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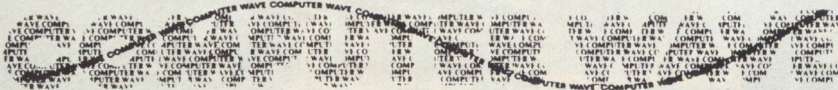
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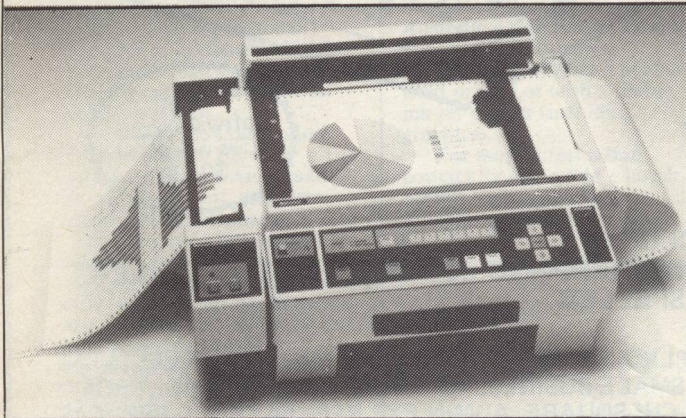
For more information contact AED Microcomputer Products, 130 Military Road, Guilford 2161, (02) 681 4966.

excitement of the conveyed news that Osborne are dropping the portable computer's price to \$1995 (ex tax), but from the 44°C heat. Although it is wonderful news, it's not a very nice thing to do to order hand-delivered telegrams on such a day.

Osborne also announce the availability of 80 and 104 column screens to existing users for \$200. The move to do this was the result of a poll conducted on Osborne owners, but perhaps

CHEAPER

We suspect that the sweat dripping from the ragged looking postperson who hand delivered an express telegram earlier this week wasn't from



This mention of Scientific Devices multicolour plotter is by way of an apology for printing the wrong price last month. It now sells for \$1860 (ex tax). We haven't got our hands on one yet but the machine is one of the "new breed" of low-priced compact plotters and, by all reports, does an excellent job.

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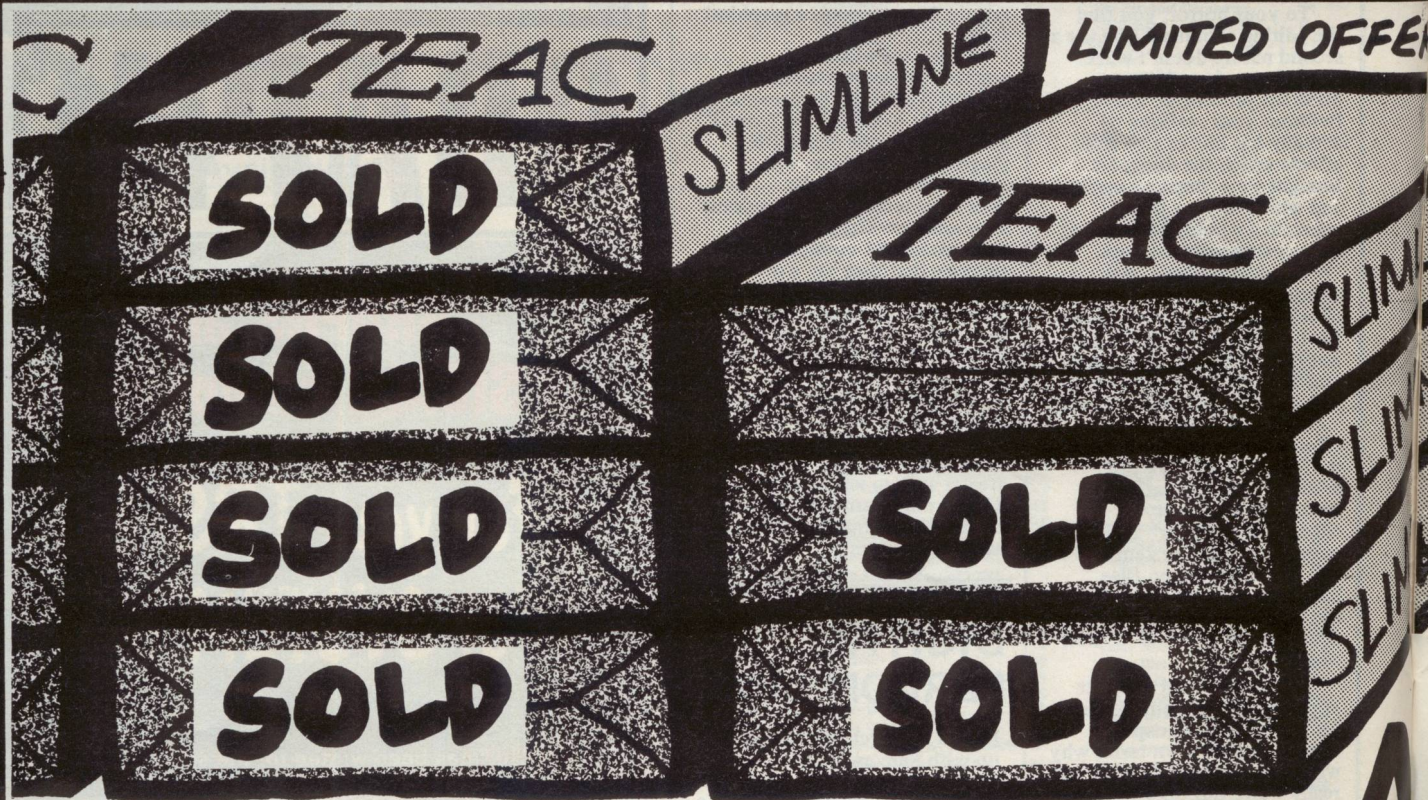
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You're never alone with a fluffy micro



Fancy sitting by the fire with a warm cup of cocoa and the pussycat snoring on your lap? David Tebbutt considers the electronic successor to pets.

Did you ever read Neil Frude's article, 'Animistics', in the July 1980 *APC*? I found the article quite fascinating and every few months I find myself thinking about Neil's ideas on where certain companies in this industry may find their future profits. Oddly enough, my own recent articles on obsessive programmers and robots brought Neil's theme back into focus. Broadly speaking, he feels that we are on the verge of developing a new range of computer systems which could be described as electronic companions or, to quote from his article, 'plastic pals'. The link with robots is perhaps obvious, the link with mental health is that lonely people are most subject to depression, mental breakdown, suicide and alcoholism. The solution lies in the combination of existing technologies and skills.

Just think for a moment about emotions you've felt when sitting at a computer. No doubt you've felt bored waiting for something to happen or, more likely, hostile because the darned thing's gone wrong. Every word processor user must have experienced that awful moment when two or three hours of creative writing have been lost. Programmers have certainly suffered at the hands of their computers throughout computing history. Playing computer games obviously arouses a great deal of excitement. All these emotions are aroused without too much effort on the part of the programmer or system designer. People often regard computers as individuals - I know one company that fondly refers to its machine as Einstein. Many of us have a tendency to bestow this inanimate object, the computer, with human characteristics.

We do this to pets, too. Many people will chat to cats, tortoises and dogs and derive a great deal of pleasure from the animal's company. Lonely people in particular can form a very special relationship with an animal which acts

as a substitute for human company. This is despite the fact that such an animal has a very limited behavioural repertoire.

Have you ever noticed the effect on a naive user of a program which asks for a person's name then goes on to address them personally. Such a program can be written in about ten seconds and requires very little thought. Imagine what would happen if we put a lot of thought into the human aspects of programs. With the skills of a programmer coupled to those of a psychologist or a playwright we could produce some pretty devastating interactions between the user and the machine. We could almost certainly deliberately arouse feelings of affection and pleasure once the user forgets that she's talking to a machine. Since there's probably an initial barrier when talking to cats, tortoises, or babies even, then this 'machine barrier' may be easier to overcome than we might think.

So, maybe the 'micro companion' is a possibility. In his original article, Neil described such a device thus: microcircuits, warm and fur-covered contentedly purring away in every old lady's lap, looking up once in a while, speaking words of reassurance and of its love and need for her, and reminding her to take her tablets at the right time . . . It does make a certain bizarre sense doesn't it? A cartoonist can evoke responses with a few simple lines. Doll makers use similar techniques to make their bits of plastic more appealing. In a similar way we could couple speech synthesis technology to the clever use of words to bring about similar reactions to the computer. If we encased the machine in a suitable pleasantly textured 'body' we would increase the appeal still further. Add a bit of warmth and a pleasant tone of voice and we could be well on the way to the 'plastic pal' mentioned earlier, all with technology that exists today.

In the mid-60s, Joseph Weizenbaum, to his eternal regret, programmed a computer to caricature a Rogerian psychoanalyst. He called his program ELIZA and it must be one of the best known computer programs in the world. It's the one that holds conversations like this:

ELIZA: Why have you come to see me?
PATIENT: I'm feeling a little low, that's all.

ELIZA: That's very interesting. Why are you feeling low?

PATIENT: I don't really know. Maybe it's the children.

And so it goes on. ELIZA simply picks up the key words and invites expansion based on those words. If ELIZA gets stuck it simply says "go on" until the 'patient' drops another meaningful word into the conversation. Weizenbaum's work was declared by him to relate to the study of natural language interaction between humans and machines. Sadly, some people took the program seriously as a psychoanalyst and begged for time with it to get themselves sorted out. I mention ELIZA simply to reinforce the idea that it is possible to program a computer in such a way that the user can become lost in meaningful 'conversation' with it. To put it another way, a computer can certainly be programmed to demonstrate higher interactive skills than, say, a cat or a tortoise.

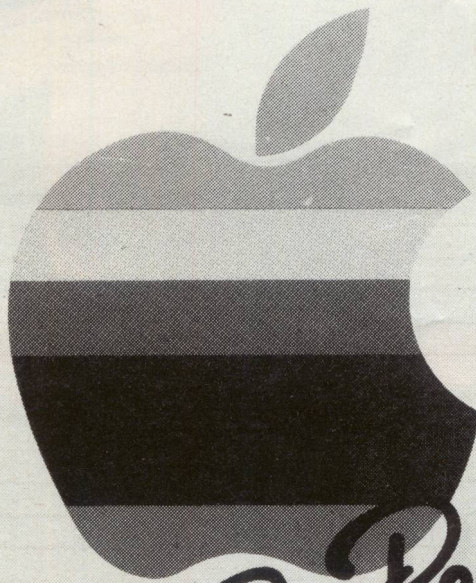
The 'plastic pal' will have a human or animal shape. It may even be a replica of someone or something, according to the user's needs. It would be pleasant to touch, having a soft warm skin or fur covering. Anything which could remind the user that it is a machine would be disguised - there would certainly be no flashing lights, metal parts or VDU screen. Computer-controlled production could make the speech and facial features unique to each machine. Similarly, imperfections such as coughs, giggles and stutters could be added to make the machines more 'human'. It's a macabre thought, but it would be possible to continue life with a replica of a deceased spouse, or a favourite film star even. For the moment locomotion poses a bit of a problem but it's probably only a matter of time before someone cracks that particular problem.

Once home with the 'plastic pal' it will be switched on and, from that moment, it will start to memorise information about its owner's likes and dislikes - anything, in fact, which will enable the 'relationship' to be a smooth one and to enable the 'pal' to imitate activities as well as responding to the user's own ideas. In this way it can become an entertainer, a comforter, a memory jogger, a calculator, a teacher, a guard dog, a game player, a menu planner - in fact, an ideal companion banishing loneliness, preventing boredom and giving care and nurturance to those who need it most.

Repugnant? An insult to human beings? Maybe, but there's no escaping the fact that many people are so desperately lonely that, in the absence of a human companion, this may be just what the doctor ordered.

Reference: *Australian Personal Computer*, July 1980: *Animistics* by Neil Frude.

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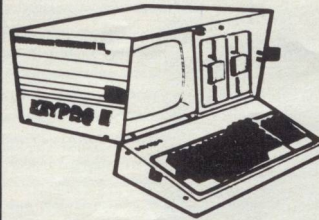


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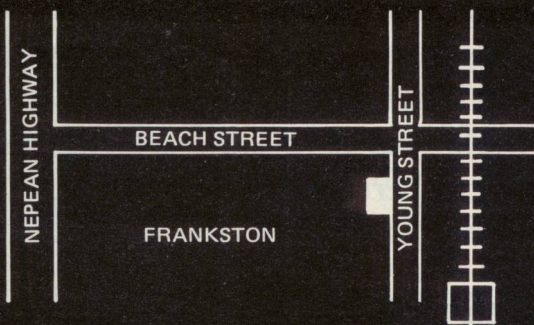


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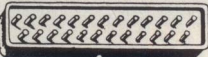
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COMMUNICATIONS



APC welcomes correspondence from its readers but we must warn that it tends to be one way!
Address letters to: 'Communications', APC,
P.O. Box 280, Hawthorn, Vic 3122.

Negative feedback

I look forward to collecting your magazine from the newsagent every month and the first thing I turn to is Lazing Around. I very much enjoy the challenge and usually achieve an answer even if I don't get it right or submitted in time. I've even introduced a couple of my computing friends to them and although one of my friends is maths shy, he rises to the challenge once the messy bits are out of the way.

But having said all the nice things I took exception to the wording in your December issue when you explained the answer to the number of coconuts. "Since -5 is clearly a solution . . ." well it is not clear to me! How can you feed half-a-dozen hungry men a quantity of minus five coconuts? Or do you mean that as a result of eating those minus five coconuts they will starve to death minus N days sooner than they would have, had they not had any coconuts to eat at all?

It reminds me of a maths class once where a pipe had to be laid in a trench and an answer came from the solution of a quadratic equation and gave a plus or minus figure. One silly blighter argued that a minus depth trench was an acceptable answer!

Thanks anyway and please keep the problems coming.

Roger Glass

Failed

No, Mr Bev Mason's program (APC December 1982) failed the intelligence test. Has he tried it on a series such as 3,9,27,81,-? The psychologist's preferred child gives the answer 243; Mr Mason's clever child, and his program, give 195. They are wrong; the other is right. Why? Because if the sequence is a series, the fifth term should be predictable from the first three terms as well as from the first four. The standard answer meets this requirement, and shows that the child can draw conclusions from all the data but nothing more than the data. The computer hasn't been programmed to check that the solution for

$N-1 \dots 3$ values is the same as that for N values; and the program assumes that the Y values conform to a formula ($Y=f(X)$) where $f(x)$ is a polynomial in X . It can't cope with other functions. The computer 'knows' about explanation, but hasn't been programmed to expect it. The standard child may not know about it, but can intuit it from its knowledge of arithmetic. That, perhaps, is what intelligence is about; and perhaps the tests are less useless than Mr Mason thinks.

C Currie

Safe level

Following your interest in the radiation hazard of video screens, may I refer interested readers to an excellent letter by Nashel, Korman and Bowman, New England J. Med. 307.14 1982 pg. 892 entitled 'Radiation Hazard of Video Screens'. As your writer realised the closeness of the viewer to the screen is a crucial factor in estimating radiation dosage. The authors do suggest that use of older colour TVs (manufactured in the US before January, 1970) may place viewers at risk of radiation exposures greatly in excess of standard recommended doses. Interested readers should consult the original letter for details.

