association, there are at least 60,000 sophisticated "mechanical men" in operation in this country now turning out high-quality cars, cheap electronic equipment, new robots, and other industrial goods. At a Nissan (Datsun) factory near Tokyo, for example, sophisticated machines bobbing and weaving like denuded chickens have now taken over most of the dirty and dangerous jobs. They are welding doors to bodies, painting, and performing other chores around the clock faster, cheaper, and far more efficiently than humans.

By comparison, American industrial plants are said to possess only 3,000 sophisticated robots. West Germany has about 850, and Britain only just

over 100.

Embattled American industries facing a growing Japanese challenge should be warned that, through the use of more and more robots and automated machine tools, this country expects to increase its already high rate of efficiency by another 70 percent during the current decade.

Nowhere is this more apparent than the revolutionary Fujitsu Fanuc factory. Lined up around the plant are dozens of automated cells, each consisting of a numerically controlled machine and a computerised robot. Copper wires are embedded in the factory floor to guide unmanned carts moving between an automated warehouse and various cells on the assembly line.

Raw material is automatically loaded onto the carts and carried to the appropriate cell. There it is shaped and finished by the computer and machine tool, returned to the unmanned cart, and carried on to the next stage in production. Workers return to the factory next morning to complete the final assembly of the new generation of robots, although company president Seiemon Inaba hopes to create a new robot by 1985 that will take over this task as well.

Mr. Inaba says the first prototype of this next generation of robots should be available within a year, and will be used to assemble company-designed electrical motors. Only after several years of in-house testing will it be available for worldwide sales.

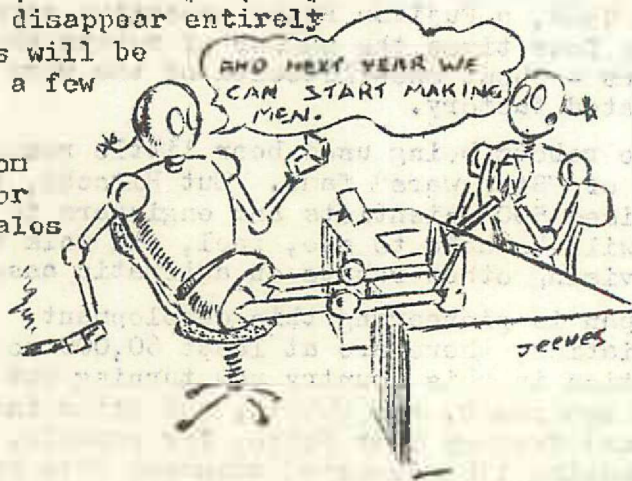
As testimony to Fujitsu Fanuc's role in pushing automation, while company sales soared almost 250 percent between 1976 to 1979, its work force has risen only 10 percent to the current level of 773.

Yet while boasting some of the world's most highly automated industrial plants, Japan still has a negligible unemployment rate, about 2 percent.

Unlike those of other countries, Japanese trade unions have not resisted the introduction of robots and new technology. In fact, the development has been welcomed, eliminating many of the most dangerous and monotonous factory jobs. Hitachi, for example, says that within five years "we expect blue collar workers to disappear entirely from the assembly line. Factories will be manned only by clerical staff and a few maintenance technicians."

The staff thus freed from assembly chores will be trained for other jobs, particularly on the sales side, as business expands.

Geoffrey Murray
Tokyo



An excellent letter response this time, so herewith snippets from as many as I can squeeze in...I'm still awaiting Mike Banks Shuttle report which will replace Nasa News this time if it trun up before deadline. So on with the natter..Ergitorial interjections, as usual denoted by triple parentheses ((()))

Mike Hamilton, 38 Park Way, Etwall,
Derbyshire DE6 6HU

I'm afraid I won't exactly be lining up behind you in your choice of the best counties. Speaking as an expatriate Georgie (((Can it all be perfect..no need to apologise))), being born on the northern bank of the Tyne within mile of the river, I'd put my cross against Northumberland with its superb, relatively untouched scenery.

It's funny, writing about visiting the States seems to be the latest thing in fanzines. The day after ERG arrived, Alan Dorey's fanzine arrived and contained his experiences in Boston. (((I've also had Eric Bentoliffels report, and also Dave Langford's))) I thought, and even began drafting my new fanzine (delayed four months as I was informed yesterday that I'm flying out to Port of Spain to join a ship) that I would describe in it my disastrous visit to Texas where I was flooded out of my hotel room by a tropical storm and spent three days eating McDonald's hamburgers...it put me off American take-away food for life; trapped in a trash food nightmare.

PAM BOAL
4 Westfield Way
Charlton Heights
Wantage, OXON

Thank you so much for ERG 74, as usual, enjoyed from cover to cover, especially the second half of Boston Tea Party. Now why is it I wonder that the cover particularly grabs me this ish? (((It was so beautiful))) It makes me think of a tiny aeroplane hauling along a space going Empire State Building complete with scenic lifts. Although it is monochrome I just know it's got multicoloured lights running along it (((Actually, they were only walking))). Yet at the same time, I could quite seriously see it full of people living and working, taking for granted their location and the technological support which makes it feasible. (((Ah, but can you imagine an administration..or public supporting such a wonderful dream..there's the hard part. The Victorians would have jumped to put money into such a scheme but not today's Government or Investor..the former is scared of technology, the latter demands a guaranteed 30% return on capital)))

