



zx mushroom club

☎ 35644
MENLO PARK 0102
☎ (012) 46-8226
TELEX 3-21945 S.A.

January/February 1989



Yes, believe it or not, the newsletter is still going. As from this month the newsletter will appear around the middle of the two months in question, round about the time that you are receiving this newsletter.

I hope that you all had a very pleasant christmas and new year and that 1989 going to be a great year. Unfortunately we have begun this year on not such a happy note - the exchange rate has worsened and as a result the software and hardware that INFORMATION ENTERPRISES has on offer are not quite as cheap as they used to be. However, their prices are still good in comparison with some other suppliers - so don't stop supporting them!

There has been some confusion - I believe - about the locations of Information Enterprises, and as to where what goes. I hope that the following will sort the problem out:

AMAbop Industries

Street Address: Zone 15
J3, Third Street
Ga-Rankuwa
Bophuthatswana

Postal Address: Private Bag 1104
Ga-Rankuwa
Bophuthatswana
0208

INFORMATION ENTERPRISES

Street Address: 417 Milner Street
Waterkloof
Pretoria
0181

Postal Address: P.O. Box 35644
Menlo Park
Pretoria
0102

That sorted out, I would like to just quickly mention some of the items advertised in the newsletter. For anyone who is considering upgrading their system, now is the time to do so. The prices advertised are for items that are in stock, unless otherwise indicated. When these are sold out, the prices of said items are expected to increase considerably. I would strongly advise you to take advantage of these prices NOW while the going is still good.

INFORMATION ENTERPRISES is buying second hand spectrums and peripherals, if you are considering selling, and would like to post your system to them for an evaluation, then **PLEASE USE THE STREET ADDRESS FOR INFORMATION ENTERPRISES**. This request also applies to any other parcels which may be sent to them for repairs etc. Remember to pack your system securely to prevent breakage in the post. You know what the Post Office can be like if they are feeling nasty!

Some really great software has been ordered and should be arriving late January, early February. Please be patient, IE is trying to get the software as quickly as possible.

That is all from me for the time being, oh before I forget - we have a great competition for you this month. We would like to see lots on entries. Can you crack the code? There is also a great prize for the winner - who is it going to be?

A last word - please encourage your friends to join the club again - that way we can put more articles in the newsletter.

ANNE



Dit klink moeilik, maar as jy 'n bietjie gaan sit en dink, dan is dit tog nie so moeilik nie!

Eerstens moet ons die data vir die graphic ontwerp en dit in 'n veilige plek stoor. Ons sal 60 000 as 'n gerieflike plek gebruik.

N.B. Indien hy 'n lang BASIC program gebruik, dan moet jy 'n CLEAR 59 999 gebruik om te sorg dat dit nie uitgewis word nie. (dis nou jou data vir die graphic!)

Die volgende program sal die nodige doen:-

```
10 FOR n=60000 TO 60007
20 READ d
30 POKE n,d
40 NEXT n
100 DATA 24, 126, 255, 255, 219, 255, 255, 85
```

Die program hierbo sal 'n PAC-MAN karakter in die geheue stoor. So as jy GKA-A print dan behoort dit op die skerm te verskyn, maar waar's dit?!

Die gehuim lê in 2 geheue - blokkies - 23675 en 23676.
Hulle moet met 2 waardes gestoor word.

```
POKE 23675, n-256*INT(n/256)
POKE 23676, INT(n/256)
```

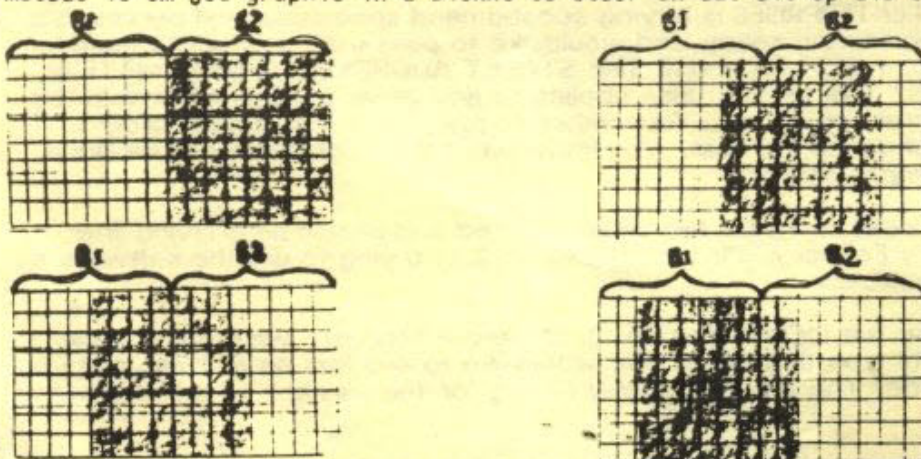
Waar "n" die waarde is waar hou graphics gestoor is. In hierdie geval is dit 60000. Probeer om nou weer hou graphic te print.

Uiteindelik het ons 'n graphic om mee te werk!

Die eerste probleem is dat 'n mens nie BASIC suksesvol kan gebruik nie. Dis geheel en al te stadig! Jy moet 'n vinniger taal aanleer soos Masjien-kode. Die artikels oor Masjien-kode deur D. Koux vind ek baie nuttig en ek glo julle sal nog baie baat daarby vind as hy met die reeks volhou. Mark Berkowits se artikels is ook goed, maar ek vind dat dit meer op die professionele programmeerder gemik is.

Keg, om terug te kom by die graphics. Ons graphic bestaan uit 'n blok van 8x8 blokkies. Ek het besluit dat ons die graphic 2 blokkies op 'n slag sal beweeg, want dit vereis minder dinkwerk! Om in BASIC hou graphic links of regs te beweeg is baie maklik, maar jy sal opmerk dat dit nie baie glad beweeg nie en ook onvoldoende is.

'n Maklike metode is om jou graphic in 2 blokke te stoor en dat dit op die skerm te PRINT:



m.a.w. - jy gaan 4 graphics nodig hê om die graphic gladweg links of regs te laat beweeg. Jy moet B1 en B2 langs mekaar PRINT. Daar is 'n eenvoudige formule om uit te werk hoeveel graphics jy nodig gaan hê:-

$$\frac{64}{x \cdot y} \quad (64/(X \times Y))$$

X = die hoeveelheid blokkies wat jou graphic op die X-as gaan beweeg
Y = die hoeveelheid blokkies wat jou graphic op die Y-as gaan beweeg

Next, to PRINT the character on the screen, load the A register with the character's ASCII value and use the ROM routine at 16. Instead of CALL 16, you can also instruct the CPU to RST 16. It functions in the same way.

To PRINT an "A" at the extreme top row, extreme right column, one would therefore use the ROM routines in the following way:

```
LD B,14      ;top row: equivalent of AT 0,x in Basic
LD C,2       ;right column: equivalent of AT x,31 in Basic
CALL 3545    ;calculate screen buffer address
LD A,65      ;ASCII value of "A" into A register
RST 16       ;PRINT "A" - equivalent of CALL 16
RET
```

This assembly program will function in the same way as PRINT AT 0,31;"A" in Basic.