Andrew Brinskill,
Lincoln Institute of Health Sciences.

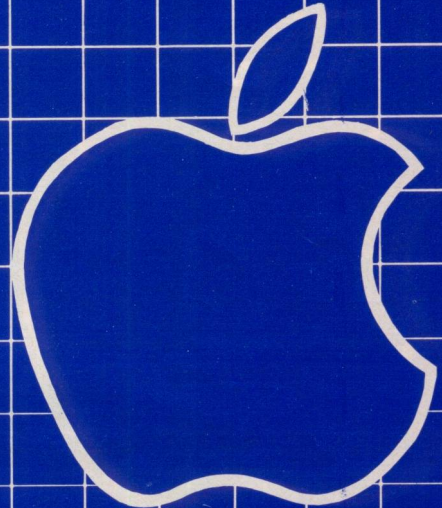
Cryptic comments

In your December edition, Dr David Fisher writes on the problem of factoring large numbers. He states that due to recent advances in number theory it is now possible to find the factors of 200-digit numbers. On the other hand, he appears to be confusing two problems: those of testing for primality, and factoring. In practice, though, these problems are not equivalent; it is much, much easier to show that a number is not prime than actually to find the factors.

On my Z80-based machine I can test numbers around 10^{36}

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1 The 1st Australian Personal Computer Show
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10-12 March 1983

STAND NO 501

COMMUNICATIONS

for primality in a matter of minutes, but finding the actual factors might take a million times as long as estimated by extrapolation. The computing power required for factoring rises as about the fourth root of the number, but for primality testing only about as the log of the number. The higher the numbers, the greater the difference.

Nevertheless there have been reports that Adi Shamir, a co-inventor of the so-called RSA public-key cryptosystem, has made a breakthrough in this field. I am investigating and await the results with interest.

George Sassoon.

Info wanted

Could you please tell me how to obtain information on all the Zilog and Intel microprocessors and support chips and also give the titles of any books on how to build simple computers and hi-resolution colour graphic displays like the Atari computer?

D Pain

Data sheets should be obtainable by writing to the manufacturers. A very full coverage is given in the "Introduction to Microcomputers Series" by Adam Osborne, Volumes 0 to III, plus the updating supplements to vols II and III give a very thorough coverage.

I am afraid I am unable to track down books on computer and graphics card construction.

P L McIlmoyle

Bewildering choice

I hope to purchase a home computer but I'm bewildered by the large selection available. I would like it to be able to carry out calculations on lots of formulae such as:

$$\frac{(B + D)^2}{2A} \quad 3L(F + 2.4)$$
$$EF - (E - G) (F - 2H)$$

How much memory will I need and what other features should I look for?

John Park

You do not indicate what else you require the computer for. In order to evaluate expressions such as the one given, you only need a simple programmable calculator. You can obtain these far more cheaply than even the cheapest computer. However, I will assume that you really do want a computer because you want to print or display the results in a way that a calculator cannot.

As long as you don't have more than 100 such expressions then even the smallest (8k, say) computer would do, provided that you print the results as they are calculated, and don't want all the results stored. If you want all the results stored then you will probably need 16k. What is perhaps more crucial is the accuracy with which the computer will carry out the calculations. You should choose a system that can work in floating point arithmetic, and has sufficient accuracy for your needs. Some versions of Basic (and you needn't necessarily use Basic) only work to six significant figures, whereas others can work in what's called 'double precision' mode with up to 14 digits' precision. As I am unaware of the use for the above expression you will have to be the judge on the accuracy required. Another consideration in choosing a system will probably be whether you can use a printer, or display the results graphically, but that's another story.

Sheridan Williams

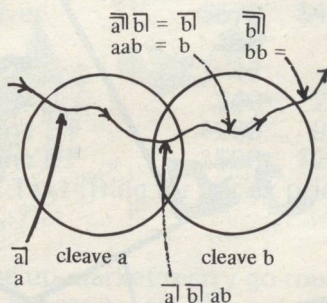
Renaming the nameless

I refer to your article on page 71 of October APC (Namer of the Nameless). With regard to your problem of notation in expressing \sqcap try this:

Instead of a write a

Instead of a write aa
and define aa =

For example



Nick Soulos

Random tip

For the past two months I have been trying to write a machine code random number generator for the ZX81 but with little success. Please could you give me some ideas?

Andrew Quilley

Try playing around with the machine register R; it does not hold a random number but the computer uses it constantly, hence the value changes continuously.

END



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Micro-Educational

P.O. BOX 154, CHARLESTOWN 2290.

See you at the 1st
Australian Personal Computer Show
STAND 301


```

ADD HL,HL ; 29
ADD HL,HL ; 29
ADD HL,HL ;HL<-HL*376 29
ADD HL,DE ;HL<-HL*377 19
ADD HL,HL ; 29
ADD HL,HL ;HL<-HL*1508 29
ADD HL,DE ;HL<-HL*1509 19
LD DE,+41 ; 11 29 00
ADD HL,DE ;HL<-HL*1509+41 39
POP DE ;restore 01
POP BC ; 01
POP AF ;registers. F1
RET ;return. C9

;RDM32 - 32-bit pseudorandom number generator
;CLASS: 1
;TIME CRITICAL?: No
;DESCRIPTION: Generates a 32-bit number from the series:
;
; r(i+1) = (69069 r(i) + 41) mod 2^32
;ACTION: The seed, or r(i), is copied from the 32-bit accumulator
; HL,IX into BC,DE (H & B are Ms bytes).
; Initialise loop counter (A) to -11
;
; . HL,IX := 2*HL,IX (all numbers are mod 2^32)
; . If bit 1 of A is zero
; . Then let HL,IX := HL,IX + r(i)
; . Increment A; repeat if not equal to zero.
; HL,IX := HL,IX + (1+65536+256) r(i) + 41
; (The algorithm is based on the regularity of the bit
; pattern of 69069 = 12(256+16+1)+1+65536+256)
;SUBR DEPENDENCE: None
;INTERFACES: None
;INPUT: A seed, or the previous random number, in HL,IX
;OUTPUT: The new random number in HL,IX
;REGS USED: HL IX
;STACK USE: 8
;LENGTH: 43
;TIME STATES: 1049
;PROCESSOR: Z80

```

```

RDM32: PUSH AF ; F5
PUSH BC ;Save registers C5
PUSH DE ; 05
LD A,211 ;Initialise SHIFT loop counter 3E F5
LD B,H ;Copy r(i) into BC,DE 44
LD C,L ; 44
PUSH IX ; DD E5
POP DE ; D1
SHIFT: ADD IX,IX ;HL,IX will hold 25 r(i) DD 29
ADC HL,HL ; after the first four ED 6A
BIT 1,A ; passes through the loop, CB 4F
JR NZ,NEXTA ; 409 r(i) after the next 20 04
ADD IX,DE ; four, and 3276 r(i) on DD 19
ADC HL,BC ; exit from the loop ED 4A
NEXTA: INC A ; 3C
JR NZ,SHIFT ; 20 F1
ADD IX,DE ; DD 19
ADC HL,BC ;HL,IX := 3277 r(i) ED 4A
ADD HL,DE ;HL,IX := 68813 r(i) 19
LD B,C ;Multiply BC,DE (presently 41
LD C,D ; holding r(i)) by 256 and 4A
LD D,E ; add 'c' (=41), preparing 53
LD E,+41 ; to add into HL,IX 1E 29
ADD IX,DE ; DD 19
ADC HL,BC ;HL,IX := 69069 r(i)+41 ED 4A
POP DE ; D1
POP BC ;Restore registers C1
POP AF ; F1
RET ; C9

```

you can discover facilities on your processor which the manufacturer never told you

about then write in to 'Sub Set' and share your findings.

FOWIAD

Also from Jonathan Marten is a routine FOWIAD (Find Out Where I'm At with Displacement) which adds the address of the

instruction immediately following CALL FOWIAD to HL. HL should already be loaded with a desired displacement for indirect addressing.

Datasheet

```

;= FOWIAD - Find Out Where I'm At with Displacement
;CLASS: 1
;TIME CRITICAL?: No
;DESCRIPTION: Adds the address of the 1st byte of the instruction
; following CALL FOWIAD to HL
;ACTION: See comments
;SUBR DEPENDENCE: None
;INTERFACES: None
;INPUT: Displacement in HL
;OUTPUT: HL = HL+PC; F reflects 16-bit addition
;REGS USED: HL F
;STACK USE: 2
;LENGTH: 9
;TIME STATES: 92
;PROCESSOR: Z80/8080/8085

```

```

FOWIAD: EX DE,HL ;disp to DE, DE to HL EB
EX (SP),HL ;DE on stack, ret address to HL E3
PUSH HL ;save ret address E5
ADD HL,DE ;displaced address into HL 19
POP DE ;ret address to DE D1
EX DE,HL ;disp addr to DE, ret addr HL EB
EX (SP),HL ;replace ret address on stack, E3
EX DE,HL ;original DE to DE and exit EB
RET ;with displaced address in HL. C9

```

6502 combination jump

Vincent Fojut has sent LONGBR, our last Datasheet this month. LONGBR was born out of Vincent's envy of the 6809's 16-bit branches and his desire to have such handy instructions on the 6502.

There are 13 different conditions resulting from the seven flags of the Status Register P. Each flag can be set or reset, except for the Break flag B which is always set to 1 as far as the programmer is concerned. Vincent questions the need to use 13 different routines to branch on those conditions. Instead, he uses just one routine which compares a bit-mask pseudo-opcode with the P register. This effects a jump only if the

state of the flags indicated by the opcode match the condition also indicated by the opcode.

Figure 3 shows the position of the flags in the P register. Bit 5 is not used. The opcode passed to LONGBR uses Bit 5 to indicate whether a jump will occur if the flag to be tested is set or reset. The flag to be tested is indicated by a set bit in the corresponding position in the opcode. So, for example, the opcode value for BDC (Branch if Decimal flag Clear) is 00001000 (08H) and for BDS is 00101000 (28H).

Although Vincent does not include the possibility in his Datasheet documentation,

Obscure 8085 instructions

Jonathan Marten has written in to tell of his discovery in an obscure Intel publication (he does not say which) of no less than nine unspecified 8085 instructions.

Three of the instructions act on the condition of the K or V flags. You didn't know the 8085 had K and V flags? Well, according to Jonathan, bit 5,F is the K flag, named 'correct sign'. Unfortunately,

he does not know what it represents or how it is affected by operations. Bit 1,F is the V flag, named 'overflow', and this appears identical to the overflow function of the Z80 P/V flag.

The opcodes, suggested mnemonics (not recognised by the Intellex ISIS assembler) and actions of the unspecified instructions are shown in Figure 2.

10	RRHL	:Rotate HL right. 16-bit rotation, flags unchanged.
18	RLDE	:Rotate DE left. Bit 15 to Cy. No other flags.
28bb	ADIHL bb	:Add 00bb immediate to HL, setting flags.
38bb	ADISP bb	:As above but to Stack Pointer.
CB	OVRST8	:RST 8 (to 0040) if the V flag is set.
D9	SHLDE	:16-bit move as 'LD (DE),HL'.
ED	LHLDE	:16-bit move as 'LD HL,(DE)'.
DDaaaa	JNK aaaa	:Jump to location aaaa if K flag is reset.
FDaaaa	JK aaaa	:Jump to location aaaa if K flag is set.

Fig 2

The Z80 has unspecified instructions, dealing with the separate halves of the index registers, among other things, and now we find that the 8085

also has a more extensive instruction set than we had supposed. Is this extraordinary state of affairs to be found on other popular processors? If

Bit number	7	6	5	4	3	2	1	0
Flag	S	V	B	D	I	Z	C	

Fig 3

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SHOW See
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The 1st APC Show will bring three days of micro-mania to Sydney early next month. Huge crowds are expected to circulate through the halls of the harbour city's most prestigious exhibition venue, Centrepont. Every available square millimetre of display space has been sold to accommodate over eighty exhibitors in the four levels of the Show. So leave yourself plenty of time to browse the widest-ever range of microcomputers (and, of course, the multitude of ancillary equipment) ever assembled in Australia.

Several new products will be launched during the three days of the Show including three or four new computers, new peripherals and some new books and magazines. You'll even see the first produce of an Australian Personal Computer/Century Books venture which is a hefty Spectrum Handbook. We hope to have at least a dozen titles by early next year.

Visitors will be able to buy or order most of the goods that take their fancy while they are there and many will be at special Show prices. There will definitely be something for everyone: games for the kids (young and old!), packages for education and business at all levels, clubs for enthusiasts and beginners alike, and a multitude of peculiar devices for the expert.

The Australian Computer Society (NSW Branch) has shown its enthusiasm for the "Personal Computer" with the First Australian Personal Computer Congress at the Sheraton Wentworth Hotel from March 9 to 11. The Congress boasts an extremely impressive list of speakers including Barry Jones (Shadow Minister for Science and Technology), Chuck Peddle (designer of the Sirius 16-bit micro), Peter Johnson (Executive Director of Myer), Scott Oki (Director of the International Operations of Microsoft), Seymour Rubinstein (President of MicroPro International) and many more. For more details on time, speakers, etc, see the ACS advertisement on page 113.

The last part of our NEC/APC contest will appear in the March issue of APC which will be on sale at the Show. The answer to this includes a telephone number which belongs to a phone at the Show - and of course the first person to fathom the correct number and ring





For details of opening hours etc, see the Australian Exhibition Services advertisement on pages 98 and 99.

the special contest telephone, picks up \$2500 courtesy of NEC Information Systems. All Show-goers are eligible to enter the competition which will be run on Futuretronics stand in the Grand Hall. If you're wondering about the connection between Futuretronics and Club Mediterranee, it's to do with a joint "Computer Workshop" venture which has been running since May 1981 in Club Med, Kamarina, Sicily and later, various other 'Meds for which Atari supply the micros.

Priority tickets are available for hurried businessmen - anyone who sends two dollars to the Show organisers, Australian Exhibition Services, either on headed notepaper or enclosing a business card, will have the opportunity to use a special 'fast lane' at the entrance to the Show, which means they won't have to queue. Discount tickets have been inserted in this magazine which allow you entry for half price.

Finally, APC staff would like to welcome readers to the Show and trust they will be well satisfied with this exciting event.



STAND BY STAND

A breakdown of exhibitors at The 1st Australian Personal Computer Show.

Stand no: 2020

ACI Computer Services, 310 Ferntree Gully Road, Clayton 3168. Tel: (03) 544 8433 ext 260.

ACI Computer Services, a nationwide IBM-based service bureau, has been appointed a distributor of the IBM Personal Computer.

ACICS' offices in all mainland states are staffed with computer professionals, who can advise their clients how to configure their personal computer and how to choose the right software for their jobs.

In recent weeks, ACICS has made available some software packages from Australian, American and British sources.

Applications covered by these packages include small business accounting, spreadsheet analysis, word processing, data base management, professional time billing, critical path analysis statistics, graphics and of course, games.

ACICS will also demonstrate how an IBM microcomputer can operate as an intelligent terminal to a host mainframe computer.

Stand no: 803

Acoustic Electronic Developments Ltd, P.O. Box 196 (130 Military Road) Guildford 2161. Tel: (02) 681 4966.