IAN GOFFIN
19 Edgewell Cresc.
Foxhill
SHEFFIELD S6 1FG

I'm in total agreement with your opinion of the recent burst of feminism. Much of it is so stupid, the comments on a recent Matrix cover seem to confirm that a small minority of women like to argue over anything. Feminists don't seem so much to want equality over males, but superiority over them. I'm greatly looking forward to further NASA News, it seems the only time you hear of this agency is when something extraordinary happens or when they have a failure. One thing puzzles me though..why has the British effort gone so unnoticed in most publications. (((Oh I don't know, the press reported our withdrawal from the European space programme, the

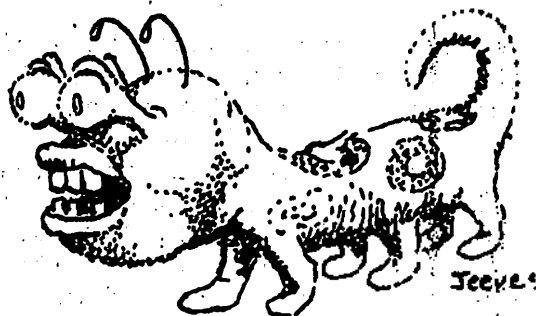


cancellations of 'Blue Streak', 'Blue Steel', the Saro rocket fighter and right now they are doing their best to kill our single venturesome step to develop technology for the future in the shape of Concorde))) I got lost somewhere in the middle of Mr. Bains article and never really found my way out of it again. (((That's the trouble with these Lorentz/Fitzgerald contractions.. no route maps))) What I really enjoyed about this issue was the trip report. The illos were brilliant, they enhanced the report, which didn't need enhancing in the first place. I hope you have cause to do many more trip reports in the near future. (((Thanks..now if everyone either nominates and votes for me in DUFF..or sends lots of lovely money, I'll do my best to oblige)))

EDDIE BUNDRED
81 Grandison Rd.
Liverpool L4 9SU

I know the postal
rates keep rising
and this is

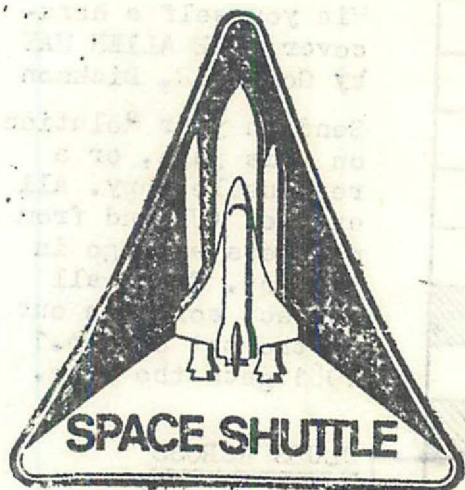
probably why the card back-cover has disappeared (((No, my supplier ran out of stock))) but dropping the envelope and sealing the zine with staples seems a bit drastic. (((I hope to go back to envelopes for next issue..but I have to make 'em first..commercial ones cost up to 4p each ! I reckon I will make it envelopes for those who remember to send stamps for the next



issue when sending in a LOC. Fanzines COST MONEY and freebies swallow lolly like a bottomless pit))) As usual, book reviews were enjoyable. Your Boston Tea Party report was very interesting. Unlike most other fans you don't seem to have an alcohol fixation. (((I no longer feel I have to 'prove myself' by bragging about the stuff))) but you do have a habit of dropping big names (((Well, they're heavy to carry))) such as Isaac Asimov or Forrest J. Ackerman. (((Well, would you have been any the wiser if I had mentioned Uria Snurge or Ike Finkelbaum ???)))

ARNOLD AKIEN (((..must be the best LOCer I ever heard from...two lovely 6 Dunblane Rd LONG (12 pages) plus several photocopies. All good and Seaburn interesting material..one of 'em only got squeezed out as Sunderland an article because of space limitations. Great to meet Tyne & Wear you at Yorcon Arnold and thanks again for the letters.)))

As I sat this afternoon, watching the aborted maiden Shuttle flight it struck me that the boom in mass communication media and the rise to supremacy of the concept of news events as entertainment has coincided with the expansion into space...and my lifetime. To you an I, and all the other SF fen (((Apart from a few 'ban progress'nits))), space flight will always hold an undying magic. But, we have to face the fact that for the bulk of the population, the magic has gone away. Oh, I know a million of them were supposed to have turned up at the launch of Columbia, but the whole presentation, though polished by long practice, of televising space flights, was dull and lack-lustre. It was as if they were going through the motions. The excitement of the early flights has gone and I suppose that this may well be the last time that a launch commands such a mass audience. (((True...but the launch is only the front end of achievement. I don't care if I miss a launch..but I sure hope that I live to see man visit the other planets, build his space stations and space cities, power satellites and begin to think of the stars instead of burying his nose in an ostrich-like fear of what bogeyman might get him by way of nuclear power or somesuch...wonder if these bods fancy they are otherwise immortal and can only be killed by fallout ? Give me the stars, not a midden.)))

NASA NEWS

The Space Shuttle was launched from Kennedy Space Center, Fla. at 7.00am EST. April 12. 1981. It was manned by astronauts John Young and Robert Crippen. The first mission of Columbia lasted 54.5 hours and was described as, "better than could be expected."

Astronauts Young and Crippen reported during the first flight (STS-1) that it was a "remarkable flying machine". Only a few minor problems occurred and none were serious enough to jeopardize the flight.

At launch, the spacecraft weighed over 100 tons and was attached to a large external fuel tank flanked by two large solid rocket boosters. Two and a half minutes into the flight, the solid rocket boosters burned out and were jettisoned. The three liquid fuel main engines continued to fire for six more minutes.

