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### SPLASH! GASP! SPLUTTER!

A QUICK DIP INTO RIP RIG & PANIC'S KIND OF CLIMATE

BY RICHARD COOK

Rip Rig & Panic's Gareth Sager coming up for air/Photo by Peter Anderson

# THE MAKING FRIENDS WITH THE MICRO CHIP...

**H**ARRY IS ADMITTED to the hospital one day after collapsing in the street.

The doctor is of the opinion that Harry is suffering from fatigue. However, the hospital is equipped with an infallible diagnostic computer, and this computer identifies Harry's symptoms as an advanced case of EAL (Expense Account Lunchitis). The doctor decides to prescribe a frugal diet and plenty of exercise.

Two weeks later, while jogging to work, Harry collapses again. By the time the ambulance arrives, Harry is dead. An autopsy reveals the cause of death to have been exhaustion coupled with malnutrition.

Suppose you were Harry's widow... Who would you sue? Who should be blamed for Harry's demise:

- (A) The computer — for making the wrong diagnosis.
- (B) The programmer — because the diagnosis was most likely the result of an error in the program.
- (C) Society — for encouraging expense account lunches and jogging.

(D) The doctor — for trusting the computer over his own judgement. If you answered...

(A)... then you were tricked by the word infallible. There is no such computer. Even if there were, blaming it for Harry's death is like blaming the car for the traffic accident.

(B)... then you know about computers, but are much too quick to make apologies for them.

(C)... you are all set for the computer age, but don't even try to share a joke with one. A joke, to a computer, is simply a 'user error'.

(D)... you have a sound perspective on both computers and doctors. The electronic brain has its limits. And as HAL remarked in Arthur C. Clarke's *2001*, the human mind is not without its shortcomings as an analytical tool.

HAL, the condescending, milk-voiced mega-computer that burned its sensors on eternity, raised a spectre much older than computers. Stanley Kubrick's screen version arrived hand-in-hand with the real thing in the late '60s, and since then the fearful imaginings of writers like Clarke and Orwell have percolated down to the level of everyday anxieties. The Home Office computer has been installed; there is a chip that can do your job.

Computaphobia was so deep-rooted that during the first flush of computomania it enabled well-placed embezzlers to swindle

fortunes out of the banks that were the first customers of the new technology. If the manipulation of computerised accounts was uncovered, it was usually possible to "blame it on the computer". Who could resist the satisfaction of gloating over the failure of this superhuman machine?

The machine, however, will have its day. The view is that it will be almost as traumatic as the one when our forebears faced the hissing iron monsters of an earlier technological apocalypse. There was a parable written then of Science run riot — and the computer is its latest Frankenstein.

I SHOULD CONFESS here, at the risk of being labelled an appeaser, that I have made friends with the Frankenstein monster. I have invited it into my house, and learned its language. Quite soon, we were playing games together. With the help of Pythagorus, Newton and Einstein, I have landed spaceships on the moon, sunk countless Argentine subs, and intercepted the entire Soviet stockpile of ICBMs.

Virtually everybody reading this has, in fact, used a computer. 20p in the slot of an arcade game buys a few minutes' interaction with a modest computer. After the scientific, business and industrial use of computers, there is the equally widespread recreational use in TV and arcade games.

The arcade addict, mesmerised as much by the electrons bombarding the TV screen as by the asteroids bombarding his ship; eyes fizzing with concentration, fingers moving at typing speed, heart pounding in time to an audio pulse... This addict is getting preliminary computer experience from a 'user-friendly' program. When the pattern of the game becomes familiar — and they always

do — he will have a mute comprehension of some of the rudiments of programming.

Demonstrating the workings of a game program in the classroom is the next step in a bigger, accidental program. Kids begin playing with computers and will, in theory, end up working them. Like the little girl in James Whale's film, they aren't spooked by the Frankenstein monster — something which is guaranteed to make the dollar-signs ring in the eyes of our forward-thinking industrial benefactors.