AED Microcomputer Products specialises in the supply of IEEE 696 S100 microcomputer products and complete turnkey systems, and provides consultancy, design, engineering, maintenance, and training services to the business community and manufacturing industries. Most important to AED have been their Supercomputer and Universe turnkey computers which feature a hybrid high speed 8 and 16 bit CPU. This computer system was developed with speed, power, and expandability as the primary objectives. AED also produces the Pulsaed computer which is based on the STD bus, and can develop special application software through its subsidiary Softaed.

Stand no: 306

Adaptive Electronics Ltd, Ground Floor, 418 St Kilda Road, Melbourne 3004. Tel: (03) 267 6800.

Adaptive Electronics Pty Ltd is a supplier of the professional range of Cromemco microcomputers and software. The company is also the sole Australian distributor of Tandon disk drives and Konan hard disk controllers. Additionally, Adaptive Electronics is involved in the development of customised software for specialist Government, industrial and business applications.

One of the main product lines marketed by Adaptive Electronics is the Cromemco range of professional microcomputer hardware and software products. This range includes the new powerful and low-priced C-10 personal computer which comes with an intelligent high resolution 12 inch CRT and detached keyboard.

The C-10 has all the necessary communi-

cations ports built-in and has been configured so that it can take advantage of C-Net, Cromemco's local area networking system which is capable of linking individual computers together to form a distributed processing system or "automated office". One of the normal network functions capable of being implemented by C-Net's network control software is electronic mail storage and delivery. The electronic mail program is a post office simulator that not only delivers electronic mail, but also holds mail for users who are not logged onto the network.

The C-10 has a wide range of peripherals available including floppy disk drives and a low priced letter quality daisy wheel printer. Furthermore, the special Super Pack configuration includes a CP/M compatible operating system, 32k Structured Basic, Word Processing and Financial Spreadsheet Software.

Stand no: 116

Addison-Wesley Publishing Co, 13a Macquarie Industrial Park, 6-8 Byfield Road, North Ryde 2113. Tel: (02) 888 2733.

Addison-Wesley Publishing Company, is an independent publisher of educational materials in all disciplines for elementary and high schools, universities, and industry; it also publishes professional, reference and adult trade books.

The microcomputer revolution is creating an unprecedented demand for information about the microcomputer field. Addison-Wesley Microbooks, a series of quality, reasonably priced titles, have been specifically created to meet that demand. This series captures the range and application of small computers to everyone's life making the graduation to "computer literacy" both enjoyable and easy.

Stand no: 913

Adler Business Machines Ltd, Cnr. Waterloo and Lane Cove Roads, Ryde 2113. Tel: (02) 888 7644.

Adler Business Machines Pty Limited will be exhibiting their family of Adler products, ranging from the Electronic Typewriter with add-on attachments interfaced to the Adler Alphantronic Microcomputer Business System, through to the Adler "Bitsy" family of stand-alone or multi-user Word Processing Systems.

The Adler Alphantronic has been marketed in Australia for some 15 months and is represented by four models with 65K RAM, CP/M and external storage of 320k of floppy disk to 5 megabyte Winchester drive. Adler have specialised in accounting solutions for small to medium sized businesses and are exhibiting a variety of commercial packages including specialised products for Insurance Brokers, Real Estate Agents, Automobile Dealers, Accountants, Medical and Veterinary Practices and Management Tools for all sizes of industry. The Alpha-

tronic is available with a variety of printers, both letter quality and dot matrix, varying in speed from 17 cps to 250 cps units;

The "Bitsy DDS" range of word processors is a family of stand-alone work stations capable of being interfaced into large shared resource systems. Units on display range from 96k stand alone systems to the DDS 30, a large shared resource network with 16 terminals and 96 megabytes of disk storage.

Stand no: 101

Anderson Digital Equipment Ltd, 14 Whiteside Road, Clayton 3168. Tel: (03) 544 3444.

Anderson Digital Equipment will be displaying products from five different computer and peripheral suppliers at the Show. Products which will feature include the Northstar Advantage with its extensive graphics capability and a 5 megabyte Winchester hard disk, Televideo visual display terminals, and the Qume Sprint II Daisy Wheel Printers with over 100 different print styles.

ADE also plans to display the Intecolor 2405 Colour Graphics Terminal, with VT100 emulation, and the Houston DMP29 Colour Plotter which comes complete with 8 plotting colour, a plot area of 17 inches by 11 inches and RS232 serial interface for \$2995.

Stand no: 1024, 1026

Apple Computer Australia Ltd, Suite 3, 73 Albert Avenue, Chatswood 2067. Tel: (02) 419 5944.

Evolution and revolution is the theme of the Apple Computer stand. Evolution in the form of the newly released Apple IIe, an enhanced version of the Apple II - well established as the world's most popular personal computer; and revolution in the form of the new Lisa system. On exhibition for the first time in Australia, the Lisa represents a new generation of personal computers. It provides six integrated software applications which cover the core functions of today's office needs, and is so simple to operate that a first time user can be operational within 30 minutes.

Demonstrating its total range of 'business solutions', Apple will also display the Apple III, the full function personal computer for the business professional; and Profile, Apple's self contained five megabyte mass storage system; together with the two new Apple III disk drives, Unifile and Duofile, which each provide 871,424 bytes of online storage.

Then there are the two new Apple Printers - dot matrix and letter quality, designed to fully complement the functions of the Apple II, III and Lisa.

Stand no: 3007

Ashton Scholastic, Railway Crescent, Lisarow, Gosford 2252. Tel: (043) 283 555.

Details unavailable at press time.

Stand no: 3024

Atari Computer Enthusiasts (NSW),
GPO Box 4514, Sydney 2001. Tel:
Tony Reeve (President) (02) 452 2974.

Atari Computer Enthusiasts (NSW) are an independent computer users' group for owners of the Atari 400/800 Home Computer System. Its aims include promotion of the Atari computer, interchange of hints, tips and ideas amongst members, instruction in programming techniques and explanation of the Atari's many revolutionary features.

The group is active in a number of areas including monthly meetings, a reference library, software exchange, special interest groups, cheap disks and cassettes, dealer discounts and a high quality 20 page bi-monthly magazine called Inside Info.

Meetings are held at 6.00pm on the first Monday of every month (or the second Monday if it clashes with a public holiday) at the offices of I.P. Sharp Associates, 8th Floor, Carlton Centre, 55 Elizabeth Street, Sydney. Everyone is welcome!

Further details, membership forms, demonstrations and copies of Inside Info will be available from members of the group at "Computer Club Corner".

Stand no: 3024

Australasian ZX Users Newsletter, P.O. Box 397, Dapto. Tel: (042) 615 451.

The idea of this club was inspired in 1981 with the introduction into Australia of the ZX81, a personal computer from Sinclair. Coupled with Sinclair's 16k RAM pack, the ZX81 soon became even more popular than the ZX80. During this time, a thermal printer was produced. It was compatible with the ZX81 and the ZX80 with Retrofit 8k ROM. The printer has 32 characters per line with full graphics capabilities on paper only 4 inches wide.

On demonstration at the Show will be a ZX81 with 16k RAM, printer, I/O board plus an exciting array of software written locally as well as overseas. Also on display will be the user group's newsletter.

Interested persons are welcome to come and swap a few yarns or even play with our computers if they wish.

Stand no: 2010

Attache Software Ltd, 6 Ryde Road, Hunters Hill 2110. Tel: (02) 920 5938.

Attache Software operates on selected 8 or 16 bit microcomputers which use either the MS-DOS or CP/M operating systems. All you require is a personal computer with 2 diskette drives and a printer. Attache supplies the rest. Attache comes complete in one Attache case per application. There is no need for you to purchase anything else. With Attache it's all in the bag. The Attache Software kit includes: User Manual, a complete easy to follow manual giving step by step instructions; Diskettes, these contain the Attache programs and sample data to show just how easy it is to use Attache Software; Business Forms, a supply of special pre-printed stationery; Attache Business Software Range, Accounts Receivable, Invoicing/Sales Analysis, Inventory Control, Accounts Payable, General Ledger.

Stand no: 2014

Australia and New Zealand Book Co. 10 Aquatic Drive, Frenchs Forest 2086. Tel: (02) 452 4411.

The Australia and New Zealand Book Co Pty Ltd is an independent Australian owned publisher and distributor of a large range of computer books in Australia and New Zealand.

They represent the following major US computer publishing companies whose books will be on display at the Show: Dillithium Press of Beaverton, Oregon, who are pub-

lishers of microcomputer books, and Sybex who publish books on all aspects of small computer design, programming, application and usage to an intelligent, but not necessarily technically sophisticated readership.

Stand no: 801

Australian Computer Society Inc.
35-43 Clarence Street, Sydney 2000.
Tel: (02) 290 3887.

The Australian Computer Society is a national society with over 4,000 members in NSW, ranging from executives in the computer industry, consultants, EDP managers, systems analysts, programmers, engineers and operators.

Entry to Professional grades is by examination, the acquisition of certain university degrees or by length of experience. Affiliate membership may be granted to people with an interest in computing but no qualifications. The Society offers a range of activities including: presentations by specialists on a range of subjects at evening meetings, high level Professional Development seminars covering a range of topics from new computer techniques to management subjects, symposia on specific topics such as Personal Computers, Data Communications or Privacy, an annual three day residential conference, special interest groups where members can involve themselves in their areas of particular interest, and a reference library.

A monthly newsletter advises details of the Society's activities. In addition, a quarterly learned Journal and a monthly Bulletin are published by the national body of the ACS.

Stand no: 103

Barson Computers Ltd, 86 Nicholson Street, Abbotsford 3067. Tel: (03) 419 3033.

Barson Computers Ltd is the sole Australian distributor for three new microcomputers - the Sirius 16-bit, the BBC and the Sinclair Spectrum - and each of these will be displayed on their stand at the front entrance to the Exhibition.

Sirius, designed specifically for business and professional office use, was first introduced to Australia in June, 1982. This micro-computer offers the industry standard CP/M-86 16-bit operating system, 128k memory expandable to 896k, twin 5 1/4 inch disks storing 600k, ultra high resolution display - 800 x 400 pixels, and an optional 10 megabyte Winchester disk.

The BBC microcomputer is used widely as an educational computer by schools and learning institutions from primary to tertiary level in several states. It features in the BBC TV Computer Literacy Programme for Schools called The Computer Programme, soon to be seen on Australian television.

The Sinclair Spectrum is the successor to the Sinclair ZX81 home computer, and it brings colour and sound, plus more computing ability (up to 48k RAM), and high resolution graphics within reach of home computer enthusiasts.

Stand no: 901

Canon Australia Ltd, 22 Lambs Road, Artarmon 2064. Tel: (02) 439 3233.

Details unavailable at press time.

Stand no: 106

Case Communication Systems Ltd, 1-3 Aitchison Street, St Leonards 2065. Tel: (02) 438 2400.

Case will be exhibiting its outstanding range of microcomputer VDU and printer products.

Stars of the Case stand will be the two new Star printer products - the 80 column DP510 and the 132 column DP515. 100 cps printing speed, 9 x 9 matrix with descenders,

correspondence quality print mode, bit-image graphics, forms control, vertical and horizontal tabulation are all standard features. Continuous friction and sprocket feed paper handling plus single sheet feed capability enables the DP range to meet a wide range of applications. Both models are capable of printing the 96 character ASCII set with 32 special characters, 64 graphics characters, an italic character set plus an optional proportional spacing set. A 2k byte buffer is standard and interfaces are available for most microcomputers.

For users requiring higher printing speed Case will be showing the PT910 and 920 printers operating at 200 and 340 cps respectively.

For letter quality printing applications Case will be displaying its recently released M45 Daisywheel Printer. The M45 combines 45 cps printing speed, ultra-high print quality and reliability with a remarkably low operating noise level.

Representing Case's VDU products will be the low cost, high quality VC4404 terminal. The VC4404 permits economical expansion of microcomputer systems. Standard features include 80 x 24 character display, non-glare screen in white, green or amber, character highlighting for forms entry and a transparent mode to monitor all ASCII line data.

Stand no: 611

City Personal Computers Ltd, 5/385 Pacific Highway, Crows Nest 2065. Tel: (02) 922 3600.

City Personal Computers are the authorised dealers for products by such computer manufacturers as IBM, APPLE, OSBORNE and COMMODORE. City Personal Computers have two stores located within the main business area of Sydney, and carry a large range of peripherals and accessories, including hard disk sub-systems and word processing and accounting packages for the major micro-computer systems. Staff at City Personal Computers regularly conduct training courses on the popular programs for the computers stocked in their stores.

Stand no: 804

Commodore Business Machines. 3 Campbell Street, Artarmon 2064. Tel: (02) 437 6296.

The APC Show will be the first public outing for the new Commodore 64, as well as for Commodore's new series 500 and 700 small business systems. The Commodore 64 incorporates a range of features normally associated with more expensive systems. With 64k RAM, 20k ROM and the capability to support languages such as Basic, Logo, Pascal and CP/M, the Commodore 64 can handle both a variety of business and educational applications, plus sophisticated games and music synthesis.

Commodore will also display their complete range of home, personal and small business computers, including the Commodore VIC-20 home computer, which is the only fully programmable colour computer under \$300 on the Australian market.

Stand no: 3021

Computer Exchange, 5/8-12 Pacific Parade, Dee Why 2099. Tel: (02) 98 8111.

Computer Exchange's specialty at the show will be the Datamind series of computers, comprising the Datamind 5000, and the Datamind 8000 systems. The Datamind 5000 is a powerful, compact word processor and computer, featuring standard 64k bytes memory and a large disk drive storing capacity of 800,000 characters. The Datamind 8000 has 64k bytes memory, a more than adequate 2.4 million character disk storage and "easy-on-your-eyes" VDU (24L x 80ch), and choice of printers for word

processing and accounting.

Computer Exchange will also have on exhibit The Electronic Salesman, The Electronic Manager and The Electronic Chairman computers.

Stand no: 518

ComputerLand Australia Ltd, 2nd Floor
65 Kent Street, Sydney 2000. Tel: (02)
264 8200.

ComputerLand is the world's largest network of independent stores specialising in the sale and service of microcomputer products. Their hardware and software range is available from ComputerLand stores in New South Wales (Sydney, Bondi Junction, Burwood, Chatswood, Gosford, Parramatta, Ryde), Canberra, Victoria (Melbourne, Box Hill, Camberwell, South Melbourne), Queensland (Brisbane, Maroochydore, Southport), Adelaide and Perth.

Stand no: 303

ComputerWave Ltd, Lower Ground
Floor, Myer Sydney, 436 George Street,
Sydney 2000. Tel: (02) 231 5791.

ComputerWave will be showing a selection of personal computers, mainly for home and educational uses, such as Atari, Texas Instruments TI 99/4A, VIC and Apple, together with a selection of some of the latest and most popular software for personal computers.

ComputerWave staff will introduce you to the exciting world of the personal computer, guide you in selecting a computer that best fits your needs and your budget, show you how to set up your personal computer, and thoroughly test all equipment before delivery.

Once you have your computer, ComputerWave are available to advise you on programming, software, applications and additional hardware.

ComputerWave will be demonstrating the interesting possibilities of Computer Sound, with the Echo Voice Synthesiser, the Alien Voicebox and SAM, a software based talker.

Stand no: 620

Computerworld Pty Limited, 37-43
Alexander Street, Crows Nest 2065.
Tel: (02) 439 5133.