Using the ROM routines are difficult, in this case, and require strange calculations for the row/column co-ordinates. It also cannot cope with graphics: when we write an arcade game, we definitely don't want to use a B to defend us against a deadly squadron of A's! Consider this piece of assembly program:

```
LD B,10
LD C,10
LD DE,CROSS
CALL PRINT
RET
```

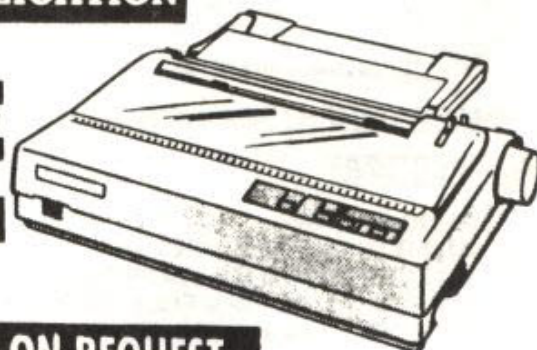
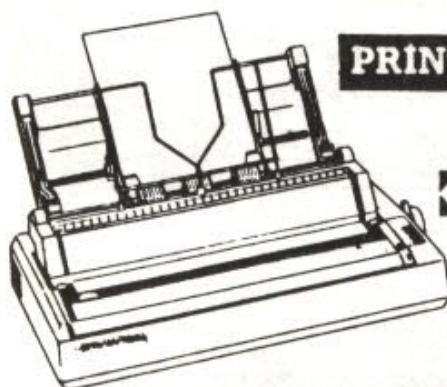
We have to read the row/column co-ordinates of a shape into B and C respectively, load a label called CROSS into DE and call a routine PRINT to actually print a cross on the screen at 10,10. This is much easier to use than the ROM routines - I will show you how to construct subroutines which will support this format.

To start off, I am going to use a look-up table to calculate the screen address of the row stored in B. The column value stored in C is then simply added to the address and the top of the character square is thus calculated. The top of the first character row starts at address 16384, the top of the second at 16416, etc. In fact, we can draw up a table in our assembly program and call it LOOK, for look-up, and list these values from the first to the 24th:

```
LOOK  DEFW 16384
      DEFW 16416
      DEFW 16448
      DEFW 16480
      DEFW 16512
      DEFW 16544
      DEFW 16576
      DEFW 16608
      DEFW 18432
      DEFW 18464
      DEFW 18496
      DEFW 18528
      DEFW 18560
      DEFW 18592
      DEFW 18624
      DEFW 18656
      DEFW 20480
      DEFW 20512
      DEFW 20544
      DEFW 20576
      DEFW 20608
      DEFW 20640
      DEFW 20672
      DEFW 20704
```


printers

PRINTERS FOR EVERY APPLICATION



FULL SPECIFICATIONS AVAILABLE ON REQUEST

9 Pin Dot Matrix 80 Col

Seikosha 1600AI	799.00
Epson LX800	949.00
Epson FX800	1 899.00
Star Gemini 160	699.00
Star LC10	949.00
Star LC10 (colour)	1 099.00
Teco VP1814	839.00

9 Pin Dot Matrix 132 Col

Seikosha MP5330AI	2 183.00
Epson FX1000	2 299.00
Fujitsu DX2200	2 149.00
Star NX15	1 779.00
Teco VP2450	1 429.00

Daisywheel Printers

Fujitsu SP320	5 449.00
---------------	----------

24 Pin Dot Matrix 80 Col

Seikosha SL80AI	1 199.00
Epson LQ500	1 799.00
Star NB10	2 255.00

24 Pin Dot Matrix 132 Col

Seikosha SL130AI	2 429.00
Epson LQ1050	3 889.00
Star NB15	2 959.00

LASER Printers

Kyocera F1000 (10ppm)	8 999.00
Star LS08 (8 ppm)	9 629.00

POST AND PACKAGING

AIR	16.50
LAND	13.50
FREIGHT	35.00

PRINTER INTERFACES

ZX LPRINT III

- * CENTRONICS AND RS232 IN ONE UNIT
- * LPRINT, LLIST and COPY
- * NO EXTRA SOFTWARE NEEDED
- * MICRODRIVE COMPATIBLE
- * COPY in colour! (Ideal for use with the STAR LC 10 COLOUR PRINTER)
- * COMPATIBLE WITH TASWORD 2

P&P 2.00
NORMAL PRICE 199.00
SPECIAL PRICE 166.00

MULTIPRINT FROM ROMANTIC ROBOT

- * MULTI-PURPOSE CENTRONICS INTERFACE
- * LPRINT, LLIST and COPY
- * NO EXTRA SOFTWARE NEEDED
- * MICRODRIVE COMPATIBLE
- * DISCOVERY COMPATIBLE
- * VTX 5000 COMPATIBLE
- * MENU DRIVEN WITH SCREEN PROMPTS

- * 8K RAM EXTENSION
- * GENI 128 DISASSEMBLER COMPATIBLE
- * FULLY PROGRAMMABLE
- * BUILT IN TOOLKIT
- * TASWORD COMPATIBLE

P&P 2.50
NORMAL PRICE 219.00
SPECIAL PRICE 169.00

RAMPRINT WITH RAMWRITE

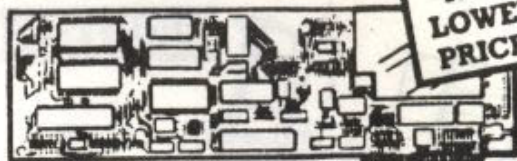
- * CENTRONICS PRINTER INTERFACE
- * BUILT IN JOYSTICK PORT
- * INSTANT ACCESS WORD PROCESSING
- * DOES NOT USE ANY OF THE COMPUTER'S MEMORY
- * EASY TO USE - NO COMPLEX COMMANDS
- * TASWORD COMPATIBLE

P&P 3.00
NORMAL PRICE 249.00
SPECIAL PRICE 188.00

SPECIAL MODEM & SOFTWARE PACKAGES



FULLY INTELLIGENT HAYES COMPATIBLE
MODEMS WITH AUTO ANSWER/AUTODIAL



IBM PC COMPATIBLE MODEMS

AMPEC 32P

- * PLUG IN CARD
- * AUTO DIAL/AUTO ANSWER
- * V.12 300 BPS FULL DUPLEX
- * V.23 1200/75 BPS FULL DUPLEX
- * 1200 BPS HALF DUPLEX

P&P 3.50
NORMAL PRICE 599.00
SPECIAL PRICE 517.50

AMPEC EXECUTIVE

- * STANDALONE
- * HAYES COMPATIBLE
- * AUTO DIAL/AUTO ANSWER
- * V.22 BIS, 1200/2400 BPS FULL DUPLEX
- * ASYNC

P&P 3.50
NORMAL PRICE 859.00
SPECIAL PRICE 809.50

AMPEC 240 SM

- * STANDALONE
- * HAYS COMPATIBLE
- * AUTO DIAL/AUTO ANSWER
- * V.22 BIS, 1200/2400 BPS FULL DUPLEX
- * SYNC/ASYNC

P&P 3.50
NORMAL PRICE 1329.00
SPECIAL PRICE 1255.00

AMPEC 120 PM (HALF CARD)

- * PLUG IN CARD
- * AUTO DIAL/AUTO ANSWER
- * V. 21 300 BPS FULL DUPLEX
- * V.23 1200/75 BPS FULL DUPLEX
- * 1200 BPS HALF DUPLEX

P&P 3.50
NORMAL PRICE 759.00
SPECIAL PRICE 699.00

AMPEC 240 PM

- * PLUG IN FULL LENGTH CARD
- * HAYES COMPATIBLE
- * AUTO DIAL/AUTO ANSWER
- * V.22 BIS, 1200/2400 FULL DUPLEX
- * SYNC/ASYNEC - SOFTWARE SWITCHABLE

P&P 3.50
NORMAL PRICE 969.00
SPECIAL PRICE 900.00

SUBJECT TO ALTERATION WITHOUT NOTICE.

