

Printout No 5

LOAD RUNNER

THE GALAXY'S FIRST COMPUTER COMIC

LOAD RUNNER FINDS HIMSELF TRAPPED IN A FANTASTIC AND DANGEROUS GAME—PLAYING **COMPUTER WORLD**. ALL KNOWLEDGE OF HIS PREVIOUS LIFE LOST BEYOND RECALL. WHILE EXPLORING THE UNFAMILIAR TERRAIN, HE IS SUDDENLY AWARE OF BEING FOLLOWED...

TYRANNOSAURUS
REX!

FOR A BRIEF MOMENT MAN AND BEAST ARE TRANSFIXED, SEPARATED BY A DISTANCE AS VAST AS HISTORY ITSELF...

**WIN A VECTREX
ARCADE SYSTEM**

**THE FORCE OF
TIME PLAN 9**

**THE COMPUTER
KEEPERS**



...AND THEN THE GAME BEGINS.

CALCULATE
SUBJECT'S
CO-ORDINATES.

CO-ORDINATES
CALCULATED.
EXECUTE MOVEMENT
ROUTINE.



EITHER
I'M RUNNING
AWAY FROM A 64
MILLION YEAR OLD
NIGHTMARE...

OR
SOMEBODY'S
PLAYING GAMES
WITH THE WORLD'S
UGLIEST
ROBOT!

IT'S
TOO FAST
FOR ME!

LOAD RUNNER MAKES A
SURPRISE MOVE.

IF I
CAN'T OUTRUN
IT PERHAPS I CAN
OUTTHINK IT.

IT'S THE
OLD MONSTER
IN THE MAZE GAME.
SOMEWHERE THERE
MUST BE AN
EXIT...

...BUT I'LL
HAVE TO DISCOVER
THE HIDDEN LASER
LANCE TO CUT
THROUGH IT!

FROM THE CLOUDED DEPTHS OF WHAT
WAS ONCE MIKE ROMAN, MICRO
MECHANIC FOR LONDON REPAIRMEN,
A DIM MEMORY SURFACES...

IF THE
LANCE IS BURIED
IN THE TRAIL SOME-
WHERE MY CIRCUIT
DETECTOR MIGHT
LOCATE IT.

LOAD RUNNER

LOAD RUNNER SETS OFF, VENTURING DEEPER INTO THE MAZE-LIKE JUNGLE.

SHARPENED BY HUNGER THE CREATURE'S SENSES ARE RAZOR KEEN.

BIP BIP BIP BIP

BIP BIP BIP

I'M GETTING WARMER. IT'S AROUND HERE SOMEWHERE...

FOUND IT! I'M STANDING RIGHT ON TOP OF IT.

BEEEEEP

SUBJECT HAS LOCATED LASER LANCE.

ELIMINATE IMMEDIATELY.

BEEP BEEP BEEP

UNAWARE OF THE VIBRATIONS OF THE ONCOMING MONSTER, LOAD RUNNER UNCOVERS THE LANCE.

RIGHT-NOW TO FIND THE EXIT...

SCRIPT:
PETER DENNIS

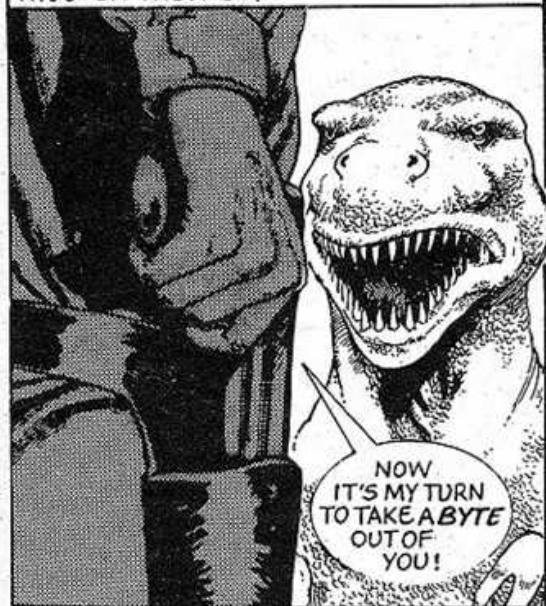
ARTWORK:
PETER DENNIS

LETTERS:
MICK HOLLINGWORTH

LOAD RUNNER



LOAD RUNNER'S FINGERS CLOSE AROUND HIS CRASH GUN, WHICH COULD MELT CIRCUITRY INTO A SCRAMBLE OF MOLTEN METAL...



ENRAGED BY THE BEAM'S HEAT, THE MONSTER CLOSES IN FOR THE KILL!



TIME 9

FAMOUS HISTORICAL CHARACTERS WERE MATERIALISING IN PAUL'S BEDROOM. PAUL AND HIS FRIENDS SUSPECTED THAT HIS AKRON 90 COMPUTER HAD SOMETHING TO DO WITH IT.

YOU'RE ISAMBARD KINGDOM BRUNEL?

THAT'S RIGHT, PLEASED TO MEET YOU.

YOU DESIGNED ALL THOSE SHIPS AND BRIDGES - AND THE GREAT WESTERN RAILWAY.

NO, SORRY, YOU'VE GOT THE WRONG MAN. I HAVEN'T DESIGNED A THING IN MY LIFE.

SCRIPT -
F. HOPKINSON
PHOTOS -
H. ARDEN
LETTERS -
S. CRADDOCK

ALTHOUGH IT'S FUNNY YOU SHOULD SAY THAT, BECAUSE I'VE GOT SOME GOOD IDEAS FOR SHIPS AND BRIDGES. I'M ONLY YOUNG THOUGH, SO I'VE STILL GOT A BIT OF TIME LEFT TO DO IT, EH?

IT'S A HOME COMPUTER.

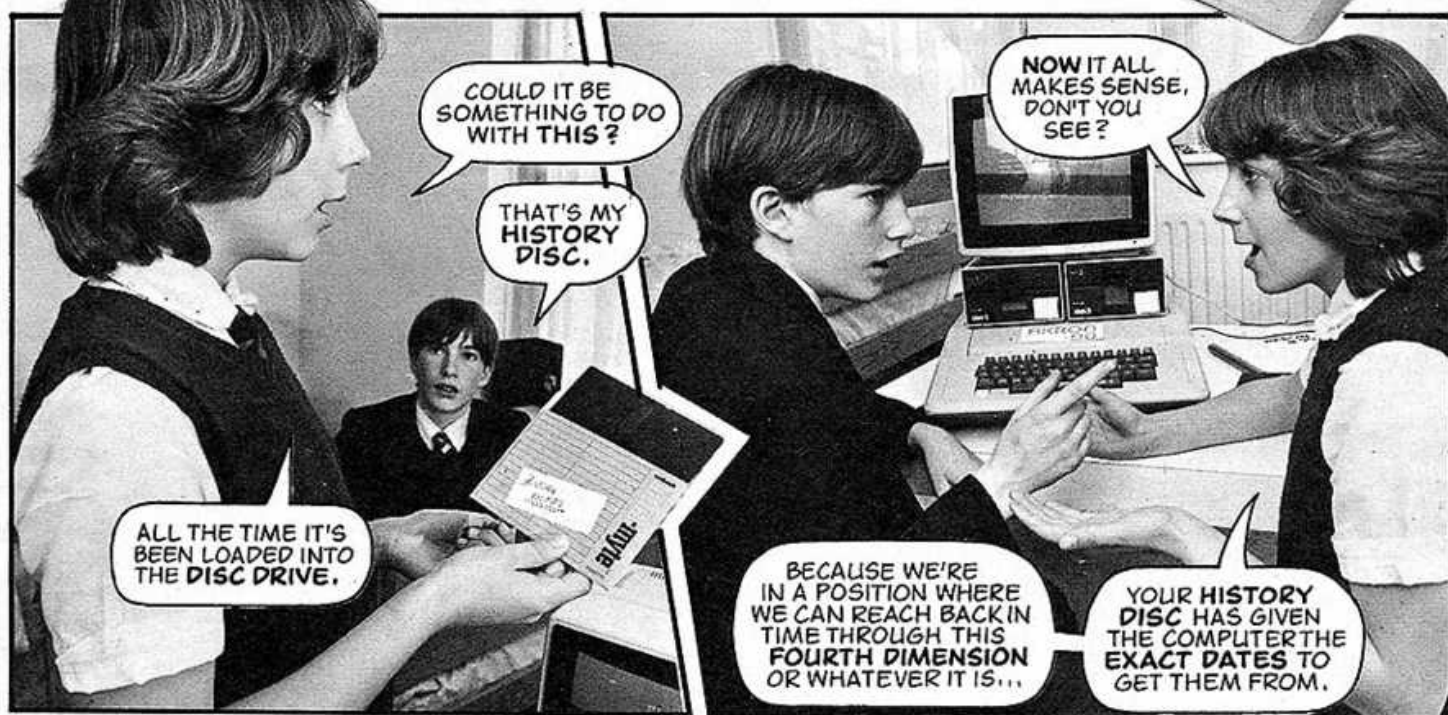
THIS IS AN INTERESTING BIT OF TINKERY, ISN'T IT?

FASCINATING. I WOULDN'T MIND HAVING A GO. THERE'S A FEW MECHANICAL EQUATIONS OF MY OWN I'D LIKE TO SORT OUT.

SOME SORT OF TABULATION INSTRUMENT, IS IT?

YOU COULD CALL IT THAT. IT CAN BE USED AS A DESIGN TOOL.







PAUL WORKED FURIOUSLY AT THE KEYBOARD, TAPPING IN THE NUMBERS FOR EACH TIME PLAN.



WHEN HE GOT TO TIME PLAN 9, THE FIGURES BEGAN TO CLICK.



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the fun, drama and frustration
of managing a league club.