Computerworld Pty Limited is promoting its range of information services which include the weekly newspaper Australasian Computerworld; Office Automation quarterly; annual software directory Greenbook of Software and Related Services; and annual hardware directory Redbook of Hardware and Related Services. Computerworld's new microcomputer publication is being launched at the Show.

Stand no: 615

Cybernetics Research, 120 Lawson
Street, Redfern 2016. Tel: (02)
698 8286.

The key to Cybernetics Research is the provision of an integrated approach to the supply of services, accommodating their customers' total needs in hardware, software, systems analysis, maintenance and problem solving.

They run a word processing bureau to provide support to their word processing clients directly and to test word processing programs under heavy duty conditions. Cybernetics programming capacity means they can offer advice on computer software and systems in general, and can tailor software to a client's needs or develop applications for him.

They also currently run a small bookshop as a service to customers. Other activities include a users' club for the Hitachi Peach computer, which meets every Saturday and acts as a communications and self help centre.

Stand no: 722

Dicker Data Projects Ltd, 78 Captain
Cook Drive, Caringbah 2229. Tel: (02)
525 2122.

Dicker Data will be exhibiting the Vector range of computers. The Vector 4 represents a new era of computer technology. The Vector 4 has dual processors, combining the power of the 8088 16-bit processor with the Z80B processor. All CP/M 2.2 compatible software can run on the Vector 4. The Vector 4 provides for the future and the move up to the power of 16-bit applications programs as they become available.

The Vector 4 offers the newest in full ergonomic design. It has a high contrast green phosphor screen with a resolution of 640 x 312 pixels. The Vector 4 comes with 128k of RAM and is available with floppy and hard disk drives. The Vector 4 can be used as a mode in a local area network. Dicker Data have been selling and servicing Vector products for nearly 5 years and will be releasing an exciting new product at the Show, so make sure you stop in and find out what it is.

Stand no: 1016

Dick Smith Electronics Ltd, Cnr Lane
Cove and Waterloo Roads, North Ryde
2113. Tel: (02) 888 3200.

Everybody is talking about computers these days - yet most people still don't understand them. In fact, many people are still scared of computers!

Dick Smith is doing something to solve that! At the Show, Dick Smith Electronics

will have a 'hands on' display of Australia's leading personal computers.

Included will be the popular System 80 - an ideal 'first' computer, yet powerful enough for running a small business.

Another very popular computer on show will be the Exidy Sorcerer, which has become favoured amongst the scientific community and more serious business user because of its adaptability.

Another model on display will be the VIC-20 - one of the first full colour personal computers, ideal for everything from games to business.

But the star of their exhibit will undoubtedly be the new Dick Smith Wizzard, the only 'TV game' available with a personal computer option built in. The Wizzard can be bought as a TV game to entertain the kids (and the not-so-kids!) as well as allowing them to learn how to use a home computer.

A full range of games, programs, etc will also be available for the public to try out.

Stand no: 705

Digital Equipment Australia Ltd,
Northern Tower, Chatswood Plaza,
Railway Street, Chatswood 2067. Tel:
(02) 412 5252.

Digital Equipment Corporation will put its newly-released range of professional personal computers on public exhibition at the Show.

The range of personal computers, comprising Rainbow, DECmate and Professional series, was launched to the Australian public in February and the full range has not been seen at any trade show or exhibition in the country before.

The Digital professional personal computer range comprises three series of computers ranging in capability from the Rainbow 100 to the DECmate 11, and finally the more powerful Professional series comprising the Professional 325 and Professional 350 machines.

The Rainbow 100 provides access to the hundreds of software applications running on CP/M and performs applications such as spreadsheet calculations and simple graphics.

The DECmate 11 is a powerful computer for office management, providing executive management, accounting software capabilities and a comprehensive word processing system with integral list processing, sort, math, calendar, message log, signature log and telephone directory.

The Professional 300 series is aimed at executives in large corporations, small business and professional people who need the capabilities of a third generation computer.

Stand no: 3016

EDP Imports Pty Ltd, 12 Garling Road,
Marayong 2148. Tel: (02) 671 5800.

Details unavailable at press time.

Stand no: 2018

Elcomp-Hofacker, 53 Redrock Lane,
Pomona, California 91766. Tel: (714)
623 8314.

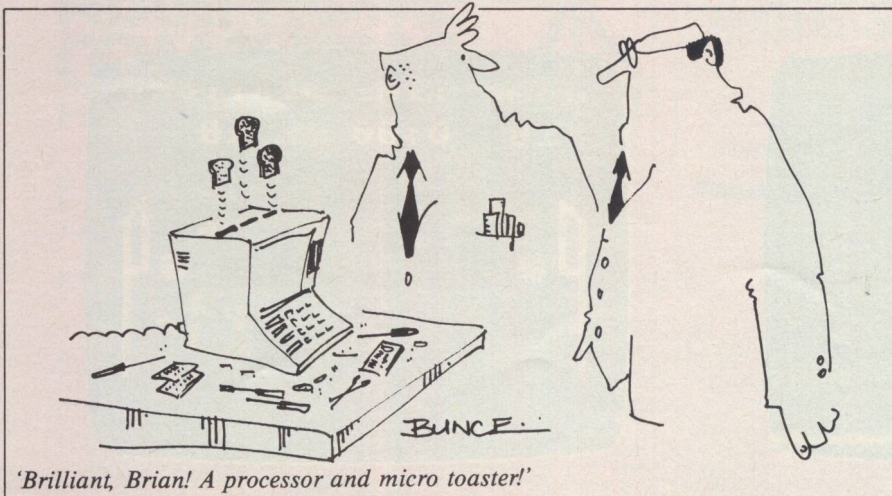
Elcomp publishes books and software for a number of different micros. For Atari there is a machine language monitor, Forth package, editor/assembler, word processor and a variety of games. Similar software is available for Apple II, OSI, VIC-20 and ZX81. Elcomp also publishes books and software for the Osborne 1, ZX-Spectrum, IBM and Tandy (Genie I, II, III).

Hardware accessories include expansion boards, EPROM burners and an analogue/digital converter for Apple II and Atari.

Stand no: 911

Elmeasco Instruments Ltd, P.O. Box 30,
Concord 2137. Tel: (02) 736 2888.

Featuring in Elmeasco Instruments' exhibit



at the Show will be the Otrona Attache portable computer which provides all the computing power of many desk-bound micro-computers in a compact portable unit weighing only 8.5kg and measuring 305 x 345 x 146mm.

Large disk capacity, graphics and processing power are key features. Software supplied with the Attache includes the industry standard operating system CP/M. Wordprocessing is provided by the Wordstar package. Basic-80 is one of the fastest and most complete versions of Basic and allows users to develop their own programs or adapt many of the existing Basic programs. Also provided is the unique Valet which is designed to manage interruptions – it can be called on in the middle of a job and allows interchange of data or messages with other computers.

The Attache has dual processors, 64k RAM, dual floppy disk drives with 384k capacity each and two serial ports which handle most printers. The display has its own 14k memory. Optional features include dc/battery operation.

Stand no: 3018

Elmtech, 36 West Street, Crows Nest 2065. Tel: (02) 92 0948.

Details unavailable at press time.

Stand no: 2016

Emona Enterprises Ltd, CBC Bank Building, Suite 208, 661 George Street, Sydney 2000. Tel: (02) 212 4815.

Emona Computers' display at the Show will feature the MPF-1 microcomputer which is Z80 based, inexpensive for learning microprocessors and prototyping and has 4k ROM, 2k RAM (expandable), cassette interface and expansion/interface sockets. Options include a thermal printer, EPROM programmer, speech synthesiser and sound generator.

Also displayed will be the MPF-11, low cost, high performance personal computer, Mitac MIS-5000 series small business computers, the MIS-900 12 inch video terminal, Applemate low cost 5¼ inch disk drives, Pax dual mini floppy disk drives, high resolution 12 inch and 9 inch monitors, dot-matrix impact and daisywheel printers and IEEE/488 (GPIB) interfaced, computer controlled instruments.

Stand no: 302

E.S.P. Management Systems Pty Ltd, 2 Ella Street, St Leonards 2065. Tel: (02) 439 8055.

E.S.P. Management Systems Pty Ltd is part of a group of companies with a broad range of activities and expertise.

E.S.P. provides a total support service including: bureau processing, computers and computer systems, consulting services, applications systems and programs, and seminar and education services for on-going user support especially in the area of personal and microcomputers.

Stand no: 3004

Feffer and Simon Inc, 456 Kent Street, Sydney 2000. Tel: (02) 29 1236.

With computer education becoming a national priority the interest and demand for personal computers and books about them is exploding.

Feffer and Simons Inc, New York, publishers' representatives and their Australian associates, Doubleday Australia Pty Limited, are exhibiting the publications of leading American and British publishers they represent.

The range includes books, diskettes and magazines related to most of the personal computers and languages available or used in Australia.

The publications to be exhibited are from the catalogues of leading overseas publishers, including: Arcsoft, Alfred, Boyd & Fraser, W.C. Brown, Century – Personal Computer, Creative Computing, Dell, Digital, Doubleday, Random House, Richard D. Irwin, Science Research Associates, Workman and Ziff-Davis.

Worthy of note are the books for children – beginning at primary school level which have already made a mark with teachers and students throughout the country.

Stand no: 2024

Futuretronics Australia Ltd, 1076 Centre Road, South Oakleigh 3167. Tel: (03) 579 2011.

Futuretronics Australia Pty Ltd will be displaying the entire range of Atari home computer systems and software.

The inexpensive Atari 400 home computer and the extremely flexible 800 home computer share many powerful features. Both offer a 10k ROM operating system. The Atari 400 comes with 16k RAM, expandable to 48k and the Atari 800 comes with 48k of RAM.

Atari home computer systems offer sophisticated graphics (128 possible colour hues) and upper and lower case letters from a full size 57 key standard keyboard. Four way cursor control allows you to move rapidly to any point in your computer program.

Languages available for the Atari computers include Atari Basic, Basic A+, Microsoft Basic, Lisp, Fig Forth, Val Forth, Pascal, Pilot and soon to be released Logo.

Atari's extensive software range offers entertainment, word processing and file management programs as well as a huge amount of educational software from Atari and APX (Atari Program Exchange). Futuretronics also markets educational software from Datasoft, Microsoft and Synapse.

Stand no: 3008

Hewlett Packard Australia Ltd, 31 Joseph Street, Blackburn 3130. Tel: (03) 878 8777.

At the Show Hewlett Packard will have on display their full range of personal computers: Series 10 Professional Calculators, Series 40 Handheld Computers, Series 70 Portable Computers, Series 80 Personal Computers, Series 100 Personal Office Computers and Series 200 Personal Technical Computers.

Hewlett Packard also markets a wide range of software packs, peripherals and graphic devices for their personal computers.

Visitors are invited to discuss their requirements with Hewlett Packard staff who can advise on how to choose the right computer for any job environment.

Stand no: 619

IBM Australia Ltd, P.O. Box 3318, GPO Sydney 2001. Tel: (02) 234 5317.

The IBM Personal Computer was announced in Australia by IBM in February last year, following an earlier announcement in the United States and Canada.

Designed for business, school and home, this easy-to-use system offers many advanced features and, with optional software, may use hundreds of popular application programs.

IBM has designed its Personal Computer for the first-time or advanced user, whether a business person in need of accounting help or a student preparing an essay or paper.

An enhanced version of the Microsoft Basic programming language and easily understood operation manuals are included with every system. They make it possible to begin using the computer within hours and to develop personalised programs quite easily.

The IBM Personal Computer will be sold by authorised independent dealers and the IBM shop in Sydney. Volume purchases will be handled by IBM's marketing organisation.

Stand no: 506

Imagineering, 22 Sir John Young Crescent, Woolloomooloo 2011. Tel: (02) 358 3011.

Imagineering manufactures and distributes microcomputer software which is sold through established microcomputer dealers in Australia. It is the first Australian company to service the microcomputer software industry with comprehensive technical marketing and merchandising support.

Imagineering provides a complete range of software for microcomputers such as Apple II and Apple III, IBM PC, Commodore, Atari 400/800 and CP/M based machines.

With the large selection of software now available in neighbourhood stores, the awareness of the potential use of microcomputers in a variety of environments has been increased.

Imagineering places high emphasis on providing technical support to dealers who in turn pass this knowledge to customers.

Since the majority of software is now being manufactured in Australia, product costs have been reduced – with production savings being passed on to customers.

GOTO page 79

VIC-20 at

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Waiting while your computer runs a printer is wasted time. With V-SPOOL you can continue to use the computer while printing a letter, an invoice or other text. V-SPOOL instantly buffers up to 16K in memory—roughly 6 full pages—instead of having to wait for the text to print. You retain complete computer control while the buffered text is simultaneously sent to the printer. The time saved with V-SPOOL can be substantial. Using a letter quality printer, you'll save up to a minute a page. If you print 60 pages of letters or invoices a day, you will have saved an hour.

NO HARDWARE COSTS

V-SPOOL costs a fraction of a hardware buffer. It requires no power, will never break down, and is in many cases faster. A hardware buffer may take 17 seconds to fill up. V-SPOOL will buffer the text almost instantly.

SIMPLE TO USE

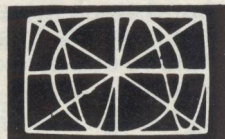
One CP/M command activates V-SPOOL. Its operation is foolproof and transparent to your application programmes. You'll want to use it all day.

NO INTERFACING

V-SPOOL requires no hardware or software modifications. Just CP/M 2.2. It occupies only 1K of memory space plus the size of the print buffer (variable from 2K to 16K). Installation is very simple—it comes ready to run on most CP/M computers.

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Programming **SUPEREZ-80** is as simple as the SET/RESET/POINT statements but FASTER.

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* Product of Tandy Corporation.
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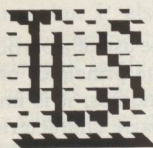
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Continued from page 70

Stand no: 305
Independent Microcomputer Supply Company, 820 Elizabeth Street, Waterloo 2017. Tel: (02) 698 7756.

TIMS is an independent distributor of a wide range of hardware and software, being direct distributors for IBM, NEC, Kaypro, Seiko, Apple, Casio and others. Similarly, they handle Datatype, Scientia, IMS (Ascent), Visicomp, Padmede, Micro Pro and other software lines.

The Independent Microcomputer Supply Company has qualified staff who examine customers' needs, assess the suitability of available software and then decide the most appropriate hardware to use. This advice is completely free and assists one in obtaining the right hardware/software combination.

Stand no: 903
Lothlorien Software, GPO Box 1033, Sydney 2001. Tel: (02) 398 4023.

Lothlorien Software produces a range of educational software whose key-note is ease and simplicity of use in both tutorial and lesson-making modes.

Each tutorial program presents and drills material, giving immediate corrective feedback. Teachers can rapidly compile sets of lessons to add to the comprehensive set provided on the master diskette.

For the smaller school or private libraries they have the Library Catalogue & Librarian's Assistant - Loan System.

Lothlorien Software also produces the Archive-Bibliography-Filing system - ideal for student records, equipment, stores, collections - with accounting facility, whilst the School Records & Reports system keeps track of examination/test results of students and produces ranked reports.

A unique Microcomputer Library System has just been released for larger libraries, based on Apple II computers with Corvus hard disk. It is a multi-function, multi-station system providing simultaneous access to the hard disk files for Circulation, Cataloguing, Overdues, Public Access Catalogue and Searches.