During most of the Columbia's first mission the astronauts remained in the upper cabin and in their seats, except for duties that required them to move around in the weightless environment of space.

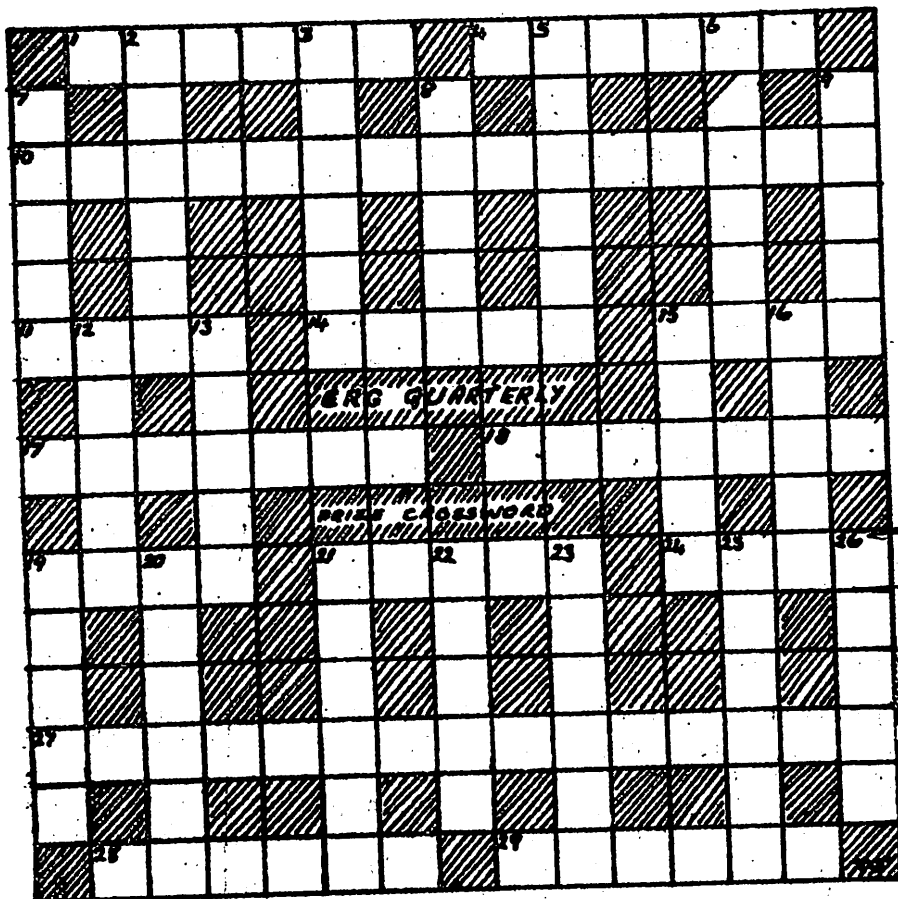
Following completion of the mission, the astronauts prepared for reentry. Turning the Columbia around so that the orbital maneuvering system engines faced the direction of flight, the engines were fired, slowing the Columbia's velocity. The orbiter was then turned round to face the heat build-up as it descended through the atmosphere.

Columbia, literally a "space truck" the size of a DC-9 aircraft, landed on Rogers Dry Lake at Edwards Air Force Base in full view of several hundred thousand spectators who gathered for the historic event.

FACTS AND FIGURES

Launch date. Apr. 12 1981 from Complex 39A Kennedy Space Center, Fla.
 Weight at launch..entire vehicle.....4,458,000 lbs
 Weight of orbiter at orbit insertion.. 209,000 lbs
 Main engine cut-off 3 mtes 42 secs Mission Elapsed Time (MET)
 Touchdown.. 54hrs, 20mtes 52 secs MET. 215 mph. Edwards AFB, Calif.
 Landing rollout... 8,993 ft from touchdown point
 Weight at landing... 196,500 lbs Number of orbits... 36.5
 Distance travelled in orbit.. 933,000 miles
 Max. reentry temperature... 2,700 F

After a week's de-servicing (purging fuel tanks and lines etc) the Shuttle was flown back to Kennedy aboard its specially modified Boeing 747. No. N905HA (SA). Reinforced to carry the 150,000 lb orbiter. Forward and aft supports and adapters were installed by Boeing, plus tip fans on the stabilizer. Modifications were also made in the cockpit for controls and displays. All seats, galleys were stripped from the 747 and the engines given increased take-off and climb thrust of 46,950 lbs with a 10 minute restriction at this rating. The 747 weighs 342,000 lbs unfueled. Adding fuel and orbiter, take off weight is 585,000 lbs. The return ferry took two days, with a refuel stop at Tinker AFB. OK.



THE ERG CROSSWORD

Win yourself a hard-cover..THE ALIEN WAY by Gordon R. Dickson

Send in your solution on this page, or a reasonable copy. All entries (UK and from overseas) will go in the pot. First all correct solution out of the pot on Sep.1 1981 gets the book.

CLUES ACROSS

1. Hydras, sea anemones etc.
4. Flowing, liquid, mobile.
10. Gunsmiths? by 17 across (3,6,6)
11. Worn by 24 across
14. 8th letter of the Greek alphabet
15. Where an ancient Greek looked for truth.