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1. Update customer files.
2. Do a security check of main branches.
3. Print-out update of customer data.

The computer starts with task 1 at midnight, does number 2 at 1am and 3 at 2am. That continues for every hour of the day and the operations are repeated. Which operations will be performed at 5pm?

THE SQUARE below represents an adventure game grid. Each square represents one move which can either be north, south, east or west. Degrees such as north-east can also be taken. Starting from one of the letter Gs on the grid, you must follow the Secret Path which is de-

tailed. The moves will make you land on squares which, when put together, will form a computer word. To do it you must first find the correct letter G.

Key: N=north, S=south, E=east, NE=north-east, NW=north-west.

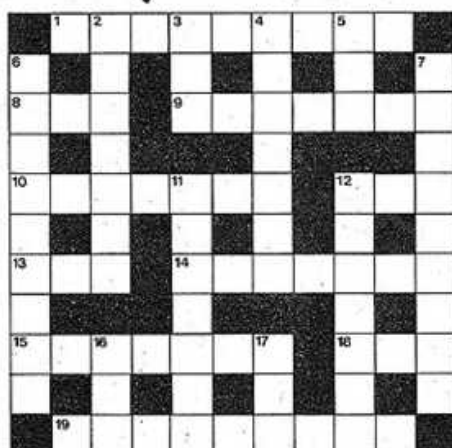
Secret Path: SE, S, S, E, NE, SE, E, N, N, NW, NW.

A	B	O	A	R	D	N	D
C	R	D	F	C	R	A	R
C	O	G	N	L	R	E	N
O	C	T	R	A	U	D	T
R	A	S	A	P	P	M	T
D	B	E	P	H	A	L	O
I	G	B	U	C	G	W	A
N	I	N	A	L	C	U	M

ANSWERS to the puzzles in last printout:
The word square included the words: HEAT, PLOTTER, ROBOT, PRINTER, ALARM, LIGHT.

Finis will take seven minutes to cross the road.

Wordplotter 5



Across

1. The new hobby — yours maybe (9)
8. Obtain a keyboard peck, for instance (3)
9. Had an ice-cream and did some processing (7)
10. Spoke soundlessly of a strange mode hut (7)
12. Go back briefly from pure theory (3)
13. Metal oxide semiconductor (3)
14. You need to be a big one to go far in 1! (7)
15. Simple sketch of the program, perhaps (7)
18. Crucial chip in a beautiful arrangement (3)
19. Scenes of adventure games (3,6)

Down

2. Caused by PRINT and BEEP (7)
3. Friendly home computer (3)
4. The machine operator used a combination of LET and READ (7)
5. Ton-up through the gate (3)
6. Classic king starts with a playful program (9)
7. What Load Runner's chief says about changing program lines? (9)
11. What the aliens always seem to be — lit up in the tube (7)
12. Sunburned girl in Cornish town (7)
16. I appear in rising extra-terrestrial clothing (3)
17. Receiver for SOUND output (3).

WORDPLOTTER 4 SOLUTION



Free copies of Wargames for Decoders

MEMBERSHIP APPLICATIONS for the Load Runner Decoders have been flooding in to my installation base, and in the near future my operators will be sending out security passes and code books to all members.

In the meantime, I am giving away 45 copies of the terrific Penguin paperback 'Wargames' — the chilling novel by David Bischoff based on the feature film which opens in London on August 18th (for more details see Load Runner printout No 4). Each of the lucky members whose names are selected will receive a copy.

Those unenlightened readers of Load Runner who have not yet joined the Decoders can do so on payment of £3. Fill in the form below and send your cheques, together with TWO passport-size photographs (black and white or colour) with your names and address on the backs, to The Controller, 196-200 Balls Pond Road, London N1 4AQ.

I am happy to announce the following winners in our Buggy Malone Competition:

- 1st Darron Ferguson, 16, Billingham
- 2nd Ian McIntosh, 17, Streatham SW16
- 3rd Angela Meyers, 12, Hornchurch
- 4th Sean Monk, 15, Preston, Lancs
- 5th D. Ludlam, 12, Surrey
- 6th John Stevens, 11, North Humberside

The following are the winners of the Camp Beaumont Competition:

- Neil M. Coe, 12, Hertford
- Namit Katharia, 12, Surrey
- Elizabeth Farbey, 14, London NW7
- Robert Hood, 11, Northampton
- David Matthews, 15, Birmingham
- Nicholas Stannah, Dorset

Congratulations.

The Controller

List below the story/programs and fact routines that you like best in Load Runner.

1.
2.
3.

What do you dislike most in Load Runner?

Do you have a computer? YES/NO

Name Age

Address



WIN A

VECTREX

HOME ARCADE SYSTEM and 3 GAMES



THE SYSTEM

Once again I bring you news of the latest exciting launch from the super-scientific world of computers — the Vectrex Home Arcade System. Marketed by Milton Bradley Ltd and costing around £130, the Vectrex is the first fully self-contained games system, incorporating its own screen, control panel and joystick. With high resolution graphics, three dimensional images and thrilling sound effects, the system captures all the excitement of true arcade machines.

THE GAMES

The Vectrex system comes complete with MINESTORM, an addictive game in which the player battles his way through alien mine fields. Twelve other games are now available, including arcade classics such as BERSERK and SCRAMBLE, and each cartridge costs £19.95. New cartridges will be launched on a regular basis.

THE PRIZES

I am pleased to announce that my operators have succeeded in obtaining one Vectrex Home Arcade System together with 3 game cartridges: SCRAMBLE, HYPERCHASE and COSMIC CHASM (all pictured right) — to give away as First Prize in my competition.

In addition I have two Second Prizes — the computerized board games DARK TOWER and COMPUTER BATTLESHIP. DARK TOWER is an electronic fantasy adventure in which your moves are recorded in the computerized control centre and your aim is to storm the forbidding castle. COMPUTER BATTLESHIP is an up-to-date electronic version of the classic war game, now with spectacular light and sound effects. You must pursue and destroy your opponent's fleet.

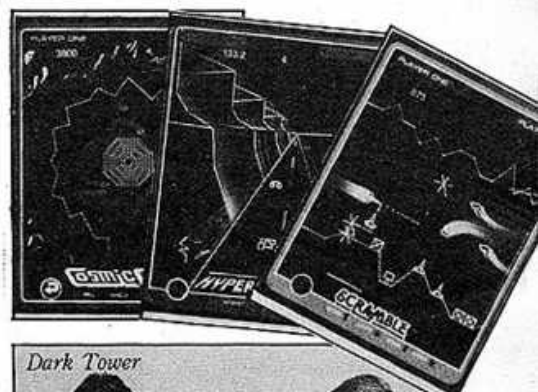
Finally, I have three prizes to offer to those who come third; the recently released arcade-based board games PAC-MAN, FROGGER and DONKEY KONG. One of these is pictured right. All prizes are produced by Milton Bradley Games.

THE COMPETITION

Below is a word square containing the titles of thirteen well-known arcade games. The titles can be read upwards, downwards, horizontally, diagonally, backwards or forwards. When you have found them, list them in the space provided and send your entry to Vectrex Competition, LOAD RUNNER, 196-200 Balls Pond Road, London N1 4AQ to arrive not later than Friday September 2nd.

The prize winners will be decided on the basis of the first 6 correct entries opened. My decision will be final and employees of ECC Publications and Milton Bradley are ineligible.

The Controller.



S C R A M B L E G E
 D G A L A X I A N D
 E Y J O P T F O O E
 F R O G B R Z P K P
 E U W A O E A A Y I
 N S O G L Z X C E T
 D S G T W X X M K N
 E E T U R B O A N E
 R A K M K E N N O C
 B A S T E R O I D S

The thirteen Arcade Games hidden in the word square are:—

Name.....
Address.....
Age.....

ABERSOFT

48k Spectrum



The Wizard's Warriors



THE WIZARD'S WARRIORS: A fast moving game that matches developments in your skill as a player by becoming increasingly more devious. By offering to you the full range of options you can choose how to control your warrior through the maze. A full implementation of this program enables such features as a continuous series of sound effects, arcade quality graphics, double-point scoring, and—for the very artful—bonus lives.

Spectrum
£4.95

FORTH: A full implementation. Ideal for writing fast moving arcade type games. Allows the full colour and sound facilities of the Spectrum to be used. Future Microdrive enhancements will be made available.

Spectrum
14.95

ADVENTURE ONE: Features a save game routine as the game can take months to complete.
'a remarkably good version....well worth the money.'
...Sinclair User...

ZX81 £5.95

MAZEMAN: A fast action m/c game that reproduces the spirit of the original.
'...is very accurate and fast.' ...Which Micro?...

Spectrum
£4.95
ZX81 £4.45

CHESS 1.4: Ten levels of play with this m/c program. Good graphic screen display.
'In a class of it's own.' ...Your Computer...

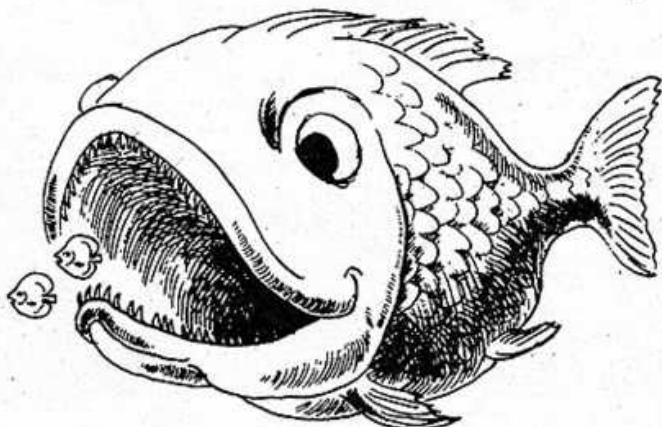
ZX81 £5.95

INVADERS: Very fast m/c action. Includes mystery ship and increasingly difficult screens.