And for fun - the Caverns of Mordia.

Stand no: 102
Magmedia Ltd, 1 Lincoln Street, Lane Cove 2066. Tel: (02) 428 1100.

Magmedia is a large supplier of computer media, accessories and furniture with branches or agents in all capital cities, and represents leading names in the computer industry such as Verbatim, Applied Data Communications, Computer-Link and BASF.

As sole Australian distributor for Verbatim, Magmedia supplies Datalife flexible disks for microcomputers, minicomputers,

word processors and data processors. Datalife disks are certified 100% error free and carry a 5 year warranty. For applications involving environmental extremes, there is the Optima flexible disk which has a 17 year warranty. Madmedia also distributes the Datalife head cleaning kit and Optima Alignment Disk plus Verbatim data cartridges, cassettes and mini cassettes.

Magmedia has recently become the Australian distributor for Applied Data Communications (A.D.C.). Using the Floppy Copy Magmedia can copy, preformat, or convert your floppy disk to tape or line. It can even do word processing to phototype-setting conversions. Magmedia also sells the Floppy Copy machines.

Stand no: 120
McGraw-Hill Book Company Australia Ltd, 4 Barcoo Street, East Roseville 2069. Tel: (02) 406 4288.

Details unavailable at press time.

Stand no: 909
Memorex Ltd, 61 Barry Street, Neutral Bay 2089. Tel: (02) 908 2211.

Memorex offers a full range of flexible disks to suit all the systems you will find exhibited. Included in their range are 8 inch disks (both single sided and double sided, all densities and all sectoring) and the 5.25 inch disks (both single sided and double sided, all densities including (QUAD) and all sectoring).

They are also running a competition to win 100 flexible disks to suit your system.

Stand no: 307
Microbee Computer Company (Applied Technology), 1a Pattison Avenue, Wantana 2077. Tel: 487 2711.

Microbee Computer Company's display highlights not only the popular 16k and 32k computers and associated software, but also the exciting new range released especially for the Show, including the brilliant colour Microbee and the 64k disk operating system.

Also on display will be the recently developed Wordbee word processing package, Pascal and Logo, to provide a variety of educational environments and a range of options not allowed under Basic.

Stand no: 301
Micro-Educational, 17 Park Road, Garden Suburb 2288. Tel: (049) 43 6805.

Micro-Educational is a large mail order supplier of microcomputer software and peripherals, specialising in Apple and Apple compatible products. Recently Micro-

Educational has branched into products for the other major micro brands including IBM PC, VIC-20, Atari, Sirius and Kaypro.

Micro-Educational also imports, sells and services a range of hardware including CPUs, drives and printers.

Stand no: 502
Micro Stat Software, P.O. Box 125, Queanbeyan 2620. Tel: (062) 972 697.

For those involved in the fields of Statistics, Mathematics, Engineering, Business Analysis and Research, Micro Stat Software has an evolving range of software designed for professionals.

Included in their range of products are: the U²SL - Volume 1 of Fortran Subroutine Library (which provides a comprehensive set of modules for both Matrix Operations, including Eigenvalues and Inversion, along with Statistical Distributions and variable distribution Random Number Generators), the Bstat (a very fast statistical package for producing Frequency Tables and Basic Statistics from your data), and Deep (Data Editing & Extraction Package for cleaning those dirty data sets).

Stand no: 112
Minicomp Software and Education Pty Ltd, 378 Forest Road, Hurstville 2220. Tel: (02) 570 7233.

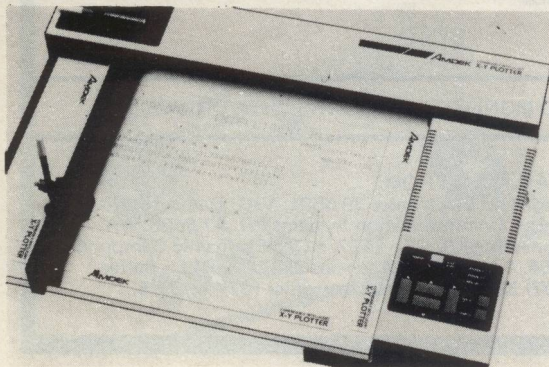
Minicomp, authorised distributors for the full range of Cromemco hardware and software are introducing the new C-10.

The C-10 has been described as a "full capability" system. It has a full 25 line by 80 character graphics display, the type of feature seen on much higher priced systems. It has the full power of the Z80A microprocessor operating at 4MHz with 64k RAM and a 12 inch green phosphor screen.

The C-10 Super Pak system also includes double sided, double density disk drive, a detachable qwerty keyboard, an RS232 serial port, a parallel port, RS232 modem port with full handshaking capability, and an impressive array of software packages. The software packages include CDOS (CPM compatible), Structured Basic, a complete word processing package and a spreadsheet calculator program.

To make the C-10 even more affordable, Minicomp will offer pieces comprising its Super Pak and Deluxe word processing package as separate items. Options include an ergonomically designed tilt and swivel stand, add on 390k floppy disk drives (up to 4), the up market CKBC keyboard with numeric keyboard and programmable function keys and a letter quality or dot matrix printer. The 8 bit parallel port can also be used as a direct memory access (DMA) port in future upgrades to a hard disk system.

AMDEK X-Y PLOTTER



Affordable computer graphics

A professional X-Y plotter at a hobbyist priced. The Amdek DXY-100 interfaces with any computer via a standard Centronics printer port. High speed (70mm/S), low noise, with 0.1 mm resolution over a 360x260mm area. Fourteen

control functions, eight vector commands. And programming is easy using the built in command mode. Use your computer to draw graphs, diagrams, circuits, even musical scores!

AMDEK by **Roland**

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uP

Learn Computing

with the **MICRO-PROFESSOR**

- At Your Own Speed
- On Your Own Time
- In Your Own Environment



MPF-1

\$115 + S.T.

MPF-1 Micro-Professor
Z80 CPU high performance microprocessor with 158 instructions.

2K RAM expandable to 4K. 2K ROM, sophisticated monitor expandable to 8K.

24 I/O system lines. 2K of sophisticated monitor, including system initialization, keyboard scan, display scan, and tape write and read. 6 digit 0.5" red LED display.

Audio cassette interface: 165 bit/sec average rate for data transfer between memory and cassette tape.

Extension connectors: All CPU buses, CTC channel signals and I/O port bus usable for expansion.

Counter timer circuit provided. Parallel I/O circuit socket provided.

2.5" diameter speaker. Driver circuits. 3.5" x 1.36" wire wrapping area for expansion. 9V, 0.5A adaptor provided. Three complete self-learning textbooks with experiments and applications. Keyboard: 36 keys including 19 function keys, 16 hex-digit keys and 1 user defined key. Tiny BASIC interpreter with two special features. Allows user to call subroutines written in machine code residing in memory. Allows users to write variable values into desired memory address or read the value of variables from a specific memory address.



EPB-MPF

\$145 + S.T.

EPB-MPF EPROM Programmer Board
For all +5V 1K/2K/4K EPROMs. MPF-1 compatible, using 40 pin flat ribbon cable and connector.

Single +5V 2K EPROM, 2516 x 1. Monitor EPROM address: 9000-97FF. Static 4K RAM, 6116 x 2 Basic RAM address: 8000-8FFF. Programmable I/O port, 3255 x 1, 24 parallel I/O lines. I/O address: CC-CF.

Main power input: 30V/75mA and 9V/400mA adaptors provided. 24-pin, zero insertion force socket textool.



SSB-MPF

\$145 + S.T.

SSB-MPF Speech Synthesiser Board
High reliability TI TMS 5220/5200.

Two EPROM sockets for expanding vocabulary. Share Z80 CPU of MPF-1 as host controller.

MPF-1 keyboard and speaker used for input/output. Adjustable voice pitch and volume.

9V, 0.5A adaptor provided.



PRT-MPF

\$95 + S.T.

PRT-MPF Thermal Printer
5 x 7 matrix characters. Built-in alphanumeric character patterns. Built-in MPF-1 memory dump utility. Built-in MPF-1 BASIC program listing utility. Built-in Z80 disassembler listing utility. 20 characters, 138 dots per line. 9V, 600mA adaptor provided.



SGB-MPF

\$95 + S.T.

SGB-MPF Sound Generation Board
High-reliability GI-AY-3-8910 programmable sound generation chip.

4K EPROM for storing sound generation programs and data.

One EPROM socket for expanding sound data. Shares Z80 CPU as host controller and 2K RAM of MPF-1 as memory for sound data.

Built-in amplifier circuit and high quality speaker.

(\$15 + S.T.)

Student Workbook

The Student Workbook is a 100-page, step-by-step instructional 'system' to bring you from initial unpacking and turnon of your MPF-1 to full working familiarity.

Although optional, the Student Workbook is an essential tool for serious students of the Micro-Professor.

ACC-MPF Experiment/Expansion Kit

Mini-breadboard for insertion of ICs, resistors and capacitors for experiments.

Z80-CTC (counter and time chip) and parallel I/O chip to expand MPF capability.

Flexible ribbon, 40-wire wrap connector connects MPF to breadboard.

Reusable breadboard. 2K RAM to expand to 4K static memory. Blank 4K EPROM for permanent program storage.

Micro Professor M.P.F. 11

A LOW-COST/HIGH PERFORMANCE PERSONAL COMPUTER



ONLY \$499 + S.T.

Options include video monitor, thermal printer, full size keyboard, remote control pad, RS 232C Interface Board, floppy disk drive, speech synthesiser, sound generation board, Chinese character controller and a host of software cassettes and cartridges.

SPECIFICATIONS OF THE MPF-11

Type	Video Display	CPU	R7602
	Memory mapped into system RAM	ROM	16K Bytes
Mode	Text, low-resolution graphics, high-resolution graphics (three modes are mixed).	RAM	64K Bytes
Screen Format	960 characters (24 lines, 40 columns).	Dimensions	9.84x7.16x1.24 inches
Character Type	5 x 7 dot matrix	Power	A switching power supply is provided to convert AC power to required power supply.
Character Set	Upper case ASCII 64 characters	Speaker	8Ω, 2 1/2 inches, 0.25W
Graphics Capacity	1920 blocks (low resolution) 53760 dots (high resolution) in a 280 by 192 array.		
Number of colours	6 colours		
Basic Interpreter	More than 90 instructions, more than those for Apple		
Keyboard	49 alphanumeric and function keys.		
Printer Interface	Connects to printers with Centronic Interface.		
Display Interface	Connects to colour home TVs or video display.		
Remote Control	Paddle		
Cassette Interface	Used for education & entertainment.		
Software Cartridge Interface	Use various cassette tapes and cartridges as data storage units.		

* ADD 20% S TAX TO ALL PRICES * OTHER PRODUCTS: RANGE OF VIDEO MONITORS, PRINTERS, DISK DRIVES *



EMONA COMPUTERS
A Division of Emona Enterprises Pty Ltd
CBC Bank Bldg, 661 George St,
Haymarket, Sydney. (02) 212 4815

The 1st Australian
Personal Computer Show
Centrepoint Sydney
10-12 March 1983

STAND NO 2016

ALSO AVAILABLE FROM:
NSW: David Reid Electronics 29 6601. VIC: Radio Parts 329 7888. SA: Int. Communication Systems P/L 47 3688. WA: Hinc Engineering P/L 381 4477. ACT: Electronic Components P/L 80 4654. TAS: D & A Agencies 23 2842. QLD: Baltec Systems (07) 36 5183, Solex Electronics (07) 72 2015.

For full details of Cromemco's new C-10 get your free copy of Cromemco News at the Minicomp stand.

Stand no: 400
Mitsui Computer Systems (Australia) Ltd, 7 West Street, North Sydney 2060. Tel: (02) 929 9921.

Details unavailable at press time.

Stand no: 613
Molymerx Pty Ltd, P.O. Box 900, 11 Bourke Avenue, Gosford 2250. Tel: (043) 694 888.

Molymerx is a publisher and supplier of software for the TRS-80 and System 80 microcomputers and offers a mail order service for its customers throughout Australasia and the Pacific Basin.

Molymerx has chosen the Show to unveil a number of new products for the TRS-80 and System 80 computers, as well as to introduce its new range of products for the IBM PC. Included in this range will be the Electric Notebook, a true relational database for the TRS-80 Model 3, the Weekly Trader, an accounting system designed for small businesses incorporating many of the features found in the popular Kalamazoo and Twinlock ledger systems, Stock Control, the Molymerx Stock Control System which offers very fast search and retrieval times with sophisticated reporting features, and Firebird, a sensational new Arcade game for the TRS-80 and System 80 computers. Play Firebird and have the opportunity to win your choice of any five games from the Molymerx Software Catalogue.

Stand no: 175
M.T.M. - Galaxy Office Equipment, 175 Parramatta Road, Annandale 2011. Tel: (02) 363 479.

M.T.M./Galaxy are pleased to announce the release of the IXO Telecomputing System, "A Revolution in Your Pocket". This is a hand held terminal that can access the Source, Compuserve, Dow Jones, The Australian Beginning or other remote database or computer services, automatically handle their protocols to access these services so that you need only enter your password to be online, have a full ASCII character set, have a built-in modem with autodialer and full and half duplex capability, emulate other terminals, have an uninterruptible power supply, fit in your pocket and operate from a battery.

Galaxy M.T.M. will be demonstrating the IXO Telecomputing System, as well as the Olivetti "Smart" electronic typewriters at stand 175, and welcomes all enquiries.

Stand no: 1004
NEC Information Systems Australia Pty Ltd, 99 Nicholson Street, St Leonards 2065. Tel: (02) 438 3544.

NEC is a leading supplier of computers and communications equipment.

The selection of products available from NEC includes the Advanced Personal Computer (APC) which is based on a true 16-bit (8086) processor and features integrated 8 inch double sided, double density diskettes with optional 10 megabyte hard disk and unprecedented high-resolution 8 colour graphics capability (600 x 475 pixels), the PC8000 which is a lower cost 8-bit personal computer, and the Astra range of business computers.

Both the APC and PC8000 are sold with a wide variety of software applications including word processing, financial modelling, data base management and business accounting packages.

NEC also has a wide range of CPM/86 application software readily available.

Stand no: 122
Novex Data Systems (Australia) Pty Ltd, 3rd Floor, 418 St Kilda Road, Melbourne 3004. Tel: (03) 267 5544.

Novex Data Systems (Australia) Pty Ltd markets the ICL, Xerox and Hewlett Packard range of small microcomputers aimed at the small to medium business through a national network of regional dealers. All systems can start as stand alone floppy disk based systems and grow to multi-terminal work stations in a networking type environment. This is possible because of the ability of systems to run the Novex CD-2000 operating system, which offers both multi-tasking and multi-user capability, whilst retaining the ability to still run under the industry standard CP/M. The flexibility of multi-tasking, the mandatory requirement to be able to add additional terminals to the system, and the speed of intelligent Winchester hard disk drives, mean businessmen may now effectively get mini computer performance from their micro.

Stand no: 905
Okura and Company (Australia) Ltd, 1st Floor Citicorp House, 54 Carrington Street, Sydney 2000. Tel: (02) 290 2111.

Okura & Co (Australia) Pty Ltd is a general trading firm and distributes various hardware and software products in Japan as well as overseas, through its world-wide network.