17. He wrote 10 across (3,4)
18. Barlennan's home world
19. 'No Woman --' was written by C.L. Moore
21. Most widely used computer language.
24. Begin, a slight change in stolen comestibles
27. 'Wild Bill Williams was one of his aliases.
28. Pointer of a sundial
29. In 'Betelgeuse Bridge', Tenn's aliens looked like giant

- CLUES DOWN
2. Satellite of fairy king
 3. Clark Kent worked for the 'Daily -----'
 5. Greek letter often used to symbolise wavelength.
 6. Tale of a symbiotic detective in pursuit of a symbiotic criminal
 7. Asimov's cave building material
 8. 'The ----- That Stood Still' was written by 17 across.
 9. One of the things you can get a fanzine for
 12. Muse of erotic poetry
 13. Merritt wrote '----- Footprints To Satan'
 15. What the Sleeper does according to a famous writer
 16. First space dog
 19. The number of the man who wrote 'Tiger, Tiger'??
 20. Indian or Martian?
 21. Bova/Ellison's robot policeman
 22. She controlled Mist, Grass and Sand
 23. It launched Verne's spacecraft
 25. One of two organs at the back of the mouth.
 26. Explorers always seem to find these on Mars.

KNOW anyone who is disabled ? Want to give them a present ? Buy them a copy of 'THE ABC OF HOME HINTS' by Pamela Boal, illustrations by Terry Jeeves. Jam packed with do-it-yourself gadgets, hints and tips for the less able-bodied. £1.25 a copy from the 'Association For Independent Disabled Self Sufficiency (AIDS) 7 Alfred St, Bath, BA1 2QU, 16. Avon. Profits aid the society, it's a good cause, so order now.



AN EXERCISE FOR MADMEN

Barbara Paul
Hale 86.75

The science-based regime on the planet Pythia is very specialised and misfits such as Jennie Geiss begin to appear as the plot develops. The ground is ready for trouble when the strange Zalmox arrives from space to plant trees. Gradually, Pythia's society begins to relax..until the trees bear fruit. A rather slow development culminates in the grand-daddy of all sex orgies. Characters are varied and include intelligent apes and a rather special cyborg with a function that proves of particular interest to Jennie. I'd rate this 'Speculative' rather than 'hard core' but it's fun.

THE ETERNITY MERCHANTS

Jack Rhys
Hale 86.75

Philip and Eirene Holm are honeymooning on Therizo, the pleasure world, when Eirene is laid low by a strange virus. Rushed to hospital, her brain is saved to await a host body. Philip is forced into contract labour to pay the bills, and then he discovers he is the victim of a large scale criminal plot. Fast moving and gripping throughout, but Philip's character is a bit undeveloped and the ending proved rather bland for the action which preceded it.... unless a sequel is afoot ?? This could have been a winner were it not for the numerous loose ends and Philip's too facile escape from captors and Therizo.

HOMO TELEKINS

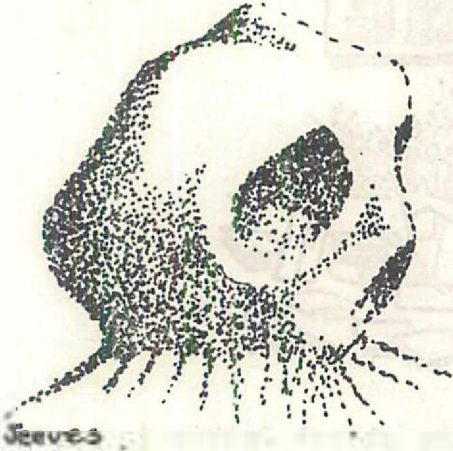
Eric C. Williams
Hale 86.75

4000AD, the Solar System's worlds are overcrowded save for Earth, base of the giant computer E1 which says war is the only solution. On Mars, TOG steals a spacecraft and flies to Earth to plead with E1. Instead, he finds an underground library colony ruled by another computer Thoth which leads him to a book on telekinesis. This in turn brings interstellar travel, a solution to war, but an even worse menace. Characters are thin, and the plot links too implausible. I was puzzled at why Tog's high G Mars/Earth transit too five days, whereas another such trip by pursuers takes only an hour. Fast moving and exciting, but lacking in its ability to make one suspend their disbelief.

PANGLOR

Jeffrey A Carver
Arrow 84.60

Panglor works hard at his anti-hero role while his pet Ou-ratot does little for the story. Panglor is coerced by one combine into eliminating another's spacecraft. He ends up, along with a stowaway and the other ship in a world where time, space and reality are variable. Plenty of action and colour, good characterisation, but a bit too much of down-beat emotions and the implausibility of an obsolescent star-gate to such a place slow the pace. I enjoyed it, but would have rated it excellent if the author had cut the introspection by 20%. Good ideas, good plot, good characters..but rather slow in parts.



THE BOOK OF THE DUN COW

Penguin £1.25

Walter Wangering Jr.

Reviewed here in hard cover a year ago, the tale is set in a time when Earth was the centre of the Universe, animals could speak, and the evil serpent Wyrn seeks to take over the world by the aid of his new-born Cockatrice and a brood of basilisks. Rooster, Chauntecleer must unite the animals against the menace, and he himself must fight Cockatrice. Reminiscent of 'Animal Farm', but without its satire. A gentle tale despite its occasional violence..the book's strength lies in the characters and make it a treat for young or old.

FIRESHIP and MOTHER AND CHILD

Joan D. Vinge

Methuen 'Magnum' £1.10

Hot on the trail of

the Sidgwick & Jackson hardcover comes this edition. Two novels for the price of one.