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Addison-Wesley

LR/I

Andy Royd-the DOMINATORS

Rogue star!

THE DOM'S TRAINEE GROUNDS-MAN ANDY, USING HIS BIO-MECHANICAL LIMBS, PLAYS FOOTBALL DISGUISED AS ONE OF THE COMPUTER CONTROLLED ROBOTS THAT HAVE REPLACED SPORTSMEN IN THE 1990S. IN A "FRIENDLY" MATCH, HE IS VICIOUSLY FOULED BY ACE'S MILANOS...

HAS SPORT BECOME TOO TOUGH?

IF I CAN ONLY GET MY BREATH BACK!

SCRIPT-
CHRIS WINCH
ART-
JOHN STOKES
LETTERS-
S. CRADDOCK

THAT ROBO-PLAYER'S HAD IT! THEY'LL HAVE TO BRING ON A SPARE!

IT'S THEIR SOFT-WEAR THAT'S THE REAL PROBLEM.

ANDY JUST MAKES IT!

THERE'S ONLY ONE WAY TO SHOW THESE MICRO-ROMANS!

JOHNNY ACE OF ACE'S MILANOS IS UNSYMPATHETIC!

WELL, YOU TOOK YOUR TIME GETTING THAT ONE BACK ONLINE!

THANK GOD HE'S UP AND RUNNING AT ALL!

DAVY KEYS IN A WARNING...

NO EMOTION, ANDY-PLAY IT STRAIGHT!

DON'T WORRY, I DON'T NEED TO COME DOWN TO THEIR LEVEL!





ANDY'S GONE ROGUE. HE MUST BE REALLY MAD!



SHEESH! THAT'S NOT IN THE TEXT BOOKS! BUT WHY DO YOU ALWAYS USE YOUR NO. 10?

I GUESS I'M JUST A TRADITIONALIST!



AND ANOTHER ONE! THAT WRAPS IT UP!

THE DOMS SURE PLAY SOME ODD MOVES.



WELL, DAVY, THE SPORTS PAPERS WILL HAVE A FIELD DAY TOMORROW - HAH! I'D NEVER HAVE BELIEVED IT. I'LL CATCH YOU LATER, CAIOU!

YOU'VE NOT HEARD THE LAST OF THE DOMS, JOHNNY, WE'RE ON OUR WAY UP!



YOU OK, ANDY? FOR A MINUTE I DIDN'T THINK YOU WOULD EVER GET UP!

YEAH, SURE, BOSS. I WAS ONLY WIND-ED. I'D BETTER GET THIS ROBO-SUIT OFF BEFORE ANYONE COMES IN.



NEXT DAY, DAVY HAS A VISITOR...

A MR MARSHALL TO SEE YOU, DAVY.

WHO?



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Sinclair user

ANNUAL

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AQUAPLANE SPECTRUM GAMES FROM QUICKSILVA



BY JOHN HOLLIS

RUNS IN 4K

New wave software

WATER-SKIING has a new meaning when you play Aquaplane on your Spectrum. An afternoon messing about on the water proves not to be such a peaceful pastime as you might think.

The idea behind this game is to drive your motorboat with a skier in tow through objects ranging from rocks, logs, sailing boats, 'gin and tonic' cruisers and sharks.

Navigating your way through the waters dotted with rocks and logs is not too difficult and, using the keys 6 and 7 for up and down movement respectively, and the 0 key for extra power in the form of an engine thrust, you can make rapid progress through the first phase. Then you find yourself in the middle of a flotilla of yachts.

If you survive and you still have one of your three lives left, you encounter gin and tonic cruisers whose pilots are apparently drunk in charge of a pleasure boat. They move quickly and it is difficult to complete that phase of the game. If you do, it is time to be fed to the sharks. The limitation of the game is that it seems impossible to finish the shark phase successfully. There are so many of them that you scarcely have a chance.

Altogether the game is a pleasing change from space games and is entertaining, challenging and addictive. It costs £6.95 and is one of the latest Quicksilver releases.

Fun, 8; addictive, 7; graphics, 8.

SOFTSPOT



Attack the androids

SPACE ADVENTURE is a better-than-average version of a theme which has been worked previously. Regardless of that, the game is very playable and combines traditional adventure ideas with all-action arcade ones. It runs on a 32K BBC B.

Your mission is to retrieve four crystals hidden in a spaceship occupied by enemy androids. To find the crystals you have to locate the correct key, of four, to unlock the door of the room containing each crystal.

Use of graphics is good—colour, high resolution—and game control is either via a joystick or keyboard. One to recommend to zap-happy adventure and space fans. Space Adventure costs £7.95, available from Virgin Games.

Fun, 8; addictive, 7; graphics, 8.

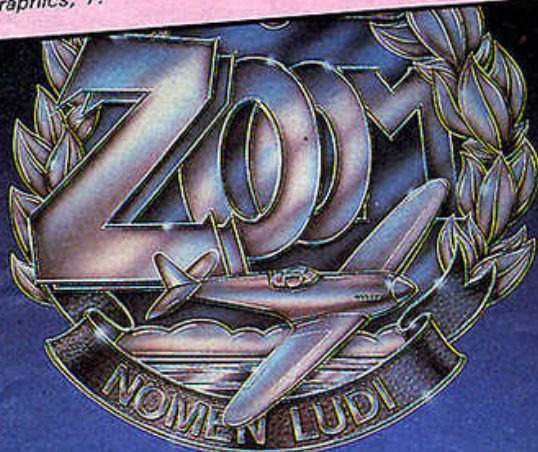
A family favourite

WITH **SPACE GAMES** reaping the benefits of popularity and publicity, it means traditional board games like this version of the old classic Monopoly, retitled Monopoly, are pushed from the limelight, however good they are. Rabbit Software isn't the first firm to produce a version of Monopoly but it has been quick with one for the Commodore 64, and it has done an admirable job.

All the traditional elements of the family favourite have been incorporated, mainly because of the huge amount of memory the programmer had available. Instead of Title Deed Cards, Chance and Community Chest and all your money scattered on the living-room floor, they are all stored in the computer memory. At the press of a button you can see what properties are for sale, which have been mortgaged and the sites on which you can build.

Graphics and sounds are used imaginatively. Monopoly players will like it but only two can play at a time. Monopoly costs £5.99.

Fun, 6; addictive, 6—you either like this type of game or you do not; graphics, 7.



Bandits at 12 o'clock

IN **ZOOM** you must line-up your sights and destroy the enemy fighters to save the lives of men on the ground. If you do not, they will be reduced to smithereens by the enemy fire.

The game runs as if you were looking through a cockpit window, so the screen is filled with all the objects within that view. You have a variety of instruments to help you fly your craft, including a long-range radar, one for shields,

one showing the state of attack and one displaying your score. As play progresses the dials are being updated constantly.

Zzoom is produced by Imagine Games and if you are already familiar with Imagine software this game will be no surprise to you. It costs £5.50 and runs on the Spectrum.

Fun, 7; addictive, 6; graphics, 7.

Ork offensive

PROBABLY the most exciting thing about this plug-in-style cartridge game is its name—Orc Attack. The words Orc Attack conjure visions of high-speed screen action, full of colour and good graphics. Unfortunately, that is not the case. It is a game dating from the days when brigands scaled enormous walls to attack an enemy only to be doused with a vat of boiling oil.

You and your Atari joystick control a man who seems to be defending the battlements of a castle single-handed. They occupy the top of the screen, the remainder being filled with the offending attackers, the Orcs.

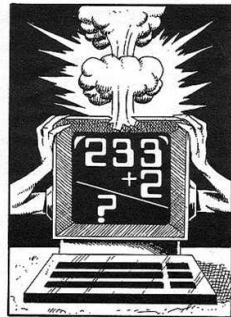
Using ladders one on top of another to scale the walls, they will attack you with swords. You are also under fire from the crossfire bolts which have a nasty effect on your man if he is hit. Beware.

You can collect weapons from either of two turrets to the left and right of the screen. The type of weapon you can use changes during the game. First you have some bricks which you must drop on the heads of the Orcs. Then the weapon changes to broadsword with which you are supposed to kill the Orcs. You use the fire button on the joystick to drop a brick or swing your sword into action.

Watch for the Ninja Orcs which, although few and far between, have the ability to climb the walls unaided. Pouring boiling oil over an attacking bunch of Orcs will ensure their death and you move to another round.

As with most games it increases in difficulty as you progress through the various stages. Extra Orcs pose the danger in that instance. If you reach certain high scores, or kill the Sorcerer, among other things, you are awarded an extra life. Produced by Thorn Emi and running on an Atari 400/800 it costs £29.95.

Fun, 5; addictive, 5; graphics, 6.



Name calling

ON NAMES AGAIN, the IBM 1620 was known as CADET before being released to the market. It was said to stand for 'Can't Add—Doesn't Even Try'.



Countdown to chaos at Avon County Council

THE DAY Avon County Council bought a computer in 1975 to deal with staff wages was a great step forward—or so everyone thought. The computer took control—and immediately there was chaos. A caretaker was paid £75 per hour, instead of 75 pence, and a janitor received £2,600 for one week's work. Many heads of departments and schoolteachers were paid their annual salary every month and others had more tax deducted monthly than they paid each year. One woman received nothing—the computer refused to pay her.

After six months, the council staff held a protest meeting. Of the 280 employees, only eight had received the correct wages. They promptly went on strike.