AMPEC 240 PLE

- * PLUG IN FULL LENGTH CARD
- * HAYES COMPATIBLE
- * AUTO DIAL/AUTO ANSWER
- * V.22 BIS, 1200/2400 BPS FULL DUPLEX
- * SYNC/ASYNC - SOFTWARE SWITCHABLE
- * LEASED LINE FACILITY - 4 WIRE
- * MNP ERROR CORRECTION

P&P 3.50
NORMAL PRICE 1559.00
SPECIAL PRICE 1435.00

AMPEC 240 SE

- * STANDALONE
- * HEYS COMPATIBLE
- * AUTO DIAL/AUTO ANSWER
- * V.22 BIX, 1200/2400 BPS FULL DUPLEX
- * SYNC/ASYNC
- * LEASED LINE FACILITY - 2 WIRE
- * MNP ERROR CORRECTION

P&P 3.50
NORMAL PRICE 1699.00
SPECIAL PRICE ON APPLICATION!!

ALL AMPEC MODEMS ARE SUPPLIED WITH
BELTEL SOFTWARE, MANUALS, TELEPHONE
CABLES.

SPECTRUM COMPATIBLE MODEM

PROTEK MODEM

- * COMPATIBLE WITH ALL SPECTRUMS
(EXCEPT THE +3)
- * COMES COMPLETE WITH MANUAL,
TELEPHONE CORD & BELTEL SOFTWARE
- * 1200/75 BPS
- * COMPATIBLE WITH INTERFACE 1

P&P 3.50
NORMAL PRICE 299.00
SPECIAL PRICE 269.00

QL MODAPTOR PLUS

- * INTERFACES QL TO MODEM
- * 300/300, 1200/75, AND 1200/1200 BPS
- * AUTO DIAL USING DTR
- * INCLUDES VIEWDATA TERMINAL SOFTWARE
- * INCLUDES SCROLLIN SCREEN TERMINAL
SOFTWARE
- * PLUGS INTO SER2 ON QL
- * COMPATIBLE WITH PROTEK MODEM

P&P 3.50
NORMAL PRICE 269.00
SPECIAL PRICE 220.00

NEW

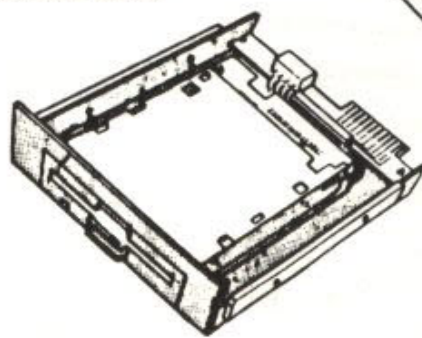
FLOPPY DISK DRIVES

IBM PC/XT INTERNAL
3½" FLOPPY DISK UPGRADE KIT

NEW PRODUCT
ANNOUNCEMENT

3½" Floppy disc drive kit to replace
existing 5¼" floppy disc drives

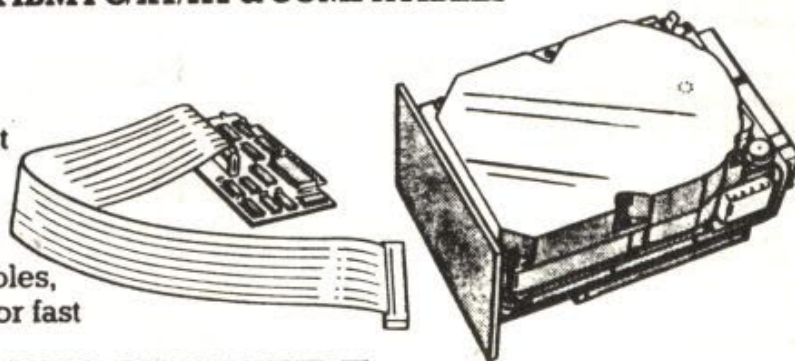
- IBM PC/XT/AT and lookalikes
- Allows easy transfer of data between
existing PCs and new 3.5" format machines.
- Direct replacement – just remove existing 5¼" floppy and fit our kit –
full instructions provided.
- FOR FURTHER DETAILS PLEASE CONTACT OUR SALES DESK.



WINCHESTER DISK UPGRADE KITS FOR IBM PC/XT/AT & COMPATIBLES

FEATURES INCLUDE:

- Specially designed 20Mb fast
access Winchester.
- Fits into existing floppy port.
- Easy to install.
- Kit contains all necessary cables,
controllers and instructions for fast
and simple installation.



20Mb UPGRADE

JVC UNCASED 5.25" FLOPPY DRIVE

- * HALF HEIGHT
- * 360K BYTE CAPACITY
- * INCLUDES CABLE - LIMITED SPECIAL OFFER
- * DOES NOT INCLUDE POWER SUPPLY

P&P 5.00
NORMAL PRICE 299.00
SPECIAL PRICE 249.00

TEAC UNCASED 5.25" FLOPPY DRIVE

- * HALF HEIGHT
- * 360K BYTE CAPACITY
- * INCLUDES CABLE - LIMITED SPECIAL OFFER
- * DOES NOT INCLUDE POWER SUPPLY

P&P 5.00
NORMAL PRICE 349.00
SPECIAL PRICE 299.00

UNCASED 3.5" FLOPPY DRIVE

- * HALF HEIGHT
- * IBM COMPATIBLE
- * SUITABLE FOR ALL MAKES OF SPECTRUM
- * BUILT INTO A 5.25" BRACKET FOR EASY
INSTALLATION INTO IBM PC COMPATIBLES
- * DOES NOT INCLUDE POWER SUPPLY AND
CABLES
- * 360K BYTE CAPACITY

NEW

P&P 5.00
NORMAL PRICE 299.00
SPECIAL PRICE 249.00

MIT SUBISHI 3.5" CASED DRIVE

- * HALF HEIGHT
- * DOUBLE DRIVE - 720K BYTE CAPACITY
- * BUILT IN POWER SUPPLY AND CABLES
- * ON/OFF SWITCH
- * NO EXTRAS NEEDED - JUST PLUG IN AND
GO!

P&P 5.00
NORMAL PRICE 899.00
SPECIAL PRICE 849.00

5.25" 20MB HARD DRIVES

- * IDEAL FOR IBM PC COMPATIBLES
- * COMPLETE KIT - NO EXTRAS NEEDED
- * EASY TO INSTALL
- * INTERFACE CARD AND CABLES INCLUDED
- * LIMITED SPECIAL OFFER

P&P 6.00
NORMAL PRICE 999.00
SPECIAL PRICE 899.00

PRICES ONLY VALID WHILE STOCKS LAST

Ring in the new...

FEATURE

SPECTRUM UTILITIES

THE OCP ART STUDIO

STATE OF THE ART SOFTWARE DESIGN
GIVING A FULL RANGE OF FACILITIES AT YOUR
FINGERTIPS.

FEATURES

- * PULL DOWN MENUS
- * ICON DRIVEN
- * KEYBOARD, JOYSTICK OR MOUSE OPERATION
- * 16 PENS, 8 SPRAYS, 16 BRUSHES, OR DEFINE YOUR OWN
- * SOLID OR TEXTURE FILL
- * 3 ORDERS OF MAGNIFICATION
- * PIXEL EDIT, PAN AND ZOOM
- * FONT EDITOR WITH FLIP, INVERT AND ROTATE
- * ELASTIC LINE, TRIANGLE, RECTANGLE AND CIRCLE
- * CUT AND PASTE
- * FLEXIBLE PRINTER SUPPORT
- * UPGRADE TO EXTENDED (DISC OR MICRODRIVE) VERSION
- * LOW COST FULL COLOUR PRINTS OF YOUR WORK

P&P 2.00
NORMAL PRICE 99.00
SPECIAL PRICE 81.90

OMNICALC 2

THE SPREADSHEET ANALYSIS PROGRAM FOR
THE SPECTRUM!