18

'Fireship' concerns lab assistant Mike Yarrow, surgically linked to a computer and blackmailed to infiltrate another computer. 'Mother And Child' is soft core fantasy, wherein the bucolic Kotanne are oppressed by the urban Nianne. Then the King steals a man's wife to be his concubine and a mysterious 'Smith' rallies the opposition. Both are good tales, which you prefer being up to you..but personally, I'd be a bit loth to buy a hardcore tale if it involved also getting softcore with it.

ASHES

Audrey Peyton
Hale \$5.95

Gas and germs have devastated humanity, but there are some survivors. We follow self-centred, bigoted Kit. Veterinarian Alan, and 'lack girl Della as they begin a new life. Things go reasonably smoothly at first,

but the arrival of sadistic Griff brings violence and strife which leads to the discovery of a strange colony. An enthralling yarn until the final chapter where it is marred by an ex-machina bit of medicine and a too facile, wrap it all up, ending. A pity, because the tale unfolds smoothly and well up to this point, with some good characterisation.

THE NUMBER OF THE BEAST

Robert A. Heinlein
New English Library
\$2.25

Extradimensional aliens seek to kill those with knowledge of multispace co-ordinates. After escaping attempts on their lives, John Carter, his Deja Thoris, Jacob and Hilda Burroughs all flee in the 'Gay Deceiver' a space-and-dimension-going car in the good old pulp tradition. They have adventures on assorted worlds, including fictional ones such as Oz and the Lensman Universe etc., before the final confrontation. Character dialogue and interplay drove me batty, but otherwise, this is the highly entertaining Heinlein with all the old talent for making you re-examine your 'fixed' concepts. Don't miss it.

WANTED by the editor. ANY copy of 'AVIATION WEEK and space technology' If any of you Statesiders could send me a copy, I'd appreciate it..and put an extra ERG on your sub. I want to check if it is worth taking out a subscription. Can you help ???

Two strikingly produced STARBLAZE books from Donning Press priced at \$4.95 each (Fantast (Medway) can no doubt get them for you). If that seems a bit pricey, remember these are bigger and thicker than UK paperbacks, have wraparound cover art and interior illustrations.

MYTH CONCEPTIONS. Robert Asprin is a Pratt/De Camp style romp in which Skeeve (apprentice magician) and Aahz, (inoperative demon-magician) find themselves hired to defend a tin-pot kingdom against a huge army. With the aid of a small, but highly unusual band, they succeed. Nice characters, lively action and plenty of fun.

THE SHROUDED PLANET "Robert Randall" (Silverberg & Garrett) originally from Analog and tells of how Earthmen infiltrate the backward planet of Nidor. Working largely undercover, they gradually get Nidorians to shed the inflexible mould of their culture and tradition so that they may enrich their lives and their world. A great yarn, hampered a bit by the unwieldy names, but in my opinion far better than much of Silverberg's more recent (and morbid) tales.

DONNING Company/Publishers 5041 Admiral Wright Rd., Virginia Beach, VA 23462 offer a wide variety of current and forthcoming titles and also run a discount scheme of 4 books for \$16.00..and a 10% discount scheme..so those living in the USA, write them direct and ask for details (mention ERG huh?)

ARROW books have issued two novels by James Blish in one volume priced at \$1.50. BLACK EASTER sees an alternate world where magic works and Bains of Consolidated Warfare Service employs master magician Theron Ware to free demons into the world for a limited period. The plan goes awry and holocaust ensues. THE DAY AFTER JUDGEMENT Nuclear WW3 follows the demon's release. From deep in S.A.C.'s underground lair, General McKnight wages war on the City of Hell which has risen in Death Valley. The two yarns form a striking mix of religion, sf and magic. Characters are unusual but well developed to make the whole and exciting bit of Blish at his best.

RETURN TO EARTH

H.M.Hoover

Methuen Children's Books,

\$4.95

Galen, retiring Governor of Marsat seeks out his old Earth home and finds a powerful cult led by 'The Dolmen' Galen meets Samara, daughter of the Director of the Continental Loyd Corporation. When her mother is killed, Samara takes over but

The Dolmen has other plans which include death for Galen and Samara. Characterisation is excellent and the writing makes no concessions to 'children's level' whilst developing a fairly standard plot in a highly interesting and very readable manner. I found it more enjoyable than many an 'adult' novel.

WARGODS OF LUDORBIS

Adrian Cole

Hale \$6.75

Facing assassination, ambitious

General Layhuto flees to the Games

World of Ludorbis pursued by agent

Marrish and assassin Sperago. The

two agents find a warrior world and must fight their way to kill Layhuto, now ensconced as a Wargod. The excitement is well sustained with each incident leading neatly into the next. Characterisation is excellent (apart from Marrish saying 'I got it' five times in as many pages), the yarn deftly plotted and developed. Despite the title, this is slightly different and a cut above the average 'war world' story. It may not be a Hall Of Fame classic, but it is still a darned good read.



Skeeve

OSCILLOSCOPES have come a long way since I stripped a VCR97 from an old radar unit and lashed up a 2 $\frac{1}{2}$ KV supply to make my first model. This excellent little book explains much of that progress in simple language with an almost total absence of formulae and mathematical

Ian Hickman
Newnes Technical Press.
£3.45

barbed wire. The result is a highly readable account of the great variety of modern equipment and what you can do with it. Chapters cover basic and advanced gear, the use of accessories, special purpose 'scopes and two chapters on basic operating principles, plus appendices on phosphors and manufacturers. There's an excellent index and a whole raft of photographs, diagrams and circuits which all add up to an invaluable handbook for amateur or professional. Incidentally, if you are looking for a scope...a Kikusui 538A is on offer from Hobby Electronics for only £95.