Describing special K

IN MANUFACTURERS' descriptions of machines, frequent reference is made to storage signs measured as 8K or 64K bytes or words, or whatever, and sometimes the abbreviation £20K is used for £20,000. Most machines were, and are, constructed using a binary scale—see our definitions. The store sizes are multiples of a power of 2, rather than 10. The nearest power of 2 to 1,000 is $2^{10} = 1,024$ and it has become customary to use K to represent that unit. There is some confusion with the K used as short for Kilo—one thousand, as in Kilogram, of course—but mostly the context makes it clear what is meant.

The Computer Story

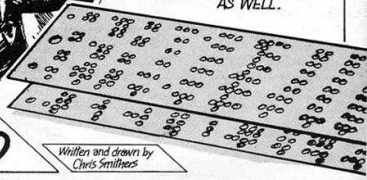
A HISTORY OF COMPUTERS PART FIVE

AS WELL: A KNOWN COMPUTING SLOGAN IS "GIGO"—SHORT FOR "GARBAGE IN, GARBAGE OUT." FEEDING PROGRAMS AND DATA INTO A COMPUTER CORRECTLY IS VITAL—OTHERWISE WHAT COMES OUT WILL BE WRONG, AND—SHOWING THAT IDEAS CAN COME FROM THE MOST UNLIKELY PLACES—IT WAS THE WOVEN TEXTILE INDUSTRY WHICH GAVE COMPUTING A RELIABLE METHOD OF INPUT.

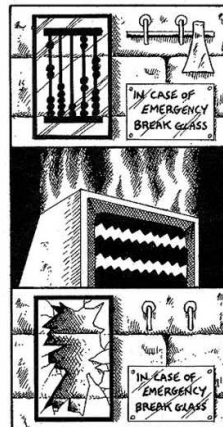
BIRTH OF THE PUNCHED CARD



JOSEPH-MARIE JACQUARD, A FRENCH SILK WEAVER, INVENTED A LOOM IN 1801 THAT WAS CONTROLLED BY PUNCHED CARDS. ALTHOUGH JACQUARD FOUGHT ON THE SIDE OF THE REVOLUTIONARIES DURING THE FRENCH REVOLUTION, AND WAS LATER REWARDED BY THE STATE FOR HIS INVENTION, THE WEAVERS COMPLAINED THAT HIS LOOM WOULD PUT THEM OUT OF WORK. THEY DESTROYED SEVERAL OF HIS MACHINES—AND BEAT UP JACQUARD AS WELL.



Written and drawn by Chris Smithers



Danish back-up

THE FIRST COMPUTER in Denmark was called the DASK. Machines in those days were not so reliable as they are now and it was thought necessary to provide back-up in case it failed. That took the form of a glass case containing an abacus, with directions to break the glass in the event of an emergency.

Buzzwords are the jargon of the computer world and can be very confusing. Below, *Load Runner* continues its glossary of computing terms. Get buzzing.

Command. An instruction to a computer from a programmer to tell it what to do. For instance, the command RUN would tell the computer to run the program which it has in its memory.

Compiler. A program which will convert instructions which are entered using a high-level language, such as Basic which humans can understand into the low-level language, machine code, which the computer can understand. A compiled program will run faster than one written in a high-level language.

Computer. A device which will output results gained from information input. It is different from a simple calculator because a computer must be able to make simple decisions as a result of information entered by a programmer.

Console. The place at which the programmer enters programs and where the computer operator will enter data. A console usually comprises a keyboard, disc units and printer or visual display unit.

Constant. A piece of data, or information, which does not change. It could be the characters of text to be printed or information which controls the data structures in a program.

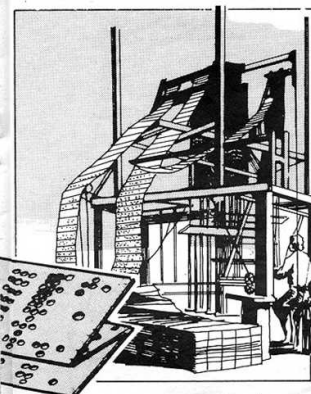
Control character. A piece of data, usually represented as a number, which will govern the way a computer or a printer works. For instance, control characters can be used to set the width of type on a printer.

Controller. A device which controls computer add-ons such as a visual display unit, printer or disc drive unit.

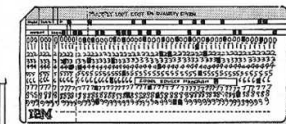
CPU. The chip which controls the computer system. It is the black box into which everything in the system is hooked. The Central Processor Unit will control the input and output of data, the storage and retrieval of information, and will decide how to handle errors when they occur.

CRT—Cathode Ray Tube. The device which puts the picture on to the screen of a television set. It is the tube which makes a television set so big and it is that which computer manufacturers hope will be discarded when flat-screen television sets are produced.

Cursor. A pointer on the computer screen which shows where data is about to be entered. Usually it shows the next print position on the screen where a character is about to be displayed.



PREVIOUSLY WEAVERS HAD TO MOVE INDIVIDUAL RODS TO CONTROL THE DIFFERENT SPOOLS OF COLOURED THREAD WHEN MAKING A PATTERN. IN JACQUARD'S LOOM, HOLES IN A CARD ALLOWED SOME RODS TO PASS THROUGH, WHILE THE SOLID PARTS OF THE CARD STOPPED THE OTHERS. CARDS WERE LINKED TOGETHER AND DRAWN THROUGH THE LOOM AS IT WOVE—EACH SET OF HOLES CONTROLLING ONE MOVEMENT OF THE LOOM.



From left to right: Joseph-Marie Jacquard (1752-1834), linked Jacquard punched cards, an early Jacquard loom, and a modern punched card for computer input.

JACQUARD'S INVENTION TRANSFORMED THE TEXTILE INDUSTRY, AND FOUND USE ELSEWHERE. 19TH-CENTURY FAIRGROUND ORGANS USED LINKED CARDS TO CONTROL THE AIR-VALVES AND PLAY COMPLEX TUNES, AND LOOKING AT EACH SET OF HOLES AS A NUMBER, JACQUARD HAD INVENTED THE PRINCIPLE OF NUMERICALLY CONTROLLED MACHINERY—STILL IN USE TODAY. PUNCHED CARDS HAVE CONTROLLED BIG AUTOMATIC CALCULATORS, AND COMPUTERS EVER SINCE, AND ARE ONLY NOW GOING OUT OF FASHION.



**LOAD
STARS**

Goalkeeper
and
Computer owner
(Sharp PC1600)
and
BRUCE GROBBELAAR
(Apple II)
made at Wembley on
August 20 when
MANCHESTER UNITED
and LIVERPOOL played in
the CHARITY SHIELD match

Shut down all systems! It's . . .

COUNTDOWN TO CHAOS

by Philip Steele

The computer—one of humanity's finest achievements. Or is it? One day the world is plunged into chaos as microchips mysteriously seem to destroy themselves. A world without computers can be a frightening place, as Joe and Ellie discover on Day One of the great disaster. On Day Two they try to get to the bottom of the mystery, with astonishing results . . .

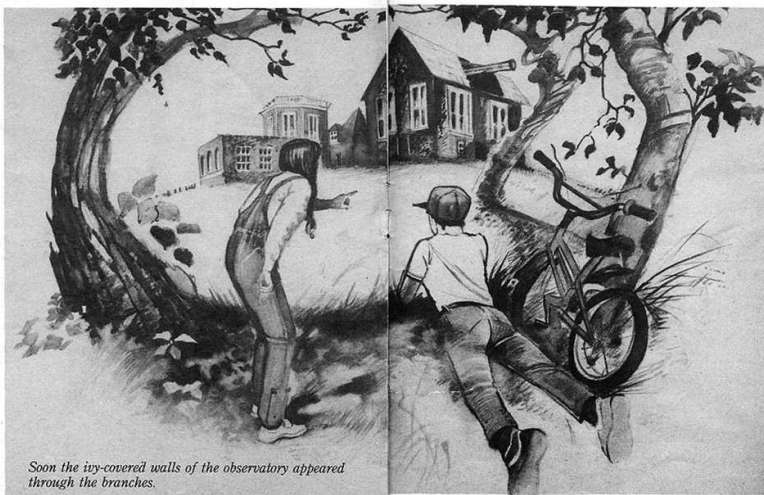
THERE IS no smell in the world like that of bacon and eggs. Ellie rolled over in her bed, still drowsy. It must be late. Was it Saturday? Normally she and Joe were awake long before their parents. . . but no, it was Thursday. No school? Suddenly she sat up and the incredible events of the previous night flooded into her head.

She raced down the stairs. Mum was already eating her breakfast and Dad was at the stove.

"I'm really hungry!"

"All right, Ellie, I think you kids deserve a special breakfast today." On the table lay a newspaper. Apparently there was no shortage of old printing presses which did not need computer typesetting for the paper to appear. Ellie leafed through the pages, which today seemed to be covered in giant headlines. *THE WORLD BREAKS DOWN!* So it hadn't all been a dream! Minutes from nuclear horror. Transport shut down: many deaths. UN in uproar. BANKS GO BUST. TV BLACKOUT. Curfew as floods threaten capital. Looters run riot. Ellie turned to the back page.

Boffins blame corrosion. Yesterday's dramatic



Soon the ivy-covered walls of the observatory appeared through the branches.

system failures are the result of some kind of corrosion of microchips. When scientists examined the microcircuits which had failed, they found that the silicon was being eaten away in some strange process. In many parts of the Earth, mineral deposits decayed in a similar way, overnight. There have been many earthquakes and landslides. We asked the geologist Dr Helga Ravenscroft to comment. . .

Ellie read on. Nobody really seemed to have an answer.

"Oh, they'll sort it out soon enough," said dad. "You mark my words".

"What did they use before microchips, dad?" asked Ellie.