The OK-30 small business computer, which is Okura's OEM product, assures quality and yields high performance. Its specifications are mainly as follows: Z80A 4MHz CPU, 24k bytes ROM, 96k bytes

maximum ROM, area network, RS232C, Dual 5 or 8 inch disk drives, CP/M and Basic-80.

Stand no: 714
Olivetti Australia Ltd, Box 3993, GPO Sydney 2001. Tel: (02) 358 2655.

A major feature of Olivetti's display will be the M20, a member of the Olivetti Line 1 Super Micro family, based on the Z8001 microprocessor.

Standard configuration consists of an alphanumeric keyboard, 2 disk drives and a 2000 character CRT. The CPU comes with 128k of RAM which can be expanded in modules of either 32k or 128k to 512k of memory.

Information can be stored on floppy disks of 160k, 320k or 640k, or on an integrated 11.7 megabyte hard disk. A wide range of peripheral devices can be connected through either the parallel or RS232 interfaces which are standard. Also available are IEEE, videotex interfaces, and an Alternate Processor Board with an Intel 8086 microprocessor. This option allows the user to make use of CP/M, MS-DOS, as well as Olivetti's operating system PCOS. A full complement of software is available including accounting, word processing, data entry, scientific and data communications.

Stand no: 3003
Onyx, 7-9 Merriwa Street, Gordon 2072.

Details unavailable at press time.

Stand no: 509
Orbital Music Ltd, 503 Pittwater Road, Brookvale 2100. Tel: (062) 47 5418; (02) 938 5522.

Details unavailable at press time.

Stand no: 2013
O'Reilly Computer Ltd, 6 Ryde Road, Hunters Hill 2110. Tel: (02) 896 2799.

O'Reilly Computer is a major manufacturer of accounting and commercial software.

It also markets and services the KDS series of microcomputers (including the newly arrived 16-bit KDS 7860) and the NDK series of fast dot matrix printers, both of which will be on display. O'Reilly is best known for FAMAS (Financial and Management Accounting System) and Micro* Tiger, a general commercial software package.

FAMAS is a full client accounting system to which has been added ancilliary packages like word processing and time recording. Micro*Tiger is a comprehensive suite of

AMDEK COMPU MUSIC

Interface with the music

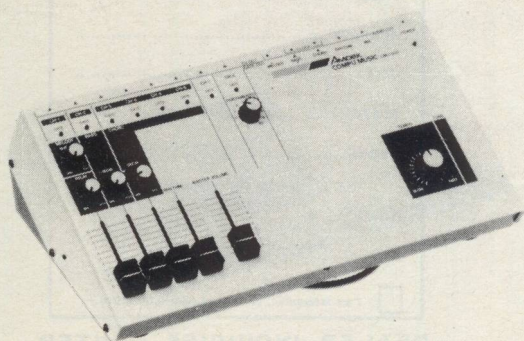
Turn your computer into a musical assistant. Amdek's CMU-800 turns your computer into a powerful musical composing/arranging tool, as well as providing musical performance. The CMU-800 provides a wide range of musical nuances. It generates melody, bass and chord

lines, seven percussion sounds as well as interfacing with up to eight external synthesizers and providing sync with rhythm machines. Powerful software makes programming and editing fast and easy. Bring your music into the computer age!

AMDEK by **Roland**

23 Cross Street, Brookvale NSW 2100. Phone (02) 938 3911. Dealer enquiries welcome.

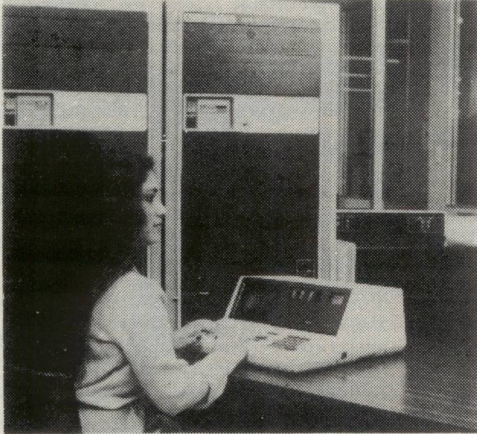
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LET THE

AUSTRALIAN BEGINNING

BRING MAINFRAME POWER INTO YOUR HOME OR OFFICE



THE AUSTRALIAN BEGINNING PTY. LTD.

The Australian Beginning Pty. Ltd. is an Australian company, with Australian based computer facilities, using the Australian Telecommunications network to offer Australian clients Australian information services and software.

WE ARE PROUD TO ANNOUNCE THE LAUNCHING OF AUSTRALIA'S FIRST MICROCOMPUTER INFORMATION UTILITY

The AUSTRALIAN BEGINNING is Australia's first microcomputer information utility, aimed at giving the average microcomputer user access to the computer data banks and also massive storage space previously only available to large Mainframe installations. The era of home computers has now officially begun in Australia now that the AUSTRALIAN BEGINNING is here; as now, any small businessman or student can have on his desk for an extremely small cost, a system that has the level of storage power and access to data banks for which only a few years ago, government departments and large private users were paying millions of dollars.

The AUSTRALIAN BEGINNING can be accessed through a number of 'approved' personal computers, and terminals, by use of an acoustic coupler or modem.

Users receive a number of benefits which include:

INFORMATION SERVICES

Members have access to a number of information sources which will include the latest news, sports results, financial reports, and farm information.

ELECTRONIC MAIL

Members are able also, to communicate nationwide with other AUSTRALIAN BEGINNING members through our system.

THE AUSTRALIAN BEGINNING
RECOMMENDS 3M DISKETTES

SOFTWARE BANK

Users have access to a myriad of computer programs that will include entertainment, education aids, programming and diagnostic tools, and financial applications.

MAINFRAME POWER

Users have the capability to make use of the Mainframe's huge storage capacity by using any of our large programs on our system.

SHOP AT HOME

You can take advantage of our 'shopping by computer' system to get the best prices on a number of popular consumer items.

EXTREMELY EASY TO USE

You do not have to be a computer programmer to make use of the AUSTRALIAN BEGINNING. All of the instructions are in everyday English, so that even the younger members of your family will be able to operate the system.

LOW COST

While services like these used to cost tens of thousands of dollars to the government departments and large corporations who used them, they are now available to you for less than the cost of a packet of cigarettes a day for the 'average' user.

You can join the AUSTRALIAN BEGINNING by paying a one-time joining fee of \$100, and a small

hourly user charge of \$10 an hour
8am - 6pm and \$4.50 an hour
6pm - 8am weekdays and all
weekends.

TELEX

Through the AUSTRALIAN BEGINNING'S unique telex feature - you can send messages to any telex users and receive messages back from anywhere in the world. All without having to pay an installation or rental fee for a telex machine.

TO JOIN THE AUSTRALIAN BEGINNING FAMILY, AND TAKE ADVANTAGE OF THE EXCITING SERVICES WE WILL BE OFFERING, PLEASE COMPLETE THE COUPON BELOW:

MEMBERSHIP REQUEST

Yes, I think the idea of the AUSTRALIAN BEGINNING is great! I enclose \$100 so please send me my user manual and password.

I have a computer, Brand.....
Model.....

Please send me information on low cost equipment packages I can use to take advantage of the AUSTRALIAN BEGINNING'S services.

NAME:

ADDRESS:

CITY:

STATE:..... POSTCODE.....

PHONE:.....

THE AUSTRALIAN BEGINNING
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Melbourne, Victoria, 3000.
Tel: (03)329.7998

I am interested, but I need more information.

DEALER INQUIRIES INVITED

commercial accounting software to suit a variety of business needs, consisting of eight modules: invoicing, debtors, sales analysis, stock, creditors, payroll, job costing and general ledger.

Both FAMAS and Micro*Tiger will be demonstrated on the KDS series of microcomputers. The KDS on display will be the 7850 and the new 16-bit KDS 7860, as well as hard disks for both microcomputers.

Three printers on display will be the NDK S-4000, the S-7700 and the S-7400. The S-4000 prints at 75 cps for word processing quality print and 150 cps for draft work. The S-7700 prints at 90 cps for word processing quality print and up to 180 cps for draft work. The S-7400 prints at 400 cps.

Stand no: 603

Osborne Computer Corporation Ltd, 2 Whiting Street, Artarmon 2064. Tel: (02) 438 1800.

1983 sees the Osborne 1 Plus being updated with double density and 100 column display, with no extra increase in price!

Also, recently announced for the Osborne 1 are the START-PAC self-instruction guide which could not be any simpler for the first time user, the POWR-PAC rechargeable portable battery system and the COMM-PAC communications package/modem system.

The \$2,595 price includes the 64k RAM memory, the two built in double density disk drives, built in 100 column screen, along with a genuine business keyboard. Software provided includes Supercalc electronic spreadsheet for accounting and calculations, Wordstar for word processing as well as Mailmerge for automatic letter processing, the CP/M industry standard operating system plus the programming languages CBasic and MBasic.

Stand no: 3020

PACE Computer Services, 4-8 Help Street, Chatswood 2067. Tel: (02) 411 7888.

PACE Computer Services distributes multi-user microcomputers from Altos Computer Systems in San Jose, California. Their micros are based upon three very popular chips: the 8-bit Z80, the 16-bit 8086 and the 16-bit 68000 with 32-bit registers. Each system has either dual floppy disks or one floppy plus one hard disk. Hard disks are available in 5m byte, 10m byte, 20m byte and 40m byte sizes, with 80m byte scheduled for June. A second disk and/or a cartridge tape can be added to most models.

The smallest Altos systems can support three terminals and two printers based on 192k byte memory, three times the typical personal computer. Larger Z80 systems support 4 users from 208k byte, while the 8086 and 68000 systems support 8 and 16 users respectively from 512k byte. Memory on the 16-bit systems can be doubled to 1m byte for less than \$3,000.

Stand no: 404

Parity Computer Ltd, 104-106 Walker Street, North Sydney 2060. Tel: (02) 929 0900.

Parity Computer Ltd offers a comprehensive range of hardware, software and supporting services. It's their objective, not only to sell the IBM products, complemented by a wide range of non-IBM peripherals and software, but also to provide a supporting service that will assure that all users are able to maximise the return on their investment.

The supporting services are provided through the Parity Installation Centre which offers courses in the following areas: Operation of the IBM PC including an introduction to basic computing; application identification and analysis; skills development programs, which are designed to train non computer oriented management personnel to most efficiently utilise the various software management tools; and operator training on both accounting systems and word processing packages.

Stand no: 713

President Computers, 100 George Street, Hornsby 2077. Tel: (02) 476 2700.

President now releases the new Kaypro Ten Megabyte Portable Business Computer. The new Kaypro Ten Megabyte comes with floppy disk back-up and 64k of RAM plus the range of Perfect Software which is included in the price, and with the CP/M disk operating system, allowing access to a world of software plus Graphics made with 160 x 160 pixels for graphs and games, also Inverse, Blinking, Underlining and Reduced Intensity.

President Computers released the Columbia 16-bit multi-user system in November 1982. A colour card and colour monitor comes standard, also two operating systems offering the choice of MS-DOS to run IBM PC software and CPM/86 opening up all CP/M possibilities. They also add a language called MS-Basic and the new wordprocessing package Perfect Writer from Perfect Software and Perfect Calc, a sophisticated electronic spreadsheet that can access any two of 7 worksheets contained in its memory on the screen at the same time and transfer information from one worksheet to another.

Columbia President is also the Australian distributor of Perfect Software which has a word processing package - Perfect Writer, an electronic spreadsheet - Perfect Calc, a management system called Perfect Filer and a dictionary called Perfect Speller. President will make the Perfect range of Software available to IBM PC dealers and users when the IBM PC becomes available in Australia in early 1983.

Stand no: 3001

Progressive Software Publishers, P.O.

Box 436, Pymble 2073. Tel: (02) 44 6393.

Progressive Software Publishers specialises in the publishing and distribution of VIC-20 software, and plan to feature this in their exhibit at the Show.

As well as their own range of software, they also stock "Micro Visions' 27k memory board" - a cheaper alternative for memory expansion. This product reproduces the expansion port so it does not interfere with games cartridges.

Progressive Software will be interested in speaking to writers of original and imaginative software about marketing, and are also eager to discuss details of a VIC-20 user group currently being organised in Sydney by Micro Visions.

Stand no: 205

PSI Computer Systems, 14th Floor, 124 Walker Street, North Sydney 2060. Tel: (02) 922 5322.

PSI Computer Systems are distributors of the Daisywriter Intelligent Letter Quality Printer. The Daisywriter Printer is manufactured by Computers International Incorporated and is based on a linear motor head positioning mechanism supplied by Brother Industries of Japan. The linear motor concept eliminates all cables, wheels, belts and pulleys and allows the printer mechanism to be driven by magnetic force, thus overcoming misalignment, adjustment and reliability problems. The Daisywriter is available with 16k or 48k of memory with computer compatibility accomplished through a selection of fifty interface signals and a matching computer cable for immediate plug to plug compatibility. Four interfaces are available including Centronix 8-bit parallel IEEE-488, RS232C and 20MA current loop. The Daisywriter has Protocol Emulation for Diablo, Qume, NEC Series, Centronics 737 and IBM PC. The Daisywriter's enclosed printwheel cassettes are available in 12 typestyles with the Daisywriter using standard IBM ribbon cartridges.

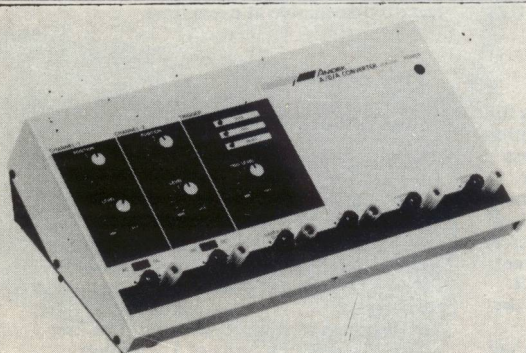
Stand no: 3013

Rank Xerox (Australia) Ltd, 970-980 Pacific Highway, Pymble 2073. Tel: (02) 449 0449.

Starring in Rank Xerox's display at the Show will be the X820-II, an enhanced business microcomputer providing business or organisational departments with faster processing power, access to mass storage, communication, printing and other resources of an office network system.

The Xerox 820-II consists of 4 main components: display screen with 24 lines by 80 characters per line, with brightness control, a Z80 microprocessor with 64k RAM memory and 8k ROM using a CP/M Operating System, a 96 ASCII keyboard with 10 numeric

AMDEK A/D/A CONVERTER



The complete analogue to digital package

Wherever you need to interface with analogue signals - Amdek's ADA-200 is the answer. Everything you need to interface your computer with audio equipment, electronic

musical equipment, laboratory equipment, pen recorders, oscilloscopes etc. Preamp, input filter, sample and hold circuits, output filter, overlevel circuits and I/O address decoder as well as A/D and D/A circuits.

AMDEK by **Roland**

23 Cross Street, Brookvale NSW 2100. Phone (02) 938-3911. Dealer enquiries welcome.

keypad, disk storage ranging from 5¼ inch single sided double density to a 10 megabyte Fixed Rigid Disc with 8 inch double sided double density floppy included allowing 4000 pages of text to be recorded, and letter quality printers and a range of matrix printers.