HAL has been forgotten. The banks have removed the bugs. A minister has been appointed. His message: computers = profits

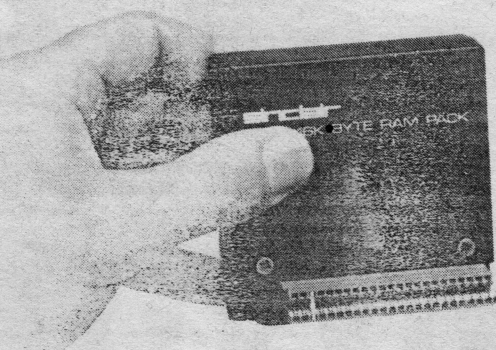
= jobs. Even a confirmed sceptic like Mick Farren admits, with numerous provisos, that the king harvest might be just around the corner. At any rate, by becoming small, available and user-friendly, computers have insinuated themselves into our lives, and no one has yet been eaten by one.

F ALL THE blessings of the Second World War — the jet aeroplane, the V8 engine, the rocket, prosperity, the bomb — it turned out to be computers that made Stephen Wozniak a millionaire. Wozniak was a 25-year-old engineer at Hewlett-Packard in California's Silicon Valley who decided to take advantage of the shrinking size and price of computer parts to build what would become the first true home computer — the Apple II.

It wasn't difficult. It wasn't even original. Many firms in Silicon Valley were busy doing the same; but they were even busier servicing the big defence and industry contracts. It was left to people like Wozniak and Nolan Bushnell, an electrical engineering graduate who built the first Atari game in his garage, to

## ...BUT WOULD YOU WANT

... but would you want one invading your space? We test drive the Sinclair ZX81, the £70 computer that looks set to revolutionise home hardware.



**I**F THERE'S one thing everybody knows about computers it is that they are boring.

People who have the misfortune to work with them are viewed with pity for the most part, apprehension at best, rising at times to open scorn. On a list of ideal guests for a dinner party, the computer programmer rivals the bank clerk and chartered accountant. What, then, would induce anyone in their right mind to take up computers as a hobby?

No doubt about it, people do. They are the target of a fast growing number of specialist publications. Like the video, hi-fi, camping or DIY enthusiast, they belong to an elaborate fraternal hierarchy, with its old hands and its novices, snobs and obsessives, jargon and apparatus.

They verge on becoming the stuff of stereotypes. In the US, it's the bug-eyed, pot-bellied, long-haired computer bum. In the UK, quaintly echoing the enthusiast of a past era, it's the four-eyed computer ham. It might be *Classic Car*, *Practical Electronics* or *Playbirds* in the briefcase on the 6.27 but instead it's *Popular Computing*.

**Popular computing?** The phrase is an almost comical juxtaposition of the arcane and the commonplace. What does the subscriber to *Popular Computing* (a weekly, no less) actually do, you wonder?

He plays with computers as a hobby. He writes programs, runs them, tinkers with them, runs them again, writes more programs, demonstrates them to anyone who shows an interest, maybe gets one printed in *Popular Computing*, and lusts after a bigger and better computer.

A lot of the programs he runs are games

programs, but the thing is that writing them is a kind of game, a puzzle of maths and logic, in itself.

On this level, the nature of the bug becomes clear, since our capacity for amusement from a challenging puzzle is universal. Programming can be a great game for the numerate, or even the half-numerate. The rules are simple and once learnt, the game can begin, getting progressively more complex until boredom or frustration inevitably set in. Plus there is the added fillip of being able to make something happen on a TV screen; a naive little joy but a triumph of sorts.

The point of entry into this distracting hobby is almost certain to be the Sinclair ZX81, the cheapest available home computer and a brilliant piece of consumer hardware of which, in the past year alone, over a quarter of a million have been sold.

Paul Rambali scans the new arcadians who blip away at technology's front line, and tells you how to have a meaningful relationship with your live-in computer

COMPUTER GRAPHICS: PETER ANDERSON

AAIAK  
IIPIAA

develop the mass applications of computers.

In 1977, Apple sold just over 1000 computers. In 1981, they sold 200,000. All the other home or micro-computer firms tell the same story. Atari has become almost as big as Coca-Cola. How big is that? Ask a computer . . .

Computers love this sort of question. They were first developed for code-breaking and for doing the calculations for A-bomb tests; which required combining many sets of numbers in many different ways — what is known in the jargon as 'number crunching'.

All computers do is crunch numbers; the bigger the computer, the more numbers it can crunch. What kind of numbers it crunches, and how it crunches them, depends on the program. A program for NatWest Bank, say, will crunch an enormous store of numbers in a very simple, routine way. A program to test for stress points in the plan of a new bridge will crunch fewer numbers, but in a very complicated way. A program for Space Invaders crunches a handful of numbers in an elementary way but displays the result as pictures. The program is what matters.