"Well, the first computers were big 'uns—like dinosaurs, real monsters, and today just as extinct. Valves used to be the thing, you see. Your wireless sets were in big cabinets, too. None of your little portables. Then your transistors came along. . . I don't think we'll go back to all that just because of the disaster, though. They'll find a way round this little problem".

"If you ask me", said mum, "it's all down to that darned comet. There's funny things out there in space; now, take flying saucers. . ."

Ellie folded the newspaper. She wished it would all end—but she wasn't so sure as her dad that the problem would just go away.

JOE NEVER liked Thursdays. Every Thursday morning there was a French test at school and every week he seemed to do worse. He used to dream of spending the day fishing, or swimming at the pool. Today, of course, there was no school. Yet he didn't really want to swim or fish. The events of the

previous day kept running through his head like an action replay. He sat in the backyard, throwing stones at a watering can.

Ellie gave him a shove. "Why, Joe. Why? There must be a reason for all this." "Look, let's think about this. Silicon is being chewed-up all over the world. It's not one country trying to attack another. Do you think it could be pollution? You know, factory smoke with some kind of acid in it? What do they call it? Acid rain? Or perhaps mum's right, and its coming from outer space".

"Well, there's one way to find that one out".

"What's that?"

"Go and see Lebo".

"Who?" Ellie scratched her nose.

"Professor Lebo. The old astronomer bloke from last night".

"Shall we? We could cycle to see him at Linden Castle Observatory; that's where he said he was going—but what about the curfew?"

"Look, it's a two-hour cycle ride. If we leave now we'll be back before the curfew starts. We can avoid the evacuated area, Sector 5".

They told their parents they were going for a bike ride—but they did not say that they were on the trail of the strange professor.

"Well, for heaven's sake, take care!" said dad. "Things seem to be getting back to normal—but you never know. Take some sandwiches and be back here before curfew—or else!"

IT WAS a fine, sunny day. Out in the country they seemed to leave the troubles far behind. They bowled along the peaceful lanes with the breeze in their faces. At Sellerton they stopped for lunch and

soon the towering Linden Castle Observatory appeared on the skyline.

"That's it!" said Joe. "It looks a bit creepy to me". All visitors to report to the main gate read a sign on the fence. Joe rode over and leaned his bike against the cabin. He put his head in at the window.

"Hello! Is Professor Lebo there, please?"

"Oh, you want to see the Prof, do you?" was the reply. A little fat man with a red face stared at Joe. "I suppose you think you're the Prime Minister? Beat it, sonny! Don't let me catch you skulking about round here!"

Joe rode back to Ellie. "No hope!" He pulled a face.

"How about an encore for last night?" said Ellie, pointing at the high wire fence around the grounds. With a leap and a scramble they had scaled the fence and dropped down among the shrubbery on the other side.

They crawled through the undergrowth for what seemed an eternity. Joe got a flake of bark in his eye—but soon the ivy-covered walls of the observatory appeared through the branches. The ancient building was some 600 years old—but it housed one of the world's most modern telescopes.

Joe and Ellie zipped across a strip of lawn and stared in through the nearest window. Nothing much to see there. Suddenly they both jumped out of their skins. A hand closed on their necks from behind.

"Aha! My young friends from last night!" They wriggled round to find themselves staring into the pebble glasses of Professor Lebo. "And what can I do for you?"

"Oh, professor, we only wanted to see you again and ask you some questions."

To their relief he let out a guffaw of laughter. "And to break into the observatory like burglars, eh? Oh, never mind. You had better come in and look around".

"Against the rules", said the prof. "Don't tell a soul." He swept into the hallway and along a series of corridors. "Extraordinary business, all these troubles, don't you think?"

"That's why we came to see you", said Ellie, panting as she tried to keep up with the old man. "Mum thinks it's something to do with outer space but I wondered if it was pollution". The professor led them into a book-lined study.

"Sit down! Well, it seems that they now know what the problem is, even if they can't solve it. The silicon is being eaten by bacteria. The bacteria have attacked mineral deposits in the Earth's crust and it seems they have developed a taste for silicon chips. Or so I am reliably informed. As for the whys and wherefores, well, your guess is as good as mine. Now I expect you would like to see the telescope; stay here while I go and get a key."

With the professor out of the room, Joe and Ellie felt easier. On his desk were piles of glossy photographs. They showed the night sky in fantastic detail.

"Aha, my little friends!" said Joe, imitating the professor. "And vot have ve here?" He screwed his eye against a magnifying glass and looked at some of the photographs. Suddenly he stiffened.

"What's up, Joe?" asked Ellie, suddenly wary.

"Ellie", said Joe quietly. "What in heaven's name is that? Just in front of the comet? . . ."

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THE INVASION OF THE ARCADIAN

MUST TRY TO LOCATE THEM...
PICTURE THEIR POSITION.
SO WEAK THOUGH...
SHOULDN'T HAVE TELE-
PORTED... AHH...
WHO'S THIS...

SCRIPT:
LES COOKMAN
ART:
JOHN STOKES
LETTERS:
STEVE POTTER

AFTER ESCAPING FROM A GANG OF DAZERS THE MYSTERIOUS YOUTH IN BLACK HAD NOW TO FIND HIS SCATTERED GANG. HE HAD TRIED TO CONVINCE THEM THAT THE MIND WARP MACHINES WERE REALLY A MIND CONTROLLING DEVICE BEING USED BY ALIENS WHO PLANNED TO DOMINATE THE WORLD. THEY RAN IN FEAR AND NOW HE USED HIS STRANGE POWERS TO TRACK THEM DOWN.



AGGIE... JUST THE ONE I NEED... NOW IF I COULD ONLY CONVINCE HER THE OTHERS WOULD FOLLOW!



...SO I MAY AS WELL STAY AT KAREN'S FOR THE NIGHT, O.K. MUM? AFTER ALL IT IS SUNDAY TOMORROW...



AGGIE, BUSY HELPING WITH THE CHORES LOOKS UP AND SEES...



NO, I DON'T MIND, DEAR, BUT MIND YOU'RE HOME BY LUNCH TIME... I'VE GOT YOUR FAVOURITE.

...D STANDING OUTSIDE!

...ER...UM...OH... THANKS MUM, I-I'M JUST POPPING OUT FOR A MINUTE.



HOW DID YOU FIND ME? I MEAN, I'D GIVEN YOU UP... ANYWAY, I DON'T SEE HOW I CAN HELP YOU.



AH! BUT HOW WRONG YOU ARE, AGGIE! AFTER THAT CLOSE ENCOUNTER WITH THE DAZERS, PERHAPS NOW YOU'LL BELIEVE ME! IT'S VITAL THAT WE DESTROY THOSE WRETCHED MACHINES, AND TO DO THAT, WE MUST FIND OUT WHERE THEY COME FROM.





THE GAME PROCEEDS WITH THE USUAL
THOUGHT CONTROLS, TRAPPING THE
UNWARY HOSA BRAIN WAVES.

THEN COME THE INSTRUCTIONS.
"YOU MUST SEND FOR YOUR
FREE PERSONAL STEREO TO..."



THAT'S IT!
THAT'S THE BREAK
WE NEEDED. NOW WE
KNOW WHERE THE
CONTROLLING HEAD-
SETS COME FROM,
WE'VE GOT THEM...
WE'LL DONE!



NOW WE'VE
GOT TO FIND THE
OTHER TWO. COME
ON—QUIETLY!



I MUST USE MY
MIND TO TRACE JO AND
BENNY. WE NEED THEIR
HELP IF WE ARE TO
SUCCEED... MUST
CONCENTRATE...



PHWE! DONE
IT! I KNOW WHERE
THEY ARE. JUST
GIVE ME A
MINUTE



THE TEAM IS COMPLETE!



I KNOW IT'S
HARD TO BELIEVE,
BUT YOU MUST TRUST
ME AND TOGETHER WE
CAN SAVE THE
WORLD!



CONTINUED
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BBC Model B



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Software

Acornsoft, c/o Vector Marketing, Denington Estate, Wellingborough, Northamptonshire NN8 2RL.
Soft Joe's Software, Business Centre, Cloughton Road, Birkenhead, Merseyside.
Level 9 Computing, Department C, 229 Hughenden Road, High Wycombe, Bucks HP13 5PG.

Books

Newtech Publishing Ltd, 8 Forge Court, Reading House, Yateley, Nr Camberley, Surrey.
Granada Publishing, PO Box 9, Frogmore, St Albans, Hertfordshire AL2 2NF.
Sunshine Books, Hobhouse Court, 19 Whitcomb Street, London WC2 7HF.

Comments

The BBC Micro is generally regarded as the best microcomputer on the market, although it is very expensive. There are two models, A and B, but because of lack of demand the Model A is to be phased out of production. The Model B can be used as a business machine. It has a device called the tube which will allow a second CPU to be attached. The favourite second processor is the Z-80.