Other key features of the Xerox 820-II include: communications including standard TTY 3730 and 3270 protocols, allowing the Xerox 820-II to act as an intelligent terminal, connection to Xerox's Ethernet local area network linking different levels of office equipment for high speed exchange of conformation, full range of tried, tested and easy to use software, and comprehensive product service.

Stand no: 710

Roland Corporation Australia Ltd,
23 Cross Street, Brookvale 2100 Tel:
(02) 938 3911.

The Amdek and Roland range of peripherals has been designed to enable the user to expand and enhance the applications of personal computers.

The initial range of products includes two monitors together with the other units detailed below: the CMU-800 - Compu Music, a synthesiser based device, which enables the user to automatically play various pieces, and allows for composition and arrangement using melody, bass, and chords together with percussion; the DXY-100 - X-Y Plotter, a low cost, intelligent graphic output unit that plots and tabulates according to the instructions from a computer; and the ADA-200, a powerful 2 channel Analog to Digital/Digital to Analog convertor capable of controlling input and output signals between a computer and a variety of analog devices including audio equipment and measuring instruments.

The Amdek range of Monitors currently consists of two high resolution, monochrome units available in green or amber phosphors. Colour units will be added to the range later.

Stand no: 717

Sanyo Office Machines Ltd, 127 Walker Street, North Sydney 2060. Tel: (02) 929 4644.

Sanyo Office Machines MBC 1000 and accompanying software are the result of a development programme to bring sophisticated information reporting within the reach of every small business.

Sanyo's exclusive Sanyo System Solution (SSS) software with the MBC 1000 is a high speed Multi-terminal, large disk capacity system, capable of handling up to three terminals running under a specially developed operating system. Additional disk drives are available as well as hard disks ranging from 5 megabytes to 20 megabytes.

This extremely powerful 'SSS' Software also allows Multi-company reporting, a feature not seen until now on any computer in a similar price range.

Other important features include System restart following a power failure - the program automatically returns to the last entry prior to shutdown; fast access to information through the use of synonyms; foreground functions can be carried out on the main computer, whilst background functions, such as printing or posting cash receipts, or normal enquiry functions may be carried out simultaneously on an additional terminal.

Stand no: 805

Seahorse Computers, 10 Mitchell Street, Camden 2570. Tel: (046) 666 406.

Seahorse Computers are major agents for all Apple systems, Osborne, CBM, and Business

CP/M Systems such as Archives and Morrow Designs. National Apple dealer and major service centre for Apple, Corvus and Commodore. Seahorse Computers' programmers specialise in business systems, data-logging, engineering, A/D, D/A and communications.

Stand no: 514

Sharp Corporation of Australia Ltd,
64-72 Seville Street, Fairfield 2165.
Tel: (02) 728 9111.

Sharp will be presenting a range of business computers.

The MZ80B a versatile computer designed for the hobbyist, professional and businessman alike provides 64k RAM and green screen. Expandable by the addition of one, two or four 5¼ inch disk drives, an 80 column printer, the MZ80B is a powerful microcomputer.

A true business computer, the PC3201 comprises 32k ROM (expandable to 72k), 64k RAM (expandable to 112k), 12 inch green screen, and can be fitted with 2 to 8 of either 5¼ inch or 8 inch floppy disks: CP/M can be used on both the PC3201 and MZ80B and a wide range of Sharp approved application software is also available.

Sharp's personal computer PC1500 is a very powerful unit comprising C.MOS 8-bit CPU, 16k of ROM, 35k of RAM (expandable to 11.5k) 26 digit LCD display, and 65 key keyboard. The addition of peripherals such as 4 colour graphic printer, cassette storage, RS232 interface and RAM/ROM expansion chip allows for a wide range of applications.

Stand no: 807

Sigma Data Corporation, 11th Floor,
157 Walker Street, North Sydney 2060.

The basic if800 Model 10 is supplied with 64k memory, integrated printer, full 99 station keyboard and a range of interfaces included as standard.

As well, there are five expansion slots for memory, disk controllers, instrument or analog interfaces, Centronics interfaces, extra RS232 interfaces, high resolution video, or other interface.

Optional disks can be 5.25 inch diskette, 8 inch diskette, as well as 5 megabyte or 10 megabyte mini-Winchester (5.25 inch).

For an integrated, well designed, complete system, the Model 20 has been designed to suit most requirements and in addition to possessing all the Model 10 facilities, the Model 20 includes dual 380k 5.25 inch diskette (760k total), integrated high-resolution colour display (640 x 200, addressable to bit level), 10 "super function" keys.

The colour display allows 120 shades to be displayed simultaneously and permits colour control of every pixel on the display.

The Sigma/OKI range utilises industry compatible CP/M, Microsoft Basic, Cobol, Fortran, PL/1 or Pascal and a large library of applications software is available.

Stand no: 203

Software Source Pty Ltd, 89 Oxford Street, Bondi Junction 2022. Tel: (02) 389 6388.

Software Source Pty Ltd imports and distributes a wide range of software for virtually all 8-bit CP/M micros, as well as for the IBM PC and most other 16-bit computers using either MS-DOS or CP/M-86. Business products include the popular Spellbinder word processing system from Lexisoft; the Word Plus dictionary program with a full 45,000 word Australian dictionary; Supercalc, the world's most popular CP/M spreadsheet; Ashton Tate's data-base manager dBase II and V-Spool the software printer buffer that can cut data entry time in half.

A full range of compilers, assemblers and

languages is also available for applications programmers.

Stand no: 108

Specialty Enterprises Pty Ltd, 6th Floor, 104 Bathurst Street, Sydney 2000. Tel: (02) 267 7747.

Specialty Enterprises has recently been appointed distributor of the Microbee for schools.

The Microbee 16k is a remarkable little machine and is now approved by the NSW Department of Education as a recommended computer under contract. Costing only a fraction of comparable computers, it is within the reach of children of all ages.

With features such as high and low resolution graphics, a very usable screen display of 16 lines, each containing up to 64 characters, the Microbee is ideal for virtually all educational software applications.

Stand no: 510

Tandy Australia Ltd, 280-316 Victoria Road Rydalmere 2116. Tel: (02) 638 6633.

The TRS-80 product line is manufactured, distributed and fully-supported through 350 Tandy Australia locations, including 11 Computer Centres and 25 TRS-80 departments in selected stores.

Today's range of 6 TRS-80s begins at 2 Pocket Computers, and the expandable, best-selling Colour Computer that attaches to any TV for budget management, word processing, education and entertainment applications.

Other TRS-80s include Model III, the ideal personal computer for managers; "strictly business" Model II; Model 16 featuring multi-user, multitasking capabilities; and DT-1 terminal. Each TRS-80 is complemented with an extensive range of peripherals, accessories and ready-to-run software.

Training, seminars, newsletters and service agreements are also available.

Stand no: 1012

Texas Instruments Australia Ltd, 9 Byfield Street, North Ryde 2113.

Everything about the Texas Instruments Home Computer has been designed to make it easy to operate whether you are a never-eventually-a-computer-before-beginner or an old hand at writing your own programs.

The novice needs only to select a program cartridge for a great arcade game, valuable spelling or maths exercises, important tax planning, or you name it - and the Home Computer is ready to teach, entertain or help with home finances.

For the sophisticated user, the Home Computer is fully expandable and versatile. Not only does the Home Computer have TI Basic built in, but it is also capable of using a number of other popular languages.

Stand no: 3009

The Australian Beginning, 24 Camberwell Road, East Hawthorn 3123.

Details unavailable at press time.

Stand no: 401

The Computer Company, 4 Cliff Street, Milsons Point 2061. Tel: (02) 436 1733.

The Computer Company will be exhibiting the 16-bit Panasonic JB3000 Personal Computer, along with Dysan-Media and Brother printers.

Expandability is the Panasonic's strong point, allowing the user to choose monochrome or 8 colour graphics with high resolution.

Diskettes start at 160k and can be user upgraded to 8 inch units of 1.2 million

characters with up to 4 drives per system.

A range of printers, both daisy wheel and dot matrix provides all the flexibility needed for users' printing requirements.

New products to be shown by The Computer Company include the Panasonic colour XY plotter for JB3000, the Panasonic JR100 and JR200 series leisure computers designed for home use, the low cost daisy wheel printer from Brother, as well as a range of software for the JB3000 personal computer.

Stand no: 505

The Logic Shop, 93 Regent Street, Chippendale 2008. Tel: (02) 699 4919.

The Logic Shop offers a wide range of business and personal computer systems for evaluation in a convenient retail environment.

In addition, a wide variety of printers, terminals and other accessories is available to enable maximum freedom of choice.

Among the products which are kept in stock (to enable prompt delivery) are the following: Apple Centronics, Sinclair, DEC, Northstar, Atari, Epson, OKI Microline, Qume, MicroPro, Imagineering, Sendata and Televideo.

The Logic Shop also offers a range of books on subjects including Introduction for Beginners, specific languages, graphics, handbooks for particular computers such as Apple and Sinclair.

They also stock consumables such as diskettes, paper and ribbons.

Stand no: 118

The Technical Book Shop, GPO Box 2065, Sydney 2001. Tel: (02) 267 8024.

The Technical Book Shop has an extensive range of microcomputer books with special sections on the IBM, Apple, Tandy and Spectrum computers. Catalogues of books held in every section are available on request. Other large stocks of books are held on microprocessors, 8-bit and 16-bit computer programming, machine languages, Basic, Pascal, Cobol, Fortran, Ada and other languages, business computing, word processing, data processing, computer games, graphics and programming. In addition, there is a special introductory selection of books for those new to computing.

Stand no: 3024

Tishug - The Texas Instruments Sydney Home Computer Users Group, P.O. Box 149, Pennant Hills 2120.

The Group was formed by a small number of TI99/4 computer owners in October 1981. The Club membership is now approaching 250 with 90% living in the Sydney metropolitan area. Contact is maintained with similar groups in all Australian capital cities and overseas.

General meetings are held on the first Sunday of each month unless a public holiday falls at that time in which case the following Saturday is chosen.

Special guests are invited to demonstrate new products from the computer industry, or discuss general topics of interest to the home computer user.

The Membership card may be used to obtain a cash discount on purchases at participating TI dealers throughout NSW, and Club competitions are organised for members to win valuable prizes.

Technical and programming assistance is given which includes a hot line for solving immediate programming problems.

Stand no: 3000

Tokyo Data Systems Ltd, 84-86 Pacific Highway, St Leonards 2065. Tel: (02) 439 6533.

Casio, well known to millions of users of their electronic calculators, organs and watches has entered the personal computer market.

Released by Casio at the end of 1982, the FP-1000 series is distributed in Australasia by Tokyo Data Systems Pty Ltd.

The FP-1000 series are dual CPU systems, with a Z80A compatible main CPU and a single-chip 8-bit subsidiary processor for I/O functions. With 64k bytes user RAM memory and a range of peripheral devices, it can be configured to meet requirements from personal computing to scientific, manufacturing and small business applications. Features available include high resolution graphics, and fine colour displays. Being CP/M compatible these systems can use the wide range of commercially available application programs and high level languages.

Stand no: 2004

Toshiba (Australia) Ltd, 84-92 Talavera Road, North Ryde 2113. Tel: (02) 887 3322.

Toshiba Australia will be displaying a range of microcomputers and printers designed and manufactured by Toshiba.

The microcomputer range includes the T200 business computer, the T100 business/personal computer and the EW100 word processor.

Toshiba's word processor - the EW100 - will be on display featuring the CP/M operating system. This has been added to the basic word processing unit to produce a very versatile office system. The EW100 was originally designed as a word processor, which means that it undertakes word processing better and more easily than a microcomputer with word processing software.

Toshiba printers on display will include the P8510, P1550 and the P1350. The P1350 is a new release in Australia and is proving very popular. It has a unique 24 Pin print

head to achieve high speed draft printing of 160 and 192 cps; 100 cps letter perfect printing and high resolution graphics. P1350 options include an auto sheet feeder and bi-directional tractor.

Stand no: 3000

Transnational Data Systems Pty Ltd, 84-86 Pacific Highway, St Leonards 2065. Tel: (02) 439 6533.

The Seiko systems on show at the exhibition will be the 8600 and the 9500. Both systems are based on the 16-bit Intel 8086 microprocessor. The Show will be the first public appearance of the 8600 small business system in Australia. Both single and multi user 8600 configurations will be exhibited. Each system consists of a CPU enclosure which contains the CPU, memory, disk drives and interface hardware. Separate video terminals and printers are added to complete the system. A basic configuration would include a processor with 128k of main memory, dual 640k floppy disks, 4 RS232C serial ports, 1 Centronics parallel printer port, 1 video terminal, and a printer. The system can be expanded by the use of 10 or 20 megabyte Winchester disks; additional terminals or additional memory. One unusual feature of the system is its ability to run all commonly available 16-bit microcomputer operating systems.

Stand no: 2017

Wabash Datatech Australia Pty Ltd, Unit 6, 26 George Street, Homebush 2140. Tel: (02) 736 3177.

Wabash Datatech Inc, formerly Wabash Tape Corporation announces the establishment of its newest subsidiary, Wabash Datatech Australia Pty Ltd.

Wabash Datatech has been manufacturing magnetic media since 1969, and markets its line of computer tape and diskettes directly through OEMs and distributors.

The key is in the coating and recent developments in coating technology and the introduction of a revolutionary SR-3000 manufacturing process coupled with additional testing procedures have resulted in the production of this product.

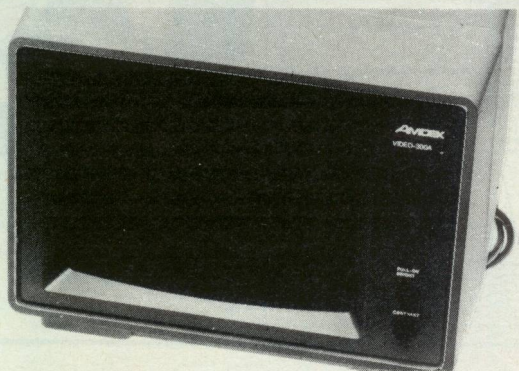
Wabash is currently offering a full range of computer tape and 8 inch and 5 1/4 inch diskettes, including the latest 5 1/4 inch 96 T.P.I. or quad-density product.

Stand no: 511

Warburton Franki Ltd, 199 Parramatta Road, Auburn 2144. Tel: (02) 648 1711.

The Epson range of portable computers, desk top computers and dot matrix printers will be presented by Warburton Franki Ltd. The Epson portable computer is a take any-

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where, use anytime battery operated system with a standard 16k of RAM and 32k of ROM. Built in peripherals include a 20 x 4 character LCD and 24 column dot matrix printer. Options include a 32k expansion unit, microcassette drive, acoustic coupler and a display controller to put the HX-20 on TV. The QX-10 desk top computer has been designed for the average consumer who isn't comfortable with microcomputers as we know them today. An enhanced keyboard, HASCI, makes the QX-10 a symbol processor that anyone can use. The QX-10 contains 128k of memory (expandable to 256k), two direct memory access controllers, one free serial port, a centronics compatible parallel port and two thinline 5/4 inch floppy disk drives.

Stand no: 513
Wiser-Microsoft, P.O. Box 95,
Forestville 2087. Tel: (02) 451 9445.

Microsoft has been responsible for the largest selling piece of microcomputer software: Microsoft Basic - now installed in over a million machines. More recently, Microsoft were selected by IBM to develop the operating system for their Personal Computer.