FEATURES

- * ACCESS GRID OF UP TO 99 COLUMNS
ACROSS OR 250 ROWS DEEP
- * ALL MATHEMATICAL FUNCTION OF THE
SPECTRUM CAN BE USED
- * BUILD SOPHISTICATED MODELS FOR
FINANCIAL, ENGINEERING AND MANY OTHER
APPLICATIONS
- * SET UP CONDITIONAL EXPRESSIONS, TAX
BANDS, DIFFERENTIAL INTEREST RATES
AND VARIABLE OVERHEADS CAN BE
ACCOMMODATED EASILY
- * EASY TO USE
- * ALL INPUT IS PROMPTED
- * ERROR DETECT FOR IMMEDIATE
CORRECTION OF INCORRECT KEY INPUT
- * HEADINGS FOR ROWS AND COLUMNS CAN
BE SET UP - FIND YOUR WAY AROUND THE
GRID AT ALL TIMES!
- * TOTALLING AND SUB-TOTALLING
FACILITIES PRESENT
- * MICRODRIVE AND INTERFACE 1 COMPATIBLE

P&P 2.00
NORMAL PRICE 129.00
SPECIAL PRICE 92.00

MASTERFILE

THE ULTIMATE FILING AND RETRIEVAL
SYSTEM FOR THE 48K SPECTRUM. ALMOST
ANY APPLICATION CAN BE DEALT WITH BY
MASTERFILE - FROM ADDRESS LISTS, LIBRARY
CATALOGUES, PERSONNEL FILES AND STOCK
INVENTORIES TO SCHOOL EXAM RESULTS AND
FAMILY TREES!!

FEATURES

- * MENU DRIVEN
- * DYNAMIC VARIABLE LENGTH FILE
- * USER DEFINED DATA NAMES AND REPORT
FORMATS
- * SEQUENCE BY ANY DATA TYPE
- * FILE SEARCH BY ANY NUMBER CRITERIA
- * DISPLAY 1-22 RECORDS PER SCREEN
- * MICRO-PRINT FEATURE FOR UP TO 51
CHARACTERS PER LINE
- * PRINT TO THE ZX PRINTER
- * PRINT TO OTHER PRINTERS VIA SUITABLE
INTERFACE
- * TOTAL/AVERAGE
- * UPDATE, COPY, ERASE ANY RECORD
- * SAVE/LOAD FILES, SAVE PROGRAM
- * OPTIONAL USER BASIC INTERFACE
- * MICRODRIVE COMPATIBLE
- * SPEED OF OPERATION - ALMOST ENTIRELY
MACHINE CODED

P&P 2.00
NORMAL PRICE 129.00
SPECIAL PRICE 92.00

Second hand spectrums wanted!

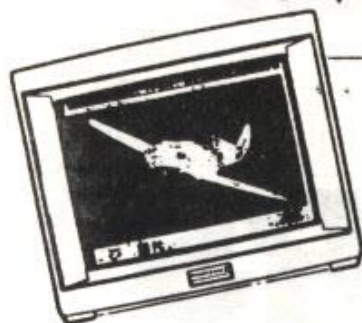
INFORMATION ENTERPRISES is buying
Second hand spectrums - provided that they
are in good working order and are not to
bashed. They are also buying microdrives,
interface 1's, joystick interfaces, printer
interfaces, disc drive interfaces (Sorry, no
GUSH interfaces please).

If you want to sell your system, please post
us your computer & peripherals or bring
them in to our offices in Pretoria.

Phone to enquire about prices offered on
goods.

HAPPY NEW YEAR

MONITORS



BUILT FOR RELIABILITY



GO ON, GIVE YOUR EYES A BREAK - AND TREAT THEM WITH A MONITOR! FOR THE SERIOUS USER WHO SPENDS A LOT OF TIME WITH HIS COMPUTER, A MONITOR IS AN ABSOLUTE MUST. WITH THESE GREAT PRICES, JUST ABOUT ANYBODY CAN AFFORD A MONITOR. NOW THE FAMILY CAN HAVE THE TV BACK, AND YOU CAN WORK IN THE PEACE AND QUIET OF YOUR STUDY.

ASK FOR OUR SPECIAL PRICES ON MONITORS AND GRAPHICS CARDS FOR IBM COMPATIBLES.

ALL OF THESE MONITORS ARE SUITABLE FOR ALL MAKES OF SPECTRUM, COMADORE AND SPECTRAVIDEO.

MONITORS TO SET YOUR SIGHTS ON

MONOCHROME MONITOR PRICES

	FREIGHT	NORMAL	SPECIAL
THOMPSON 12" COMPOSITE GREEN SCREEN	15.00	299.00	259.00
AMDEK 12" COMPOSITE GREEN SCREEN			
AMDEK 12" COMPOSITE AMBER SCREEN			
CHEER 12" COMPOSITE GREEN SCREEN			

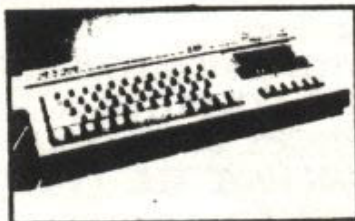
COLOUR MONITOR PRICES

PHILIPS 14" COMPOSITE COLOUR MONITOR * THIS MONITOR HAS SOUND AND MAY BE USED WITH A VIDEO RECORDER! * MONITOR HAS 16 COLOURS	35.00	799.00	660.00
EGA 14" COLOUR MONITOR * IBM COMPATIBLE	35.00	1 799.00	1 399.00
AMSTRAD 14" RGB COLOUR MONITOR * DEMO MODELS, IN EXCELLENT CONDITION	35.00	899.00	599.00

**E.G.A.
COMPATIBLE
MONITOR**

▶▶▶ **SPECIAL OFFERS** ◀◀◀
ONLY WHILE STOCKS LAST

SPECTRUM MICRO COMPUTERS



SINCLAIR +2

NORMAL PRICE 850.00
SPECIAL PRICE 679.00

ZX SPECTRUM +2.

The amazing ZX Spectrum +2 has a built-in datacorder - to save you the bother of tape recorders and leads. The advanced 128K memory helps you get the most from the hundreds of games available.

Every model comes complete with six free games to start you off, and a free joystick to really get you into the action.

With the advanced Sinclair technology you can afford to let your imagination go wild.

Technical Specifications

Memory:
RAM 128 Kbytes
ROM 32 Kbytes

CPU:
Z80A running at 3.54690 MHz

Screen:
256 x 192 Pixel resolution
24 x 32 Colour resolution
8 colours foreground,
8 colours background,
plus intensity and flash settings
Independently controllable border

Sound:
Three voices tone and/or noise with 16 envelope setting
One voice CPU generated
Output via TV or Audio socket

Keyboard:
58 keys full travel "Qwerty" keyboard.

Storage:
Integral Datacorder
Volatile Silicon Disc

Firmware:
48K Spectrum BASIC (compatibility mode)
128K enhanced Spectrum BASIC with full screen editor and menu driven command system
Calculator
Single-key program loading system

Interfaces:
UHF PAL TV port
Serial Printer port
RGB Monitor port
Keypad port
MIDI port (out only)
2 Joystick ports
Audio Out port
Expansion I/O port (full Z80 bus)

NORMAL PRICE 850.00
SPECIAL PRICE

AIR	14.50
LAND	11.50
FREIGHT	35.00

the **NEW**
ZX Spectrum

INC. 6 GAMES



SINCLAIR +3

DISK DRIVE

NORMAL PRICE 1 075.00
SPECIAL PRICE 999.00

ZX SPECTRUM +3.