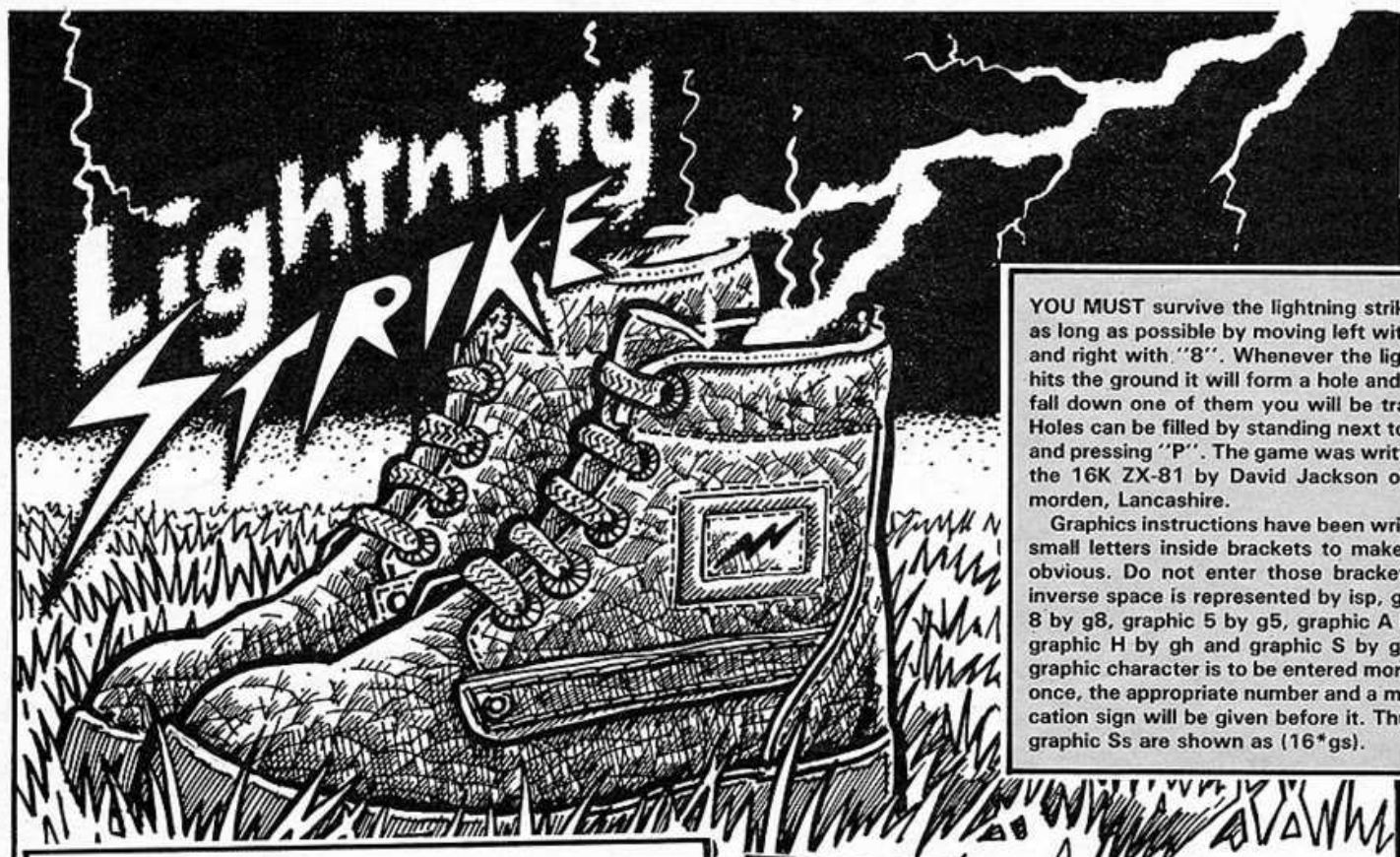
Program

The useful routine printed below enables the user to list the contents of memory locations and to change those contents at will.

```

10 VDU22,7:INPUT"BYTE NUMBER ?"Q#:M%=EVAL(Q#):VDU12,31,10,1,33,83,46,65,100,9
7,109,115,33,28,0,22,39,3,14:FORX%=0TO255 STEP8:PRINTSTR$(M%+X%);:FORY%=0TO28 ST
EP4:PRINTTAB(Y%+6);STR$(?(X%+M%+(Y%/8)));:NEXT:PRINT:NEXT:VDU26,15:GOTO10
20 REM TO USE THIS DECIMAL MEMORY VIEWER
30 GOTO LINE 10 (IT CAN BE RENUMBERED TO ANY LINE IN THE PROGRAM)
40 REM ENTER LOCATION IN HEX (&) OR DECIMAL
50 WHEN SCREEN FULL USE SHIFT TO SEE NEXT BIT
60 USE ESCAPE TO GET OUT OF PROGRAM.
70 REM VDU22,7 CLEARS THE SCREEN BY CHANGING TO MODE 7
80 REM INPUT BYTE MAY BE IN HEX OR DECIMAL OR A CALCULATION AS LONG AS
VARIABLES EXIST
90 REM VDU12 CLEARS SCREEN.VDU28 SETS UP LIMITED TEXT SCREEN WITH FOUR
VARIABLES FOLLOWING.
100 REM X% GIVES NEXT 255 VARIABLES FROM INPUT BYTE AND PRINTS LOCATION AS F
IRST BYTE ON LINE.
110 REM STR$ MUST BE USED TO RESTRICT NUMBER TO POSITION ON SCREEN.
120 REM ?(NUMBER) MEANS PEEK AT THIS LOCATION IN MEMORY
130 REM Y% IS USED TO GET NUMBERS IN RIGHT PLACE ON SCREEN
140 REM VDU26 RESTORES SCREEN TO NORMAL SIZE
150 REM VDU 15 RESTORES PAGEING SCREEN TO SCROLLING SCREEN
160 REM CAN YOU PUZZLE OUT THE REST OF THE VDU COMMANDS ?

```

YOU MUST survive the lightning strikes for as long as possible by moving left with "5" and right with "8". Whenever the lightning hits the ground it will form a hole and if you fall down one of them you will be trapped. Holes can be filled by standing next to them and pressing "P". The game was written for the 16K ZX-81 by David Jackson of Todmorden, Lancashire.

Graphics instructions have been written in small letters inside brackets to make them obvious. Do not enter those brackets. An inverse space is represented by isp, graphic 8 by g8, graphic 5 by g5, graphic A by ga, graphic H by gh and graphic S by gs. If a graphic character is to be entered more than once, the appropriate number and a multiplication sign will be given before it. Thus, 16 graphic Ss are shown as (16*gs).

```

20 GOTO 1000
30 RAND
100 LET P=24
110 LET L=0
120 LET C=5
130 PRINT AT 15,0;"(64*isp)"
140 PRINT AT 14,5;"(9a)";AT 14,
25;"(9a)"
150 FOR X=1 TO INT (RND*3+0)
155 PRINT AT 14,P;"I"
160 PRINT AT 3,C;" (9*isp) ";
AT 4,C;" (8*isp) ";AT 5,C;"
(6*isp) ";AT 6,C;" (7*isp
) ";AT 7,C;" (6*isp) ";AT
8,C;" (5*isp) "
170 LET C=C+(C+8<P)-(C+8>P)+(IN
T (RND*3-1))
180 PRINT AT 14,P;" "
185 IF INKEY$="P" THEN PRINT AT
15,P-1;"(3*isp)"
190 LET P=P+(INKEY$="8")-(INKEY
$="5")
200 PRINT AT 15,P;
210 IF PEEK (PEEK 16398+256*PEE
K 16399)=0 THEN GOTO 500
220 IF P=5 THEN LET P=6
230 IF P=25 THEN LET P=24
240 NEXT X
245 PRINT AT 14,P;"I"
250 LET Z=C+7+INT (RND*3)
260 PRINT AT 9,2;"(95)";AT 10,2
;"(98)";AT 11,2;"(95)";AT 12,2;"
(98)";AT 13,2;"(95)";AT 14,2;"(9
8)"
270 IF Z=P THEN GOTO 700
275 LET L=L+1

```

```

280 PRINT AT 9,2;" ";AT 10,2;"
";AT 11,2;" ";AT 12,2;" ";AT 13,
2;" ";AT 14,2;" ";AT 15,2;" "
290 GOTO 140
500 PRINT AT 15,P;"I"
510 LET Z=P
520 GOTO 260
700 PRINT AT 15,P;"(9a)";AT 14,
P-1;"(3*gh)";AT 13,P;"(9a)"
710 PRINT AT 3,5;"THE LIGHTNING
GOT YOU.";AT 5,0;"YOU DODGED ";
L;" BOLTS OF LIGHTNING"
715 PRINT AT 6,7;"ON LEVEL ";6-
D
720 PRINT AT 19,0;"PRESS A KEY"
730 PAUSE 4E4
740 CLS
1000 PRINT AT 0,10;"LIGHTNING ST
RIKE";AT 1,10;"(16*9s)"
1010 PRINT ,," ""P"" TO FILL
IN A HOLE"
1020 PRINT ,,"YOU CAN""T GO PAST
THE WALLS(9a)"
1030 PRINT ,,"DON""T FALL DOWN A
HOLE"
1040 PRINT ,,"AS YOU CAN""T GET
OUT"
1050 PRINT AT 20,0;"ENTER DIFFIC
ULTY (1 TO 5)"
1051 LET A$=INKEY$
1052 IF A$<"1" OR A$>"5" THEN GO
TO 1051
1053 LET D=6-VAL A$
1070 CLS
1080 GOTO 30

```




HI I'M BRAINY and I really rate computers. I'm in Load Runner every issue so write to me at 196-200 Balls Pond Road, London N1 4AQ and I'll do my best to answer any questions you have.

Remember, Brainy's the name and, by the way, I will pay £1 to anyone whose name is mentioned. Write away!

BRAINY'S BRAINBOX

Practice make perfect programs

COULD YOU give me some hints about how to make up my own programs for a Sinclair ZX Spectrum?

Dominic Gastrell, Hilsea, Portsmouth.

THE BEST WAY to learn is by practice. Work through your handbook or an introductory book, such as *Easy Programming for the Spectrum* from Shiva, or the *Collins Starter Packs*, which have tapes, too. Try the programs suggested and make sure you understand the commands involved and how they are used. Then you can try your own simple program and, as you become more familiar with Basic, you will be able to write more difficult programs. Games and similar programs on cassette are usually long and complicated, as you can see if you LIST them. All the same, study them to learn what they do.

The origin of the PCs

I WOULD like to know who invented computers. What is his name?