ELECTRONICS POCKET BOOK

E.A.Parr £5.60
Newnes Technical Books

Ever been frustrated by having to hunt through a stack of books in search of a forgotten bit of data? This little mine of information goes a long way to solving the problem, jamming an immense amount of information into its 350 pages of text and diagrams. Component operation, amplifiers, oscillators, digital techniques, computers, optoelectronics, TV, disc and tape recording, servosystems, transducers, power supplies and fault finding...plus handy reference tables and an excellent index. All this and lots more. There are one or two omissions (digital recording techniques, for instance, or 'truth Tables', but these are few and far between. The book can be read purely for information, as a background to an electronics course or simply as a very handy reference work. Invaluable for all the things one should be able to remember...but never can.

THE NERMAN'S CHILDREN

Poul Anderson
Sidgwick & Jackson
£7.95

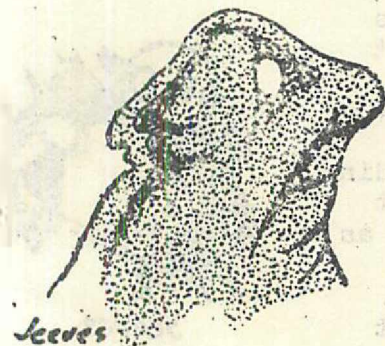
Along with his siblings, Tauno (half human, half nerman) is separated from King Vaninen and other survivors when their underwater city is destroyed by an exorcism. We follow the adventures befalling the two groups as Vaninen leads his small band in search of a new aquatic home and Tauno seeks to establish his youngest sibling safely on land before following the rest of the tribe. Deadly storms, krakens, villains and slavers are among the perils faced as Anderson blends his faery fantasy and Scandinavian myth.

Characterisation is rather weak and I failed to understand why, with nermen tribes dying out, those remaining were unable to assimilate so small a band as one of 140. Quibbling aside, if you like wide-scale adventure, then this one is for you.

THE GABRIEL INHERITANCE

Alfred Dyer
Hale £5.95

Cern Staedtler's life is endangered when a meteor strike ruptures a specimen tank on a spacecraft, covering him with a corrosive specimen fluid. Hospitalised on planet Eros, he begins to recover, but has two strange growths on his back. These excite the natives who hustle him away for their own purposes. After much uneventful to-ing and fro-ing, Staedtler's back lumps begin to exhibit their powers. To me, Staedtler never really came alive and the pointless trekking coupled with the lack of a cohesive aim failed to rouse my interest.



DEEP SPACE WARRIORS

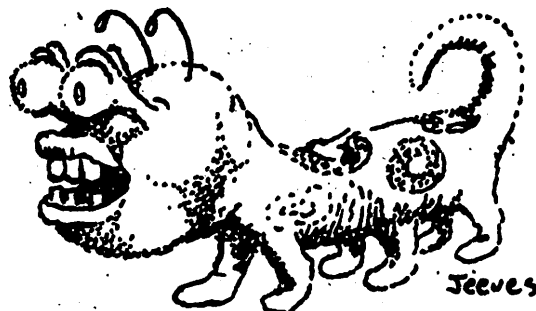
Julia Riding
Hale £5.95

Attacked and left drifting by one set of aliens, Sergeant Anders is rescued by another group of Masters and Servants who follow 'The Rule' and roam through space dispensing justice. Whilst pursuing the pirates, a relationship develops between Anders and one of the Masters. However, judgement of pirates..and humanity has yet to come. Despite the ghastly title, this one proved highly enthralling. The characters of Anders and Master Telaires being very nicely developed. The pirates never came alive but that is of minor importance as they are not pivotal to the story which is really a tale of friendship between individuals..and their races. Nice one.

IF IT'S BLUE IT'S PLAGUE

L.P. Reeves
Hale £6.25

I suspect Mr. Reeves is a 'caver' since 90% of this tale is set under the Yorkshire hills where four pot-holers are trapped when an alien starship mistakenly sterilises Earth. The yarn is well written, characterisation being of particular strength..but I found it most implausible that no other survivors would exist..in mines, submarines and underground military silos etc. Also, the alien/human language problem is ridiculously oversimplified. Pity, as the style flows smoothly and the underground adventures never pall. A little more polish and a less facile ending would have made this a real winner.

THE DREAM KILLERS

R.M.E. Carter
Hale £6.25

Mercenary Frank Stafford returns to the violent, riot-torn Britain of 1995 where he stumbles across a scheme to market a new experience-inducing drug. Making the stuff involves killing the person whose experiences are to be recorded. Stafford aims to cash in on the plot, but falls into the clutches of the cripple Manero and his wife Carla. One wants Stafford's experiences, the other his services as a stud father. Unfortunately my review copy had numerous repeated and jumbled pages at this point so I'm not quite sure how things finally worked out..but I was thoroughly enjoying it up until chaos point. Stafford was rather an anti-hero..but credible.

WITH QUEEN OF LOCHLANN

George H. Smith
Hale £6.25

Duffus January is a normal, sex hungry, machine hating American bookseller...who also happens to be a non functional wizard. When Morgan Lacy comes for help and is then taken to an alternate world of Annwyn to become Morrigan, Queen of the Fomorians who are being attacked by the sea people, January follows with Annis who is another claimant to the throne. Armed with his sword Skullcleaver, January finds himself in a world of magic, pirates, vampires, monsters and other wonders. An amusing romp in the Pratt/De Camp style, but probably more enjoyable ...I particularly liked January's desire to worship the goddess Bronwen..as this involved making love to Annis whenever he could wangle it.