Loading games is quick and easy with the built-in disk-drive. You'll be in the thick of the action in seconds. And the fantastic 128K memory gives you the power to outsmart the most sophisticated enemy.

Get to grips with the latest high-tech graphics on the multitude of games available (six of which come free). There's also a free joystick to give you ultimate control.

Technical Specifications

Firmware:
48K Spectrum BASIC (compatibility mode)
128K Spectrum ZX +3 BASIC, integrated with +3 DOS
Storage selection by reassignable default with optional override

Interfaces:
UHF PAL TV port
Serial interface (RS232) port
Parallel Printer port (8bit)
Auxiliary interface port
RGB Monitor (and PERITEL TV) port
MIDI output port
Two Joystick ports
Audio Out / Cassette port
Second Disk Drive port
Expansion I/O port (full Z80 bus)

NORMAL PRICE 1 075.00

SPECIAL PRICE 999.00

Memory:
RAM 128 Kbytes as 8 x 16K pages
ROM 64 Kbytes as 4 x 16K pages

CPU:
Z80A running at 3.54690 MHz

Screen:
256 x 192 Pixel resolution
24 x 32 Colour resolution
8 colours foreground,
8 colours background,
plus intensity and flash settings
Start of buffer switchable
Independently controllable border

Sound:
Three voices tone and / or noise with 16 envelope settings
One voice CPU generated
Output via TV, Audio or Monitor socket

Keyboard:
58 key full travel QWERTY keyboard

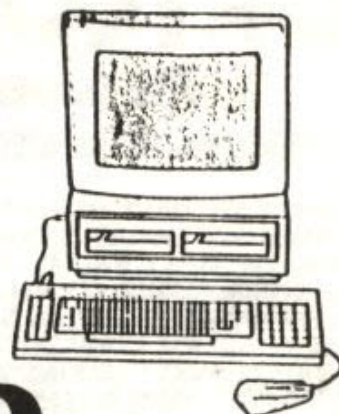
Storage:
Integral 3 inch disk drive, single-sided reversible media
40 track, 9 sector, 512 bytes / sector.
CP/M compatible structure
Optional second disk drive
Volatile RAM drive
Interface for external cassette recorder

FULL SPECIFICATIONS AVAILABLE ON REQUEST



other computers

" NOT ANOTHER CLONE "



AMSTRAD

Designed, assembled and quality controlled in the U.K., coupled with the economy of scale and the experience in production engineering and manufacture, the AMSTRAD PC 1512 and 1640 are hailed as the most cost effective PC compatible computers in the world.

The amazingly low price of the AMSTRAD range underlines the wealth of experience in making a quality product at a popular price - well over one million AMSTRAD computers have been built and sold.

Many hours can be wasted deciding the exact configuration most suitable for your requirements. AMSTRAD make life much simpler; just decide which disk drives you require and choose a colour or monochrome monitor. Experience in marketing, and judging the user's requirements, have made certain that all the features you are likely to need are provided.

Finally, the compromise between price and graphic performance is over. The astounding graphics handling and expansion capabilities of the AMSTRAD mean you don't pay through the nose to give your eyes a treat!

The Amstrad PC1640 offers powerful performance packed with all the features needed for everyday computing. The latest improvements to the range include the Enhanced Colour Display (ECD) models which give near-photographic quality resolution.

The built-in graphics expansion board together with the standard 640K RAM brings exciting new business solutions such as Desktop Publishing and Computer Aided Design within the reach of all end-users—at a price that is simply unmatched.

NO EXTRAS REQUIRED!

Everything built-in for the
price of.....

FROM R3399

**LOW PRICES . . . HIGH SPECIFICATION
FROM AMSTRAD**

Please write for more details concerning the fine range of AMSTRAD compatible pc's and portable computers. Or alternatively call our sales desk for specifications on the range. Our SALES DESK HOT LINE is 012-468226.

SOFTCOVER SOFTWARE

The paperback alternative for software

ATTENTION ALL PC OWNERS!!

LOOK WHAT WE HAVE GOT FOR YOU! SOFTCOVER SOFTWARE IS COMMITTED TO OFFERING THE BEST VALUE. MORE AND MORE PEOPLE THROUGHOUT SOUTH AFRICA ARE DISCOVERING THAT S.S. CAN SAVE YOU A LOT OF MONEY. MAJOR CORPORATIONS, EDUCATIONAL INSTITUTIONS AND STATE DEPARTMENTS HAVE ACKNOWLEDGED THE WISDOM OF BUYING BETTER FOR LESS. PRESUMABLY SO SHOULD YOU.

TURBOCAD

THE ULTIMATE CAD PACKAGE AT A REASONABLE PRICE!

- * EASY TO READ MANUAL WITH TUTORIAL
- * INTERACTIVE CONTEXT SENSITIVE HELP FACILITY
- * PULL DOWN MENUS FOR EASY SELECTION
- * MULTIPLE TEXT FONTS
- * AUTO DIMENSIONING
- * HATCHING OF COMPLEX SHAPES WITH ISLANDS
- * DFX FILE CONVERSION
- * CREATE SHAPE LIBRARIES
- * SIMULTANEOUS INSTALLATION OF 5 PRINTERS AND 5 PLOTTERS
- * POWERFUL USER DEFINABLE MACROS

P&P 3.50
RRP 299.00
OUR SPECIAL PRICE 284.00

TURBOCAD

"With so many extras, its a great upgrade for existing spreadsheet users!"

POWERHOUSE SPREADSHEET WITH AN EXCLUSIVE MULTIDIMENSIONAL DATABASE, GRAPHICS AND MACROS. FULL LOTUS 1-2-3 v.1A F8ILE AND COMMAND COMPATIBILITY.

- * 255 COLUMNS BY 9999 ROWS MAXIMUM MATRIX
- * SPARSE MATRIX SYSTEM FOR MORE EFFICIENT USE OF MEMORY
- * ADVANCED MACROS
- * DISPLAY UP TO 6 WINDOWS
- * INTEGRATED GRAPHICS
- * READS dBASE AND VP-INFO FILES DIRECTLY
- * EXTENSIVE HELP FACILITY ON LINE

P&P 3.50
RRP 199.00
OUR PRICE 169.00

MAILBOX

THE SIMPLEST AND MOST POWERFUL NAME AND ADDRESS PROGRAM ON THE MARKET!

- * CREATED SPECIFICALLY TO DEAL WITH THE MANAGEMENT OF NAME AND ADDRESS LISTINGS. LETTER WRITING AND

LABELLING

- * POWERFUL ENOUGH TO MANAGE AN EXTENSIVE OFFICE PERSONNEL FILE OR PROFESSIONAL LISTING AND MAILING SYSTEM FOR YOUR COMPANY AND YET SIMPLE ENOUGH FOR USE AT HOME.

P&P 3.50
RRP 199.00
OUR PRICE 159.20

R199

NEWSMASTER

NEWSMASTER PROVIDES THE SOLUTION - IT IS SIMPLE ENOUGH TO USE, YET HAS THE FEATURES YOU NEED TO COMBINE TEXT AND GRAPHICS FOR NEWSLETTERS ETC.

AN AFFORDABLE DESKTOP PUBLISHING PROGRAM THAT COMBINES HIGH QUALITY GRAPHICS AND TEXT PROCESSING IN A EASY-TO-USE PACKAGE.

OVER 30 FONTS AND 250 PIECES OF CLIP ART.

SUPPORTS DOT MATRIX AND LASER PRINTERS.

VERY EASY TO CUSTOMISE!

P&P 3.50
RRP 299.00
OUR PRICE 284.00

FOR MORE INFORMATION ON SOFTCOVER SOFTWARE, PLEASE SEND US A STAMPED, ADDRESSED ENVELOPE AND WE WILL GLADLY SUPPLY YOU WITH THE LATEST PRICE LIST, OR FURTHER INFORMATION ON ANY OF THE LISTED TITLES.