Charles, London SW5

SOME PEOPLE think computers were created like Earth, with a big bang. That is not true; the invention

was a slow and time-consuming process. As men have developed from Stone Age ape-like creatures, computers stem from simple adding systems over thousands of years. The first calculating machine with a memory was designed by Charles Babbage in 1833. You can find a detailed history of computers in the weekly strip on pages 18 to 19 of Load Runner.

More loading difficulties

COULD YOU help me solve a problem? My tape recorder will not load games from tapes properly. We have tested the tapes but they are O.K. Could you give me a few ideas?

James Sullivan, Bexley, Kent.

I AM having difficulty loading my ZX-81. I load the program as it says in the manual, roughly estimating the correct tape recorder level. The program will not load. I adjust the sound but still it does not load. Can you help me?

Russell Bron, Polmont, Falkirk.

FOR A START, check that the EAR and MIC plugs are in the correct sockets and that the EAR especially is not loose. If they are not firm, fix them in with Blu-Tack or something similar. Put the tone control on

maximum if you have one. If you have failed with altering the volume of loading which may take time and patience—changing the volume gradually from near maximum down to minimum—try swapping the leads, removing the one in the MIC socket, and a different lead from a computer friend. If you know a fellow computer user—with the same computer, of course—try swapping tape recorders or lending your program to try on that computer.

How to spot the mistakes

I HAD a ZX-81 for a short time and I found that when I had programmed some games, they did not work due to faults in the programming. How do people find faults in such programs? Please tell me how to correct them.

Philip Cooper, Buxton, Derbyshire.

I PRESUME you are unhappy about mistakes in magazine programs. Well, they often have difficult-to-spot faults. First, check carefully what you have written with the written program you are copying and correct any copying mistakes you may have made. When you have found and corrected them and run the program, the computer will tell you which line is incorrect. All you can do then is to try to correct the line, using the manual and any help you can get from computer books or friends.

Cartridges for the Atari

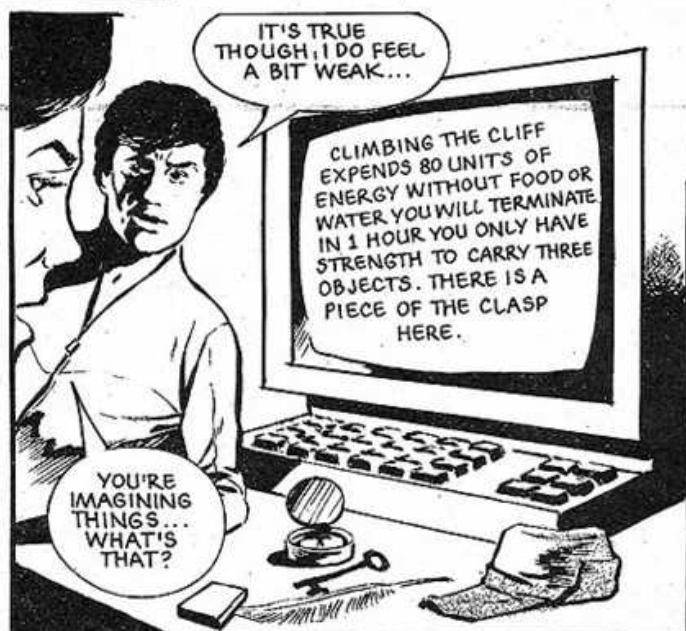
CAN YOU tell me if the Atari 400 or 800 could use cartridges for the Atari television game or do they need special computer cartridges? If they need them, are they difficult to buy?

Alan Endean.

THE 400 and 800 machines need their own special cartridges. They are, unfortunately, difficult to buy. You should be able to get them from a specialised Atari dealer. Also you can get them at good computer games shops and at computer shows. Often at shows the prices—from £15 to £30—are reduced.

TRUMBULL'S WORLD

MARC AND JAN HAVE ENTERED THE ADVENTURE GAME CREATED BY THEIR FATHER ON HIS COMPUTER. THEY ARE SEARCHING FOR FIVE PIECES OF A MYSTERIOUS CLASP, WHICH WHEN RETURNED TO THE OUTSIDE WORLD WILL FREE MANKIND FROM THE OPPRESSION OF A TYRANNICAL GOVERNMENT LED BY THE CRUEL SIMIAN.





THE BIRD FLEES!

HUMPH!
GREAT
IDEA, MARC.
JUST GREAT.
C'MON.

I THINK
THE KEY
AND THE
COMPASS.



WAIT,
WE'VE STILL
GOT TWO
OBJECTS TO
PICK, WHAT
D'YOU
THINK?



THAT COULD
BE WHAT WE'RE
SUPPOSED TO TAKE.
I RECKON THE
FEATHER AND
THIS HAT.



leave knife.
take key.
take compass.

KNIFE IS LEFT

MMM...
MAYBE
YOU'RE
RIGHT, I'LL
LEAVE
THEM.

WHAT'RE
YOU GOING
TO DO WITH
A FEATHER
AND A
HAT?

THEY SET OFF INTO THE
MAZE OF HEART'S END.



DOWN TWISTING TUNNELS...



PAST GUTTERING TORCHES...

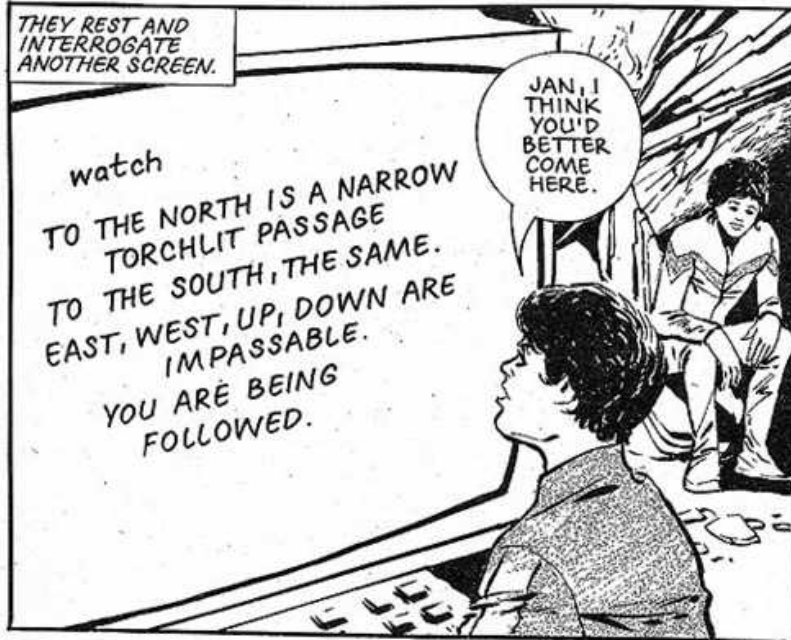
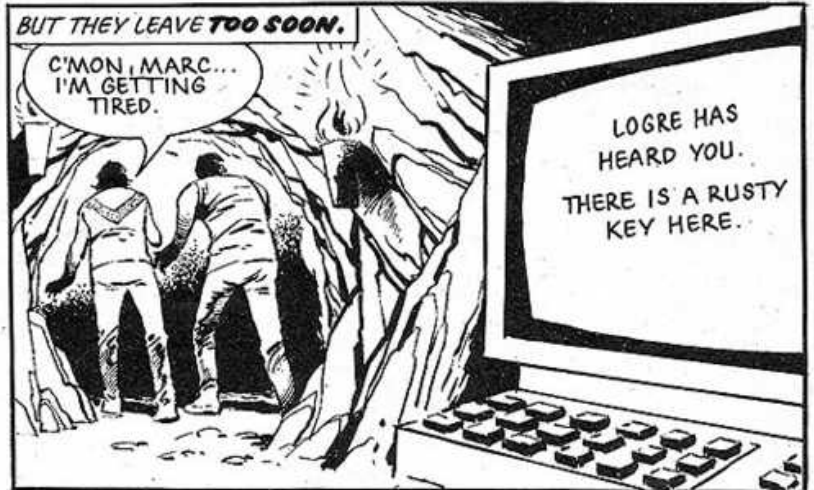
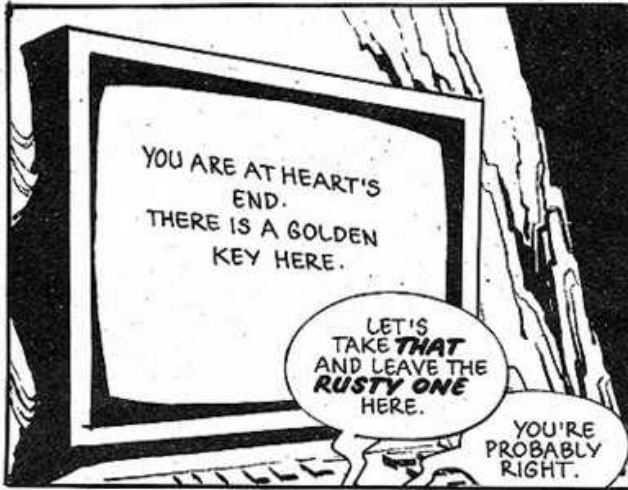
AND ARCHES OF SHADOW.



LOOK
JAN,
ANOTHER
KEY.

AND
THERE
ON THE
WALL...