Incidentally, two of the jackets (Witch Queen, and 'Warriors' were done by Helen Hale....possibly a relative, as the work does the books no service.

SPECIAL REVIEW



LEARNING BASIC WITH YOUR SINCLAIR ZX80

Robin Norman.

NEWNES TECHNICAL BOOKS £3.95

By one of those happy coincidences, shortly after ordering one of the new Sinclair ZX81 computers I heard of the Newnes book and requested a review copy.

The book beat the ZX81 by four weeks, but both made it well in time for the deadline for ERG 75.

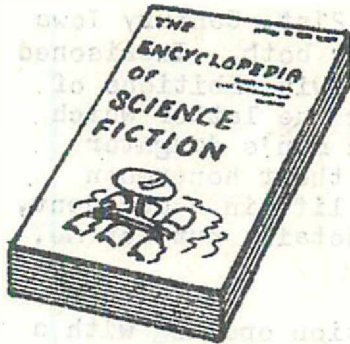
THE BOOK..is clearly written without ponderous phrasing and moves steadily from the known to unknown in well defined stages.

First, you are told how to set up your ZX80..that takes all of two minutes. Then EVERYTHING is gently explained. I particularly liked the use of Disney's

Worcerer's Apprentice to illustrate the pitfalls of unended loops. Each chapter has a set of questions (with answers in Appendix 4), plus a listing of points covered in that chapter. There are several appendices including a very useful Glossary, a handy index, and a set of 14 programs for games etc. (one is a distant relative of Dungeons & Dragons). The bugbears PEEK and POKE are explained as are graphs and graphics and all the other items a newcomer to computing will want to know. Being divided into short, clear chapters, one is never faced with too much at one go. Incidentally, by comparison, I found the official Sinclair handbook hardgoing in parts..but running the two together I am having great fun working my way through. A few months ago, I wasted over a fiver on a book purporting to teach me basic ..recommended by the course tutor, it proved useless, merely giving problems and their answers. I wish I had known of this Newnes book then..it is far and away the best 'teach yourself computing' handbook I have come across and if you contemplate getting yourself a ZX81 (The successor to the ZX80), I can strongly recommend you get this title to supplement the Sinclair handbook.

In case you are worried about the book being for the ZX80 and whether or not it applies to the newer ZX81, I can say that although the keyboard layout is different, and the newer model has fewer 'chips' (and is cheaper), the only other difference so far apparent to my ignorant proddings is that the , on the ZX80 apparently feeds 4 columns, on the ZX81 you only have 2 columns. The price for the ZX81 is about £70 ready made up, and for an extra £50 you can get a further 16K of RAM..which I also have on order. Sinclair also supply cassettes of games (and educational) programs for £4 each....much cheaper than, say, Atari games at £17.

The handbook, and the Newnes title both explain very clearly how to load or store cassette programs using a standard (any make) of cassette recorder, and the ZX81 itself plugs into the domestic TV for its VDU. I tried it first on our bedroom black & white, then on the colour set (where of course, it operated in black and white. No problems, in either case, the cursor appeared with a brief tuning twiddle..but I had to make an extension lead to let me sit back in comfort, as the one supplied is only about 2 feet long. There you have it..get both and have fun!



THE ENCYCLOPEDIA OF SCIENCE FICTION

Edited by Peter Nicholls Granada £4.95 **This is**

an encyclopedia and NOT a coffee table gimmick. Amassed in alphabetical order is a fantastic range of SF information on books, magazines, writers, stories, films etc. Accompanying the reams of facts are numerous photographs and illustrations.. (although some of the captions are not always objective). Additionally, there are some 175 theme entries giving general coverage to such items as Utopias, computers, fandom, esp and so on. On the professional side, coverage is superlative, but less so on fandom. No mention of many definitive

fanzines such as Slater's 'Operation Fantast' or Gillings' 'Scientifiction' although the latter does get a mention in the entry for Mike Rosenblum's 'Futurian'. No entry for the Doc Weir or Ken McIntyre Awards..or for the other excellent fanzines of the fifties (and this does profess to be a history). Conventions in the UK are listed as starting in 1951 (I attended those in '48, '49 and '50..but they are not listed). So, whilst this does cover quite a bit of fandom...mainly of recent years, its great value is in the coverage of the professional field. Every serious SF buff should have a copy of this huge (672 large sized pages..17cm x 25cm)..it's not only cheap at the price, but is also darned interesting reading even if you plough straight through....(I was a bit niggled to see Vector's first editor listed as Ted Tubb...who handed the job on to me half way through in addition to my doing the secretarial work on the side...of the first 4 issues, I edited 3½ of 'em).

THE PRIESTS OF PSI

Frank Herbert
Futura £1.35

A rare and welcome collection of short stories opening with 'Try To Remember' where all-powerful aliens tell humanity to 'communicate or else'. 'Old Rambling House' tells of a couple trading a \$200,000 house for a \$7,000 trailer. The perils of trapping a ,ind-parasire arise in 'Murder Will In'. 'Mindfield' sees a time of eternal peace through mental rebirth, and then 'The Priests Of Psi' has Agent Orne facing the ordeals created by a religious world where he hopes to counter psi and prevent war. The tales have all the complications of van Vogt without the latter's incomprehensibility. Always a good yarn spinner, Herbert hits top form in this collection.