Spreadsheets · Databases · Word Processing · Accounting
Graphics · Integrated Packages · Utilities · Commu-
nications · Desktop Publishing · Expert Systems
Desk Accessories · Mail Merge · CAD

HAPPY BIRTHDAY!!!

Are you wondering what to get that special person for his birthday? Well perhaps we can help there - you see the Club has an item from outer space called a GIFT VOUCHER, this item may be used as money by the one who receives it as a gift! Go on and buy that special person some GIFT VOUCHERS - and let him get something he really wants for his birthday.

The Home of the Hits!

ie information enterprises

417 MILNER ST
WATERKLOOF
PRETORIA
R.S.A. 0181
☎ (012) 46-8226
☎ 35844
MENLO PARK 0102
TELEX 3-21845 S.A.

NEW RELEASES

NEW SOFTWARE ON ORDER

DUE TO ARRIVE EARLY IN FEBRUARY 1989

OPERATION WOLF	41.50
SAVAGE	46.99
WHERE TIME STOOD STILL	41.50
TRACKSUIT MANAGER	46.50
STREETFIGHTER	46.50
EUROPEAN 5-A-SIDE	12.99
AIRWOLF	12.99
CYBERNOID 2	41.70
ALIEN SYNDROME	46.50
CORRUPTION (128k ONLY)	83.50
SAM FOX STRIP POKER	16.99
IMBOS 1.1	47.99
URIDIUM	
PACMANIA	15.99
VIRUS	46.50
DROIDZ	46.50
HOTSHOT	12.99
OVERLANDER	41.50
ROADBLASTERS	46.99
NIGHT RAIDER	46.99
T-WARPS	52.50
BARDS TALE	46.99
EMPIRE FIGHTS BACK	46.50
LAZER SQUAD	46.50
GAME, SET & MATCH II	51.99
THE GOLD COLLECTION III	67.50
4 ACES	POA
CONFLICT COMMAND	POA
GRAND PRIX SELECTION	POA
TASMASTER (FOR +3)	POA
PAR 3	+ - 67.99
GOLD, SILVER, BRONZE	75.55
TAITO COIN-OP HITS	75.55
ICUPS	66.00
CHESS THE TURK	POA
BACKPACKERS	12.99
SHERLOCK	12.99
IMPOSSABALL	12.99
TRIO	12.99
PLUS 80 ADDRESS MANAGER	12.99
CASINO ROYALE	29.99
WORLD CUP FOOTBALL	16.99
PAUL OF ALES	16.99
MISSION IMPOSSIBLE	16.99
ENDURO	16.99
TIR NA NOG	16.99
DOGFIGHT 2187	16.99
BIGGLES	15.99
TAU CETI	15.99
NOW GAMES 3	15.99
PUB GAMES	16.99
HACKER 2	16.99
ACE	16.99

AVAILABLE SOON

KARNOV	29.99
LORDS OF MIDNIGHT (+3 DISC)	29.99
STAR RAIDERS (+3 DISC)	39.99
MICRO VALUE (+3 DISC)	39.99
FOOTBALL MANAGER 2	47.99
FOOTBALL MANAGER 2 (+3)	75.99
FIGHTER PILOT	16.99
HISTORY IN THE MAKING	TBA
20 CHART BUSTERS	95.00
SPECTRUM 128 COMPANION	TBA
(THIS IS A BOOK)	
SWITCHER JOYSTICK INTERFACE	TBA
DATL DEMAGNITISER	49.99
DATL LIGHTWRITER	149.00
DATL INTER PRINTER	166.00

THE GREMLINS ARE OUT TO
GET YOU!!

VOLTAGE SPIKES CAN BE
VERY EXPENSIVE AND CAN
CAUSE MORE THAN JUST
DAMAGE TO YOUR
EQUIPMENT. MAKE SURE
THAT YOU DO NOT LOSE
VALUABLE INFORMATION
STORED ON YOUR COMPUTER
THROUGH A VOLTAGE SPIKE -
USE A VOLTAGE DESPIKER.
TESTED AND APPROVED BY
THE SABS.

VOLTAGE DESPIKERS CAN BE
USED FOR ALL YOUR
ELECTRONIC EQUIPMENT
FROM MICROWAVE OVENS TO
TV's AND HI-FI's. NOT ONLY
YOUR COMPUTER NEEDS
PROTECTION, BUT ALL YOUR
ELECTRONIC EQUIPMENT.

LIMITED SPECIAL OFFER

QUANTITY	NORMAL PRICE	SPECIAL PRICE	P&P
1	18.50	14.00	1.50
2	each	13.00	2.00
3		12.50	2.50
4		11.75	3.00
5		11.25	3.00
10		10.50	3.50

Special price quoted is price per plug, i.e.
10 voltage despiers = R105.00.

PLEASE NOTE: PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE

The new Amstrad

Loss Adjusters • Trav
Lawyers • Precision J
Representatives • Jou
Hotel Managers • Mar
Farmers • Printers •

Designers • Exporters
Inagers • Accountants
Brokers • Sales
Restaurants
Secretaries

portable

Amstrad PPC features

- Parallel Centronics Printer Port.
- Compartment for 10 Alkaline C Cells to give up to 8 hours use.
- 8086 16-bit processor, 8MHz clock.
- 640 K Ram.
- Integrated display adapter fully compatible with MDA and CGA. Drives either the LCD panel or an external monitor.
- 640 X 200 pixel supertwist LCD panel supports all CGA and MDA graphics and text modes. Display can be tilted to 6 viewing angles and contrast is fully adjustable to allow for different lighting conditions.
- Integral Modem which supports V21 (300 bps) Full Duplex V23 (1200/75 bps) V22 (1200 bps) Full Duplex V22bis (2400 bps) Full Duplex
- Hayes Command compatible; auto-dialling, auto answer.
- Includes Serial Port.
- AC Mains Adapter.
- Enhanced AT type Keyboard with 102 keys.
- Single or Twin 720K 3 1/2 inch Disk Drives.
- Microsoft MS-DOS 3.3 operating system.
- Mirror II Communications software.
- Full user manual.
- Compatible ROM BIOS.
- Speaker with volume control.
- Battery backed real time clock with scratchpad RAM.
- Socket for 8087 maths co-processor.
- Socket for PPC640 expansion box (to accept IBM compatible expansion cards and hard disk).
- Carrying case with pockets for manual and disks.



Taking technology as far as you can go.

NEW PRODUCT

ATOMIC WARFARE

We are bringing wargames right to the privacy of your own home!

This is a game with an entire new concept: Skill, Action and plenty of STRATEGY!

As commander of either the East or West, your mission is to destroy hostile nuclear missile bases.

Go on, support LOCAL SOFTWARE and get this great game!

Normal Price
Special Price
P&P

R15.99
9.00
1.50



PLEASE NOTE

INFORMATION ENTERPRISES will be closed over the EASTER WEEKEND - After all, we also need a break every now and again!

PRICE LISTS

Yes, you are reading correctly, are available for the people who want to see just how big the SPECTRUM, QL, Z88 and AMSTRAD range really is.

A4 size catalogues R4.50
(this includes postage)

THIS NEWSLETTER WAS EXTENSIVELY PRINTED USING A PROGRAM CALLED NEWSMASTER FOR IBM COMPATIBLE MACHINES. THE FEATURES OF THIS PROGRAM ARE FEATURED ELSEWHERE IN THE NEWSLETTER. NEWSMASTER GIVES YOU THE ABILITY TO COMPOSE ILLUSTRATED, MULTIPLE COLUMN DOCUMENTS. IT IS EXPRESSLY DESIGNED TO MAKE THE CREATION OF NEWSLETTERS, ADVERTISEMENTS, OR ANY PRINTED COMMUNICATION USING TEXT AND PICTURES COMBINED, FUN AND EASY!