Without a program, that million-dollar 50,000K main-frame computer will just hum abstractly to itself. The most fun you can have with computers is writing programs. Since there are no absolutes in programming (i.e. one programme can do the same job as well as another) there is room for creativity and even style. It takes time and expertise to write a useful program, which then becomes 'software'. Companies pay big money for software, and that's why it took a computer bum like Nolan Bushnell to waste the time to

bring you that tennis game that now seems so primitive.

As time goes by and the market for domestic software increases along with sales of home computers, the programmers' ingenuity will be pressed into the service of this new market. Programs that allow the computer illiterate to interact with a computer in plain English already exist. And then there are the so-called 'expert' programs that let you consult a 'doctor', 'lawyer', 'mineralogist', 'rock critic' etc, etc by merely typing in a question. If the question is vague, the program prints out more specific alternatives. It is being user-friendly.

Such programs are beyond the storage capabilities of most current home computers, and will probably come on subscription. For the present, aside from but allied to their capacity for amusing games, home computers are a kind of training ground; a relatively cheap way of shaking hands with the future.

TO UNDERSTAND what this future will be like, one further technicality must be grasped. Computers deal in numbers, but the numbers can be made to represent words, pictures, sounds and of course numbers. Digital processing of information, in the case of numbers, is mainly of use to business, science and industry. The only leisure use of numbers is in games. But the use of words, pictures and sound are vast; words and pictures especially are the most important traffic of our culture.

The revolution in words is already underway; primarily and not a little bitterly in the newspaper and news media field —

though it seems reasonable to surmise that print union resistance will eventually have to yield to the arcade addicts, a few years older and looking for work. What the digital storage of words promises to do is bring the library of the world to the TV screen, with a keyboard nearby to ask it questions and an 'expert' program in between to interpret. The Gutenberg Analogy has it that this will be a giant leap in the spread of knowledge akin to the invention of the printing press. At worst it will turn us all into bloated, sedentary jobless polymaths.

Digital storage of pictures is still in the early stages; but computer graphics seen in arcade games have already gone from the humble dots of the tennis game to the faintly realistic 3D displays of games like Battlezone and Sub-Roc. More sophisticated programs exist to take a TV picture, turn it into numbers, and by changing the numbers, edit the picture; turning an actor's profile from left to right, say, or a smile to a frown. Combined with the soon-to-be available digital camera, which takes pictures in numbers that can be sent down a phone, this will, if nothing else, give the lie to the lie that the camera never lies.

You can bet your last video that the technique will be adapted to moving pictures too. And the next step — seemingly 'real' but entirely computer-generated films — will subvert the nature of film reality more thoroughly than any European director. The implications for the news media are obvious. Already, most of the news teams in El Salvador use video instead of still cameras — so as to be able to select the key image to print.

The use of computers to store and process sound has already had its results, not least in the upper reaches of the US pop charts, and quite apart from such pieces of technological Dada as the Casio syndrum / synthesiser / calculator. It was computer circuitry that made

possible the polyphonic synth — without which New Order would still sound like a heavy metal band. The lush, exact, multi-layered sound favoured by every self-respecting US rock band is largely the fault of the digital sequencer, a device that turns sound into numbers, and by playing with the numbers, corrects or alters pitch, changes timbre, or turns one voice into a hundred.

The same kind of processing tricks will soon be available for pictures, and just as it was people on the fringe of science and art like Pierre Boulez who first experimented with such devices in music, so it is the avant-garde visual artists who have been the first to make use of computer graphic and picture editing techniques that will eventually find their way into every Hollywood movie.

But they will turn up in arcade games first. Watch the games for a measure of the computers' progress. Most games have an arcade life of about 18 months before the coins stop dropping; thus they are a constant challenge to the programmers' imagination and the limits of the technology.

When they start looking 'real' and talking back to you — another hurdle will have been passed. When an 'adventure' game — an as yet non-graphic game that's like an adventure story in which the player writes his own part given cues and clues by the program — when one of these turns up in your local, it means the crucial problem of cheap, durable bulk storage with high-speed random access will have been solved.