THE SHOWQUEEN

Joan D. Vinge
Orbit £1.95

The planet Tiamat orbits a Black Holes and has a 150 year cycle. Drug-induced, immortal Queen Arienrhod plans to survive the time of ruler changing by using clones. Two of these are Moon who is a replica of the Queen, and Sparks who is Moon's lover. The plans go awry when Moon is taken off planet and Arienrhod takes Sparks as a consort. A blockbuster of a tale and the equal of Gloriana, Dune, or Malacia Tapestry. If you missed the hardcover..don't miss this.

SEVEN STEPS TO THE SUN

Fred & Geoffrey Hoyle
Penguin £1.25

Hoyle fiction (and this one is 'edited' by Barbara of the ilk) usually turns me off. This one, I rarely did the same with its detailed description of London's streets..and how to shave and make coffee. Then it got into its stride as it followed the adventures of writer Mike Jerome who plans to make a TV show about a pianist who travels into the future...and then who begins to make time leaps himself...ten years at a time. Some nice details of future societies and good characterization make this a much better Hoyle than usual.

ON WINGS OF SONG

Daniel Weinreb grows up in conformist, 21st. Century Iowa where most things are illegal, sinful or both. Imprisoned Thomas M. Disch for selling newspapers he acquires the twin ambitions of Methuen Magnum for singing and 'flying'..the former aiding the latter which is a sort of astral projection. Meeting and wedding rich man's daughter Boadicea, Daniel's life style changes dramatically after their honeymoon 'flying' spree. Skilfully constructed around Weinberg's life in a decadent, riot-torn future. Richly inventive, plenty of credible detail, but for me, it just failed to come off.

THE FIGHT OF NEITHER CENTURY

A juvenile, 5-story collection opening with a Robin Chambers sadistic, and rather gory account of a Prize Fight Granada 'Dragon' 85p between two women. Then there's a teenager who turns into a bird; an account of a shape-changing alien; a boy who likes to dream in drainpipes and thus helps in a strange war. To conclude, two children meet a giant bird which carries them to other adventures. A load of lively, if rather stylised fantasy. I'd recommend it for a wide range of youngsters were it not for that opening yarn. Otherwise, a pleasing volume of 'what if..?' stories.

SONGMASTER

The Songmasters have achieved such perfection that a Orson Scott Card trained singer can manipulate anyone. Mikal the Conqueror Orbit \$1.75 is given Songbird, Annset who is then kidnapped and conditioned to kill Mikal. The plot is aborted but the plotter is hard to find and many years go by before Annset achieves his destiny. Developed from two Analog tales, deftly characterised, skilfully and beautifully developed, this gripping yarn is all the things the 'Dragon' series might have been..but never was. An excellent yarn.

DRAGON'S DREAM is the name of a new (to me) publisher, based in Holland and specialising in a variety of art books. Among them is "ROGUE PLANET", part two of a Dan Dare picture-strip story reprinted from the Eagle (part one is also available..along with 21st Century Foss; Ballard's 'Drowned World'; Dean's 'Views' and many others. If you are a Dan Dare fan, then this one is for you. Some evidences of script alteration are evident in the 'balloons' but whether this is new..or from the original artwork, I wouldn't know. Dragon's Dream also sent for review, "THE ROAD OF COURAGE" which, as with Dan Dare, is also illustrated by Frank Hampson and originated in Eagle. The dialogue and some of the situations seem a bit modernised or colloquial, but this should help to make the story more 'real' to any youngster presented with it. Prices vary, but Dan Dare titles cost \$4.95 in paperback, and the Jesus story only \$3.95 in hardback. Page size is a large, 29.3 by 22.2 cms and the titles are available through the distributors, W.H.Smith. Colour and artwork are both excellent and so is the overall presentation.

THE ARRIVAL OF RUVAIG

Jewel thief Torv Rikdahl pulls a big job and flees to Iain Douglas Serenia under the guise of a new administrator whose Hale \$6.25 papers he has stolen. Planning a few days in hiding, Rikdahl finds he is drawn into preventing a human-extraterrestrial war, foiling drug peddlers and escaping the vengeance of Johann van der Gijn whose jewels he stole. A rather standard adventure with additional gangster violence thrown in. Rikdahl is believable, van der Gijn even more so, but the remaining characters just say their lines. The aliens are cast in the 'noble red man mould' so that all in all the story could be classed as borderline SF...an entertaining story to read, but not to put on your Award list.



National Aeronautics and
Space Administration

Viking News Center
Pasadena, California
(213) 354-6000

Viking 2-8
P-17681 (Sol 0)
September 4, 1976

Viking 2's first picture on the surface of Mars was taken within minutes after the spacecraft touched down on September 3. The scene reveals a wide variety of rocks littering a surface of fine-grained deposit. Boulders in the 10- to 20-centimeter (4- to 8-inch) size range — some vesicular (holes) and some apparently fluted by wind — are common. Many of the pebbles have tabular or platy shapes, suggesting that they may be derived from layered strata. The fluted boulder just above the Lander's footpad displays a dust-covered or scraped surface, suggesting that it was overturned or altered by the foot at touchdown. As in Viking 1's first picture taken on July 20, brightness variations at the beginning of the picture scan (left edge) probably are due to dust settling after landing. A substantial amount of fine-grained material kicked up by the descent engines has accumulated in the concave interior of the footpad. The center of the image is about 1.4 meters (5 feet) from the camera. The field of view extends 7 degrees from left to right and 20 degrees from top to bottom. Viking 2 landed in a region called Utopia in the northern latitudes about 7500 kilometers (4600 miles) northeast of the site of Viking 1's landing on the Chryse plain 45 days earlier.