Are you backed up? We are.

JUST BECAUSE YOU ARE UPGRADING TO A DISC DRIVE, THAT DOES NOT MEAN THAT YOU ARE NOT ABLE TO TRANSFER ALL YOUR PROGRAMS TO DISC - A MULTIFACE OR SNAPSHOT INTERFACE IS THE ANSWER TO ALL YOUR QUESTIONS AND TROUBLES!

WITH THE MULTIFACE YOU CAN; STORE AND RESTART PROGRAMS WHENEVER YOU WISH AND COPY THEM TO VARIOUS PERIPHERALS. YOU CAN ALSO STUDY/MODIFY PROGRAMS USING THE BUILT IN MULTI TOOLKIT AND, WITH OPTIONAL UTILITIES, DISASSEMBLE THEM, FIND INFINITE LIVES ETC. EACH MULTIFACE CONTAINS ALL ITS SOFTWARE IN A ROM, IS FULLY AUTOMATIC, USER-FRIENDLY, MENU DRIVEN WITH ON-SCREEN INSTRUCTIONS, COMPRESSES WHEN SAVING AND COMES PACKED WITH INDIVIDUAL FEATURES.

MULTIFACE ONE

- * FOR 48K SPECTRUM
- * SAVES TO MICRODRIVE, WAFADrive, DISCOVERY AND BETA DISC DRIVES AND TAPE
- * EXTRA 8K RAM
- * JOYSTICK INTERFACE AND THROUGH PORT

P&P 2.50
NORMAL PRICE 289.00
SPECIAL PRICE 239.00

Get backed up with us!

FIRST CLASS BACK-UP SYSTEMS

CLUB SUBSCRIPTIONS

HAVE YOUR FRIENDS BEEN ASKING "WHAT HAS HAPPENED TO THE ZX MUSHROOM CLUB?" WELL, NOW IS THE OPPORTUNITY FOR THEM TO ENROLE TO BECOME MEMBERS TO THIS EXCLUSIVE SPECTRUM USERS CLUB!

JUST FILL IN THE FORM BELOW AND SEND US YOUR R10.00 SUBSCRIPTION FEE FOR THE YEAR, AND LET US DO THE REST! SUBS CAN BE SENT IN THE FORM OF A POSTAL ORDER OR CHEQUE. MAKE SURE THAT IT HAS BEEN MADE OUT TO: ZX MUSHROOM CLUB, PLEASE.

NAME .

MULTIFACE 128

- * FOR 48K AND 128K SPECTRUMS - EXCEPT +3
- * SAVES TO MICRODRIVE, DISCOVERY AND TAPE
- * OPTIONAL DISCIPLE AND +D VERSIONS
- * EXTRA 8K RAM AND THROUGH PORT

P&P 2.50
NORMAL PRICE 299.00
SPECIAL PRICE 259.00

MULTIFACE +3

- * FOR SPECTRUM +3
- * SAVES TO DISK AND TAPE
- * EXTRA 8K RAM
- * OPTIONAL THROUGH PORT

P&P 2.50
NORMAL PRICE 299.00
SPECIAL PRICE 259.00

SNAPSHOT II

- * SAVES TO MICRODRIVE AND TAPE
- * SIMPLY PRESS BUTTON TO FREEZE THE PROGRAM
- * SPECIAL COMPACTING TECHNIQUES
- * ADD POKES OR PEEK PROGRAM THEN RESTART
- * ALL BACKUPS RESTART FROM THE POINT THEY WERE SAVED
- * BUILT IN JOYSTICK INTERFACE

P&P 2.50
NORMAL PRICE 229.00
SPECIAL PRICE 179.99

ADDRESS .

.....

.....

.....

.....

PERIPHERALS THAT YOU OWN .

.....

CLASSIFIED

FOR SALE: QL Computer and software, Memory expanding package, Green monitor, ExpandaRAM, Centronics Printer Interface, Mice.
R1000.00 O.N.C.O. Phone 0331-62062 OR
0331-68241

FOR SALE: Protek modem, Joystick Interface, Timex Printer. Will take best bid. Phone
Juri 011-7602376

FOR SALE: Rocky Gush Design, Disc Operating System/Printer Interface with push button copy function. Hardly used. Manual, program tape and complete Printer cable (Star) included. R180.00 O.N.O. Shawn Comrie Tel: 041-325520 (A/H) Before Dec 15 or After Jan 15.

FOR SALE: Star Gemini 10X Printer. As New. R500.00 O.N.O. Phone Liebenburg at 012-3222170 in the evenings.

HELP!! do you have any information on these two games - KENTILLA and MESSAGE FROM ANDROMEDA. Nicolas Vorster from Queenstown is having problems with them!

CAN YOU HELP? Mr Nel from Potch has the following system: Spectrum128K, Tasprint, The Style Writer, Phillips Monitor, Breakthrough Interface made by Arrow Research 1986, Seikosha SP1200. Have you been able to customise this program(s) for this system - for the Breakthrough Interface? Please Help.

GREMLIN INVASION! PLEASE HELP!! Michael Bishop from Kloof has the following problem- He scares the Gremlins into the vents with the camera and weld them all closed with the plates. But, they still keep coming! After Gizmo opened the locked door He sealed the last vent but he cannot block the broken window. How is this done and where do they come from? What use are the pipes and jointing tape, and how does he kill them? Any suggestions??

TASMAN TROUBLES!! Mr Janse v Rensburg from Kimberley has the following hitch - He uses Tasword PC 1.05 Word processing package. Do you know how to get rid of the space created by control K when printing mathematical and scientific symbols?

A very happy mushroomer sent us this letter. I think that we should share it with our other members in the Club.

I've been with the club for about 8 months now, and I must say, I'm impressed. For those of you who say that the club's prices are too high, or that it's a stupid idea for the club to ask members fees again, don't know what they are talking about! When I received the news that we must pay member fees again I didn't like the idea myself so I've done some enquiries about other clubs. There are a few, and I was surprised about their fees. One of the clubs asked R30.00 and the other two no less than R20.00. I say the Mushroom Club's fees are VERY reasonable and prices very low. So how is that for all you complaining members!?

This very encouraging note was received from Ettienne Smith of Evander. Thank you Ettienne.

INTERESTED IN ACHIEVING YOUR OBJECTIVE MORE QUICKLY?

Here are some POKES for those of you who would like to get there more quickly:-

For all you Multifacial People!!

FREDDY HARDEST

PT1 infinite lives POKE 64011,167
PT2 infinite lives POKE 61607,167
Type in any access code!

RENEGADE

Infinite lives POKE 41048,195
no of lives x POKE 23343,x

WIZBALL

Infinite lives POKE 37052,0
Invincibility POKE 36831,0
POKE 36832,0
POKE 36833,0

Normal POKES

GUNFRIGHT

Stops bandit drawing in quickdraw mode
10 FOR a=1 TO
7: LOAD "" CODE:NEXT
a: POKE 47919,0: POKE
47920,0: RANDOMIZE USR
23424

TARGET KENEGADE

When entering your name use the J,K & L keys as you would in Decathlon, except using all 3 keys. The writing should go over your score, and when it does, push ENTER. You'll return to the game immediately, with infinite lives!