THE POTENTIAL of the computer to wreak wholesale changes in society has only just begun to be realised. The awe and trepidation at this prospect is giving way to a warming to it — science junkies that we are. But to take a stand either for or against it is foolish, since all the computer does is

CONTINUED OVER

## ONE INVADING YOUR SPACE

There is nothing very new about the ZX81 except that it is cheap, versatile and simple. At a price of £70 (or £58 in kit form) it is the perfect computer primer. If it was made by Sony instead of a small firm in Cambridge it would have become the most fashionable new item of furniture you could buy. If it was made by Atari it would be in every high street TV shop — since, with a few modifications, it could do everything an Atari can and more. As it is, the ZX81 is still only available by post.

Along with the computer comes a manual that, starting from zero, teaches the user something called Basic. This is the most common appliance-computer language, and one that is easy to understand because it makes use of plain English. It took me about three days to work through the manual (and I'm no prodigy), after which the computer was at my disposal.

What can I do with it? Well . . . not a lot. I

can play games on it and write modest programs, which is a temporary if amusing diversion. I could computerise my bank account, address book or laundry lists but I don't have any laundry lists. I could use it to help run a business, program compositions on a synthesiser, or build an H-bomb, but I don't have the time.

I am, however, poised and ready for whatever the age of digital information processing wants to throw at me next. This is perhaps asking to be bowled right over by it, but whatever it is, at least when it happens it won't be a total mystery. Beyond all else, as an ideal tool for comprehending the implications of computer technology, the ZX81 is the front runner in a field of one.

Sinclair will very soon be introducing a new model, called the Spectrum, with improved colour graphics (the ZX81 is monochrome), a much larger memory (at present only possible

with an add-on memory unit), and a better keyboard. For around £125, this next ZX will be the equal of computers costing up to £1000.

With the library of ZX software — programs stored on ordinary cassettes — getting larger by the day, and a bulk disc storage system also due to be introduced, Sinclair seem to be in a position to effect the great transformation well ahead of all the predicted schedules.

An interesting point about all the technological advancements of the past is that, however much they were scoffed at initially, once the things came on-stream people soon began to wonder how they ever did without it. There are enough predictions about computers to fill a book, but I predict you'll be surprised.





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# £69.95 is a small price to pay for a giant step into computers.

The best way to learn about computers is to own one. And the Sinclair ZX81 is a

sophisticated computer that's easy to learn and simple to use. The language is Sinclair's unique BASIC which features single key-stroke commands and automatic syntax check to identify program errors.

We've a range of 46 pre-programmed cassettes from 'Do Your Own Income Tax' to exciting games like ZX Galaxians, and we're constantly updating and expanding our range.

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keep permanent records. But the best way to learn about the ZX81 is to take the small step of calling in soon because the ZX81 is exclusive to

W. H. Smith shops.



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# WHSMITH

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## MICRO CHIP

### FROM PREVIOUS PAGE

extend our speed and capacity in every direction at once: our capacity for improving our lot as well as our capacity for screwing it up.

The mass mobility of information will make fortunes for the Henry Fords of the era, of whom Stephen Wozniak is the first. And cheap information will open up as many horizons as did the cheap automobile. On the other hand, the creation of mass data banks (school, work, medical, criminal, credit, consumer) will only extend the tyranny of the state.

But to call it all a revolution — a sudden radical change — is a misnomer. Computers merely facilitate a speeding up of production, and however radical the effect of this might be on the worker and consumer, production continues along the same lines — with the cancerous God of unlimited growth worshipped ever more fervently.

Beyond this, in my haphazard opinion, the threat of computers lies not with computers themselves but with the computer mentality.

The search for mean paths that is the crux of the flow-chart reasoning taught as first principle to all programmers has many worrying effects, not least on me as a

consumer. It is the mean path that dictates, among other things, the playlist of Top 40 radio, the homogenisation of food, the standardization of cars, clothes, housing and entertainment.

Mean paths have always been necessary to industrial processes, but the computer can find the mean path in any jungle — the linear solution to any problem — and find it very fast. What price the genius of eccentricity when the mean path is always at hand? What of the engineer or scientist who is deprived of the valuable experience of an experiment that fails? The programmer who cannot conceive of the lateral approach?

He would become, like Dr Frankenstein, the victim of his own creation. And HAL, if he only knew how to, would have the last laugh after all.

Thanks to Walte Koetke of Lexington High School, Massachusetts, for inspiring the introductory quiz; to David H. Ahl and his magazine *Creative Computing* for invaluable source material and a sane perspective; and to Adrian Boot for the comprehensive five-hour crash course with dinner and refreshments. *Creative Computing* is available from The Computer Bookshop, Temple House, 43-48 New Street, Birmingham.

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