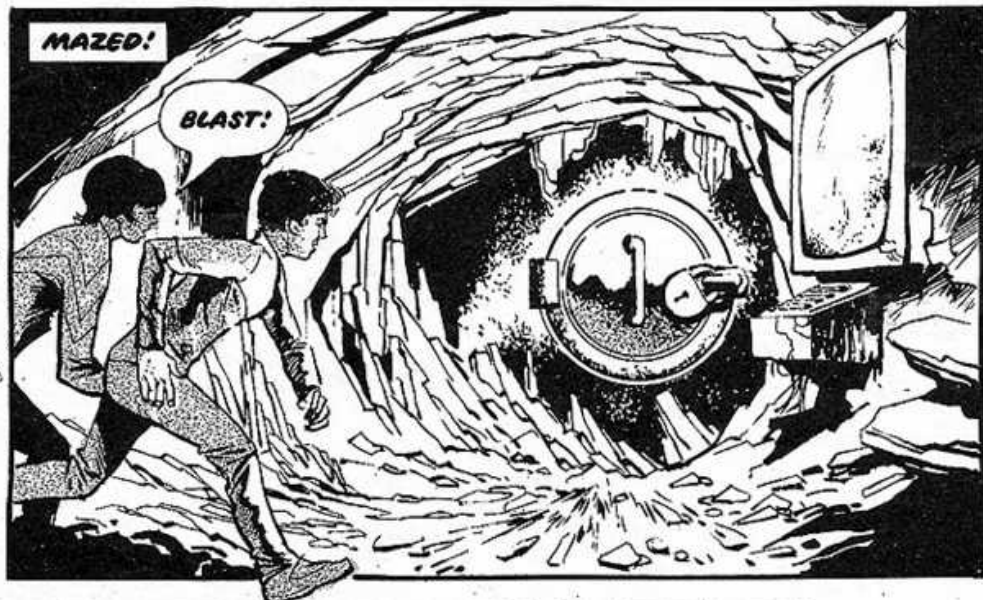


THE LOGRE IS ON
THEIR TRAIL!



MAZED!

BLAST!



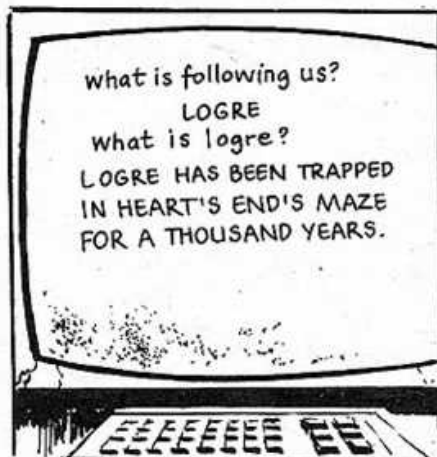
JAN TRIES AGAIN...

IT
JUST WON'T
BUDGE!



help
YOU ARE STILL BEING
FOLLOWED.

what is following us?
LOGRE
what is logre?
LOGRE HAS BEEN TRAPPED
IN HEART'S END'S MAZE
FOR A THOUSAND YEARS.



MARC!!
USE THE
KEY!



BUT AS MARC
FUMBLES...



THAT KEY DOESN'T
FIT THIS DOOR.

...THE SHADOW
FALLS!

OH NO...



NEXT ISSUE: THE HUNTER
AND THE HUNTED.

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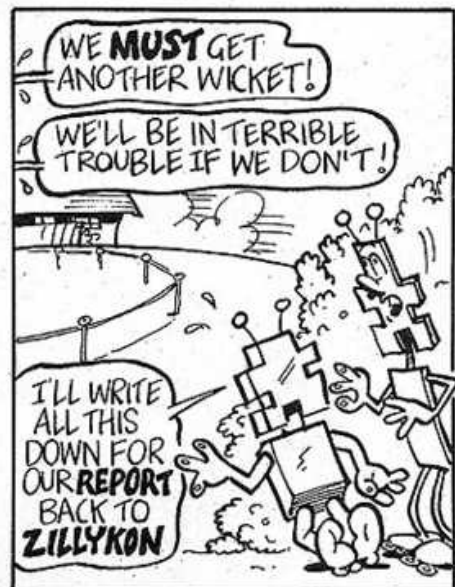
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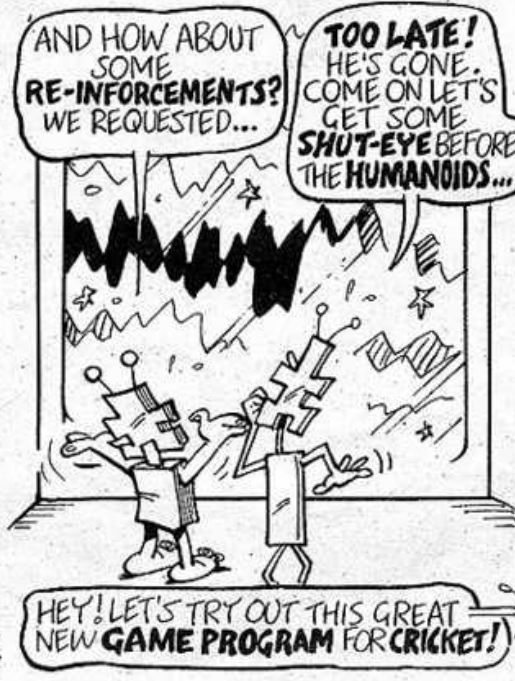
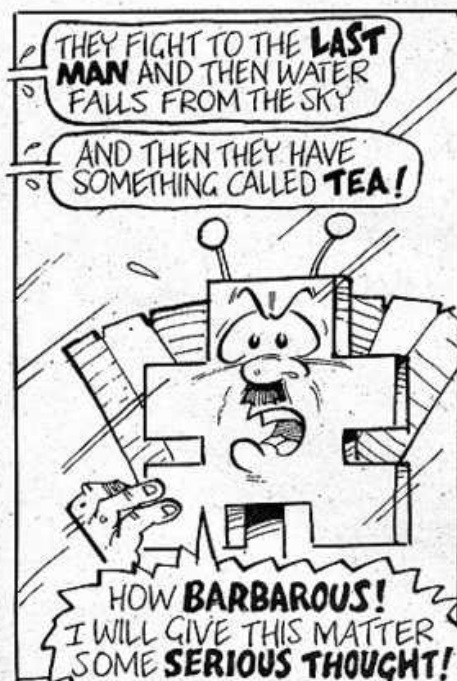
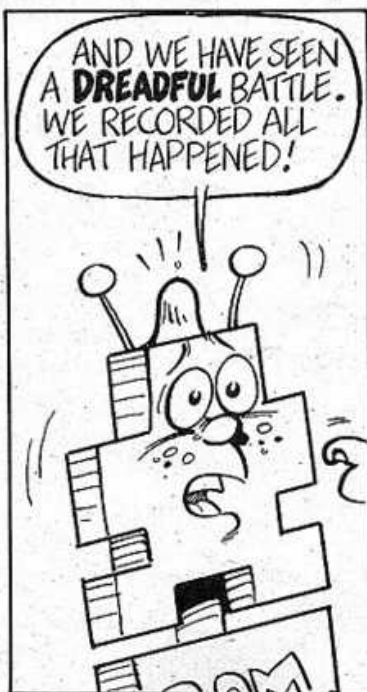
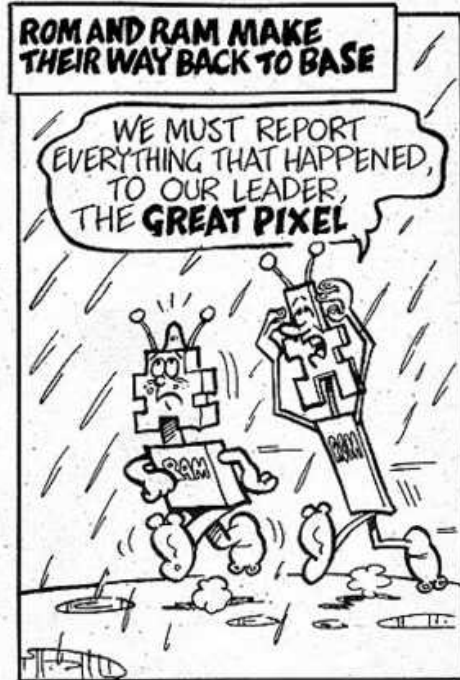
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THE ADVENTURES OF ROM AND RAM

A HOT STEAMY SUMMER'S AFTERNOON AT DUNZAPPIN.





SPACE INVADERS

FROM SIMPLE bat-and-ball games on home TV, games centres emerged. Space Invaders, the grandfather of all video arcade games, was introduced into the U.K. from Japan by Taitel Electronics towards the end of 1978.

Although there were 100,000 machines in Japan, only 46 units were installed in the U.K. for a trial period; they were an instant success. The demand for more Space

that Taitel was compelled to employ other companies to help with the manufacturing.

The theme of Space Invaders was simple — rows of aliens marching back and forth firing missiles earthwards and getting lower on each contact with the edge of the screen. Flying saucers move across the top of the screen at intervals and can be fired at to score a mystery bonus.

The player controls a laser base. Invaders machines was so great

which can be moved left or right along the bottom of the screen; his aim is to shoot down the entire invasion fleet before it reaches the bottom of the screen. Scores between two and four million have been recorded but for a dedicated player the sky's the limit.

High scores can be achieved by the 22-14 method, that is, firing 22 shots and waiting at the side of the screen for the flying saucer to appear. Shooting it at that point will give a maximum score of 300 points. Then fire another 14 shots and wait for the saucer, which will again give 300 points. Repeat the process until a new wave begins and then start again from 22.

The graphics compared to modern machines were relatively poor but were a revolution in their day.

Software

ATARI produced the first game of Space Invaders for the home TV games centre — the VCS — making record sales on both sides of the Atlantic. The game is virtually the same as the arcade game and there is also a version available for Atari 400/800 home computers with the title.

Commodore produces a similar version for its Vic-20 machine, Vic Invaders, with average graphics for the unexpanded computer.

Other computerised nasties include Spectral Invaders for the ZX Spectrum and TI Invaders for the Texas Instruments TI/99/4a which include many types of alien.

Star Rating out of 10:

Atari, 8;

Vic-20, 6;

Spectrum, 6;

TI/99/4a, 8.