Now that the computer has these addresses stored and the assembler knows where they start, it is possible to write a routine which calculates where the top of a character square is using B and C as row/column pointers. I called this routine CALC for calculate.

```
CALC  LD H,0
      LD L,B           ;load HL with B (row)
      ADD HL,HL         ;multiply by 2
      PUSH DE          ;store value in DE
      LD DE,LOOK        ;DE=start of look-up table
      ADD HL,DE         ;Add row to start of look-up table
      LD E,(HL)
      INC HL
      LD D,(HL)        ;screen address stored at that address into DE
      EX DE,HL         ;put the result in DE in HL
      LD D,0
      LD E,C           ;DE loaded with C (column)
      ADD HL,DE         ;add row to column
      POP DE           ;retain initial value of DE
      LD B,8           ;is going to be used later
      RET
```

After CALC has calculated the top of the character square, a routine is needed to do the printing of the shape (e.g. the cross in the example). I decided to call the routine SHAPE.

```
SHAPE LD A,(DE)        ;A contains byte at DE
      LD (HL),A        ;load screen address with that byte
      INC DE           ;next byte of shape
      INC H            ;add 256 to screen address
      DJNZ SHAPE       ;repeat until B is 0
      RET
```

It may be worth the effort to include a routine which prints a blank so that the shape can be wiped. I called this routine WIPE.

```
WIPE  LD (HL),0        ;load screen address with 0
      INC H            ;add 256 to screen address
      DJNZ WIPE       ;repeat until B is 0
      RET
```

Finally, the PRINT routine which calls all these routines in sequence:

```
PRINT PUSH BC          ;to prevent it from being corrupted
      CALL CALC
      CALL SHAPE
      POP BC
      RET
```

And a routine to print a blank:

```
BLANK PUSH BC
      CALL CALC
      CALL WIPE
      POP BC
      RET
```

Even if you understood nothing of these routines, you can still use them by loading B and C with row/column and calling PRINT or BLANK. If PRINT is called, DE will need the label value of the graphic data.

In the example case, you will need to define the data for the cross and label it CROSS somewhere in the assembly program:

```
CROSS DEFB 24,24,24,255,255,24,24,24
```

If you want to print your shape by the pixel, and not by the character, you will need to define a look-up table of your own with the screen address values from 0-175 for row. It will be necessary to call the routine which calculates the screen address before each byte which is poked into the screen memory.

TEST YOUR KNOWLEDGE - WHAT IS:-

1. Special circuits which convert the signals from a computer into a form other electronic equipment can deal with, and vice versa.	(9)
2. Character at CODE 85 (Print CHR\$ 85).	(1)
3. A system of computers, sometimes with other computer peripherals, linked together to share information.	(7)
4. A high-level programming language used mainly by scientists and mathematicians.	(7)
5. Character at CODE 78.	(1)
6. Any information the computer gives you.	(6)
7. This function gives the natural logarithm of a value.	(2)
8. At the end of a subroutine, tells the computer to go back to the instruction after the one where it left.	(6)
9. Character at CODE 90.	(1)
10. A code consisting of abbreviated instructions used as an aid to low-level programming.	(9)
11. This function checks the status of the keyboard and other input and output devices. It reads a byte from a given port address that indicates the status of the device connected to the port.	(2)
12. Moving pictures on the screen.	(10)
13. Character at CODE 65.	(1)
14. An electronic component which stops or sends the pulses in the circuits of a computer, depending on the pulses it receives.	(10)
15. This command may be used in an INPUT statement. -- 0,0 displays at the start of the line above the bottom line and the display scrolls up if more than two lines are displayed.	(2)
16. A special part of the computer's permanent memory (ROM) where instructions in a programming language are converted into machine code.	(11)
17. Is the second part of a statement/command which makes the computer loop back through the program and repeat any instructions inside the loop a fixed number of times.	(4)
18. Allows you to alter a line in a program without typing in the whole line again.	(4)
19. Character at code 70.	(1)
20. Wipes the program from the computer's memory to clear it for the next program.	(3)
21. The first part compares pieces of data (e.g. numbers or words or the contents of variables) and does different things depending on the results.	(2)
22. The second part mentioned in 21 above.	(4)
23. Character at CODE 75.	(1)
24. When this message is flashed up on the screen by the computer it is telling you that there is a bug in the program.	(5)
25. The computer ignores lines starting with this statement.	(3)
26. First word of the Mushroom Club.	(2)
27. Short for picture elements.	(6)
28. The memory inside the computer where the program and data are stored.	(3)
29. Is a way of getting the computer to ask you for data while program is running.	(5)
30. A series of characters for storing in a variable.	(6)
31. One of the two digits (0 and 1) that make up the binary code.	(3)
32. Another word for ESCAPE from a routine (not available on the ZX).	(4)
33. An alternative to a Monitor.	(2)
34. In a computer, this is a pulse single or a no-pulse single.	(3)
35. This command specifies the foreground colour in which characters are displayed.	(3)
36. This function calls a user-defined function.	(2)
37. Puts a variable label on a memory space and puts some information in it.	(3)
38. Character at CODE 84.	(1)
39. Acts as a logical operator to test the truth of a combination of conditions.	(2)

NAME _____ TEL _____ MEMBER REF #:

ADDRESS _____

To: INFORMATION ENTERPRISES, PO Box 35644, Menlo Park, 0102

DESCRIPTION PRICE

_____ R _____

_____ R _____

_____ R _____

_____ R _____






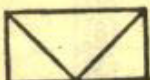
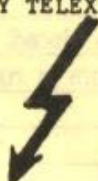
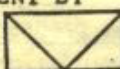
_____ R _____

_____ R _____

6595

HOW TO ORDER

ALL ORDERS NORMALLY DESPATCHED WITHIN 48 HRS

<p>BY PHONE</p>  <p>(0146) 30 774</p>	<p>BY POST</p>  <p>PO BOX 35644 Menlo Park 0102</p>	<p>BY FAX</p> <p>012) 46 5788</p>
<p>GENERAL ENQUIRIES</p>  <p>(012) 46 8226</p>		<p>ADVICE ON EQUIPMENT AND SOFTWARE</p>  <p>(012) 46 8226</p>
<p>TECHNICAL ENQUIRIES</p>  <p>PO BOX 35644 Menlo Park 0102</p>	<p>BY TELEX</p>  <p>321945</p>	<p>PAYMENT BY POST</p>  <p>Send cheques/ POs made payable to I.E.* PO BOX 35644 Menlo Park 0102</p>

ALL ORDERS NORMALLY DESPATCHED WITHIN 48 HRS

SUBTOTAL: R _____

POSTAGE: R _____

TOTAL: R _____

SOFTWARE

	Surface Mail	Air Mail
1 Tape	1.15	1.50
2 Tapes	1.50	1.85
3 or more tapes	2.30	2.80
Packs	1.85	2.30

HARDWARE

Interfaces (all)	1.85	2.30
Disc Drive (single)	5.90	9.00
Disc Drive (double)	7.00	11.50
Expansion pack	3.45	5.75
A4 Printer	10.00	13.80
Timex Printer	4.45	5.90
Joystick	1.80	2.30
Monitor (green)	8.00	10.50
QL computer	8.00	14.50
Spectrum +	8.00	14.50
Spectrum + 2	10.00	13.80
Spectrum + 3	11.90	14.50

PARTS

Membrane	2.30	2.80
All other parts	1.85	2.00

STATIONARY

Box of paper (2000)	3.00	5.00
Alphacom paper (1)	1.00	1.50
Alphacom paper (2)	1.50	2.00
Alphacom paper (5)	3.00	4.00
A4 roll of paper	2.80	4.90

KEYBOARDS

All keyboards	1.85	3.45
z88 computer	5.00	7.50

POSTAGE AND PACKAGING

All items are registered for your protection. Remember to take your ID to the Post Office when collecting a parcel.