On display at the Show will be software and hardware for the IBM PC, plus products for the Apple II, Xerox, Osborne, DEC and most other CP/M and MS-DOS 16-bit computers. As well as the languages and utilities that have made Microsoft famous, new products like the IBM PC RamCard that gives the computer an instant access 'disk drive' in RAM; a flight simulator program and prototyping boards for the IBM PC; and Multi-Plan, the spreadsheet program that is the first of a whole range of "Multi-Tools" - integrated software tools designed for business users. A full range of 16-bit software products will also be operating.

Stand no: 501
Zofarry Enterprises Pty Ltd, 6a
Burwood Road, Burwood 2134. Tel:
(02) 745 1888.

Zofarry Enterprises Pty Ltd, traditionally dealers for the Apple Computers, has recently announced their appointment as dealers for IBM. At the beginning of February 1983, Zofarry moved into large new premises to accommodate their position as Apple dealers, IBM dealers, and exporters of the "Vision-80".

The Vision 80 is a device which allows the Apple II to display eighty columns of output on its video screen. There have been other eighty column cards, but none has matched the Vision-80 in quality of output or ease of use. They are currently being manufactured in the USA under licence, and are exported from Australia all over the world.

We shall endeavour to publish companies' details not available at press time in next month's issue.

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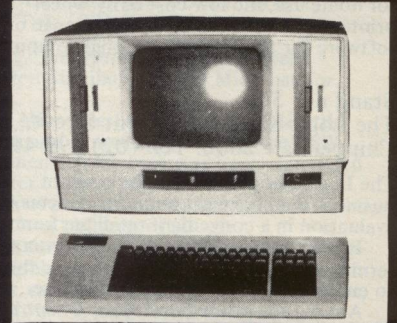
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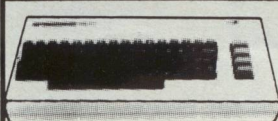
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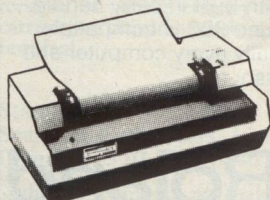
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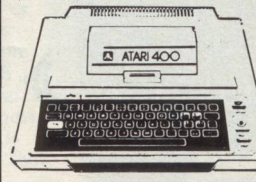
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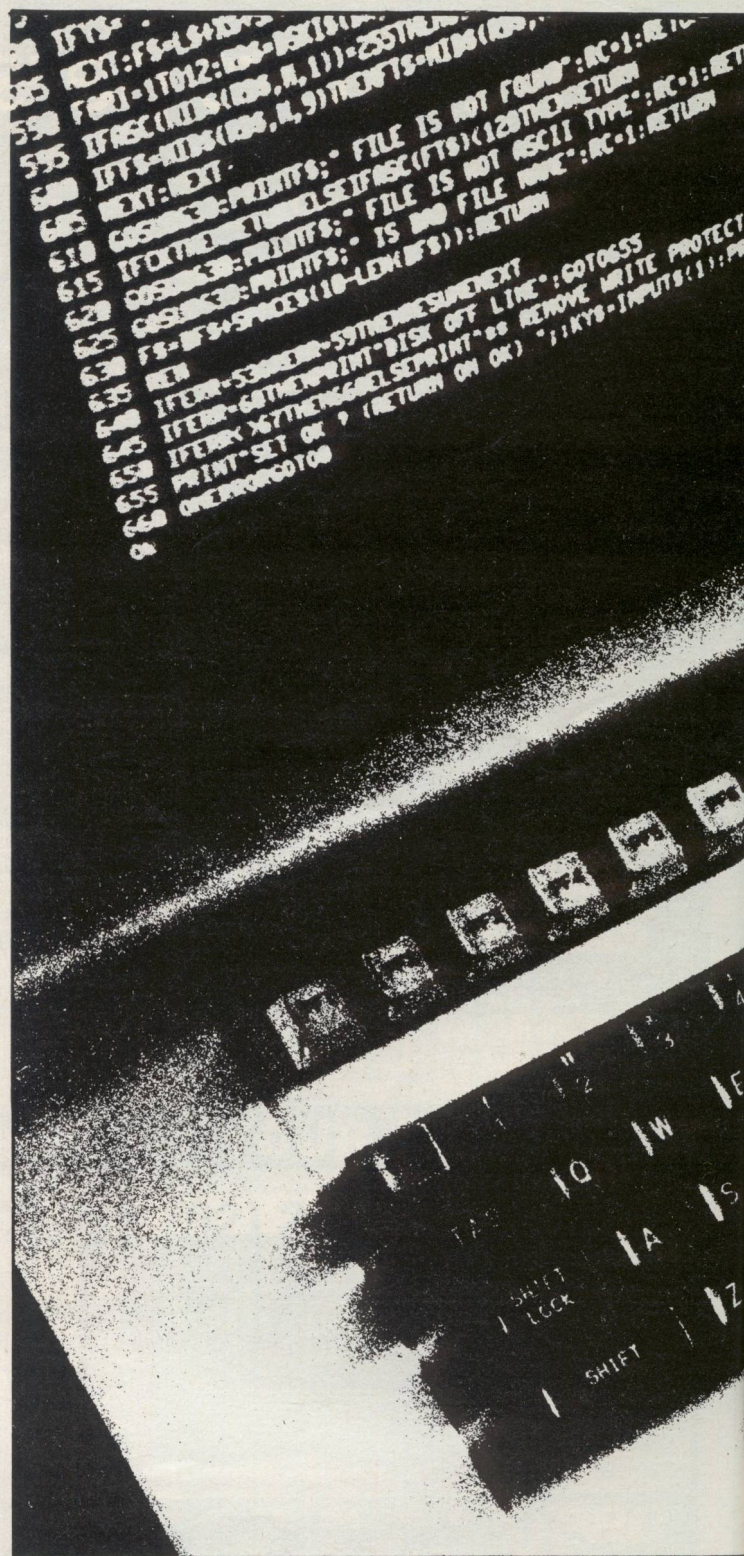
Australian Personal Computer is the largest-selling microcomputer magazine in Australia. We must be doing something right. But even *APC* has its limitations.

Touch the keys in the picture. Nothing happens, right? There just isn't any substitute for hands-on experience of new and exciting machinery and software.

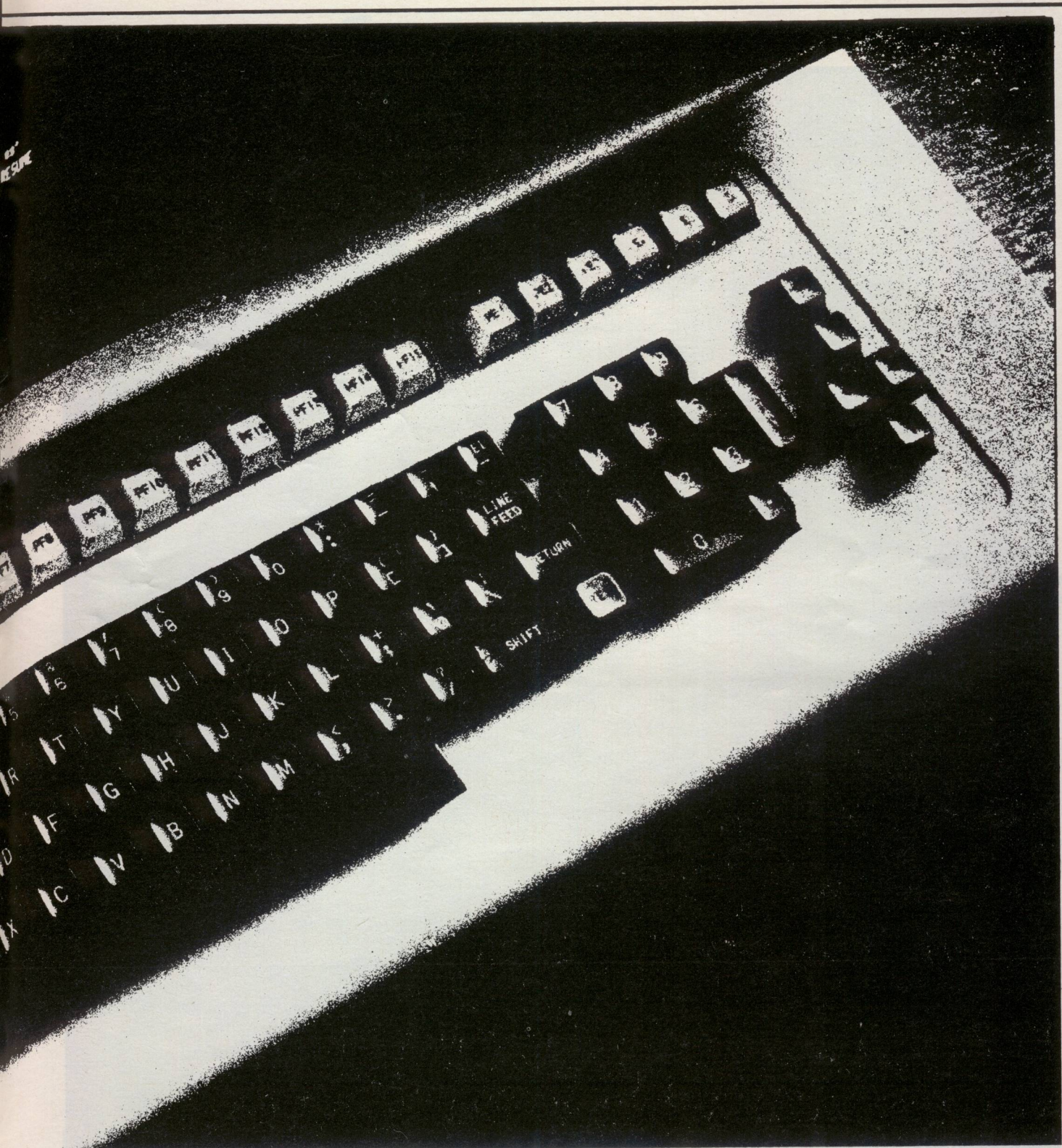
The 1st Australian Personal Computer Show next March will be the largest and most exciting microcomputing exhibition ever held in Australia. Almost every big name (and a lot of smaller ones) in the microcomputer industry will be represented. Features will include the very latest software and add-ons for popular machines, computer chess competitions and an opportunity for you to challenge a micro to a game of Scrabble.

From the business angle there's more demonstration machines and business software than you could get to see in a year at your own office. But you needn't risk divorce to evaluate them . . . your wife (or husband!) and the kids can be looking at the vast array of home and educational micros on one of the other stands.

In short, The 1st Australian Personal Computer Show will have something for everyone to get their hands on. Can you really afford *not* to be there.



1 The 1st Australian
**Personal
Computer Show**
Centrepont Sydney
10-12 March 1983



For further visitor and exhibitor information about The 1st Australian Personal Computer Show, please contact Rachel Tetley, Australian Exhibition Services Pty Ltd, 1250 Malvern Road, Malvern, Victoria 3144. Telephone: (03) 20 1208. Telex: AA 39329.

If you miss our 3-Day Personal Computer Congress it could take you years to catch up.

The First Australian Personal Computer Congress, Sheraton Wentworth Hotel
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Takayoshi Shiina, President, SORD Computer Systems Inc.

Jerry Whitmore, Vice President, Information, Digital Equipment Corporation.

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congress towards an examination of the Personal Computer's impact in the business and commercial world.

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The congress will be officially

SCOTT ORL, Director, International Operations, Microsoft.

Chuck Peddle, President, Victor Technologies, Inc., (designer/manufacture of Sirius and Victor computers).

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Congress organised by The Australian Computer Society (NSW Branch).

2532 001A

The full program to move the air balloon is shown in Figure 2.

This method of moving graphics is easier to understand and control when using only two colours, but interesting effects can be achieved by adding more colours. I have added some buildings to the air balloon screen and when the balloon moves in front of a building it changes colour. Try working out for yourself why this happens.

I think you will agree that this method gives very smooth movement even in Basic, but if used in a machine code program, I'm sure it could be even faster as well.

```

10MODE 1: XLEN%=4: YLEN%=4
20VDU 23,224,0,24,36,102,126,60,36,0
21VDU 23,225,0,20,54,85,65,34,54,0
22VDU 23,226,0,40,108,170,130,68,108,0
23VDU 23,227,0,24,60,66,24,66,24,36
24VDU 23,228,24,60,66,24,66,24,36,0
30X% = 600: Y% = 500: REM PRINT AT THESE
    COORDINATES
40VDU5: REM JOIN TEXT AND GRAPHICS CURSORS
50MOVE X%,Y%
60VDU 224: REM SAME AS PRINT CHR$(224)
70ON ERROR REPORT: PRINT " AT LINE ";
    ERL: GOTO 900
80REM SET AUTO REPEAT DELAYS TO MINIMUM
90*FX 11,1
100*FX 12,1
110REPEAT
120K$ = INKEY$(0)
130REM FLUSH INPUT BUFFER
140*FX 15,1
150IF K$ = "K" THEN PROCUP
160IF K$ = "M" THEN PROCDOWN
170IF K$ = "Z" THEN PROCLEFT
180IF K$ = "X" THEN PROCRIGHT
190UNTIL FALSE
500DEF PROCLEFT
510IF X% < XLEN%
    FOR EDGE OF
520X% = X% - XLE
530MOVE X%,Y%
540VDU 225
600DEF PROCRIGHT
610IF X% > 1279
    REM X% IS ON
620X% = X% + XLE
630MOVE X%,Y%
640VDU 226
650ENDPROC
700DEF PROCUP
710IF Y% > 1023
720Y% = Y% + YLE
730MOVE X%,Y%
740VDU 227
750ENDPROC
800DEF PROCDOWN
810 IF Y% < YLEN
820Y% = Y% - YLEN%
830MOVE X%,Y%
840VDU 228
850ENDPROC
900*FX 12,0
910*FX 15,1
920VDU 4: REM RETURN TEXT CURSOR TO NORMAL
930 END

```

Fig 1 Listing for Cyclops

```

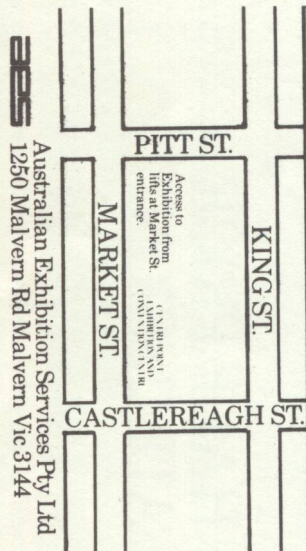
10MODE1: XLEN%=4: YLEN%=4
15VDU 19,1,6,0,0,0:VDU 19,2,1,0,0:VDU
    19,3,3,0,0,0:
    VDU 19,0,4,0,0,0
20REM **BALLOON**
30VDU 23,240,0,7,15,31,63,63,63,31
40VDU 23,241,0,224,240,248,252,252,248
50VDU 23,242,15,3,2,2,3,3,1,0
60VDU 23,243,240,192,64,64,192,192,128,0
70REM **LEFT**

```

```

80VDU 23,224,0,4,8,16,32,32,32,16
90VDU 23,225,0,16,8,4,2,2,2,4
100VDU 23,226,8,2,3,3,2,2,1,0
110VDU 23,227,8,32,96,96,32,32,64,0
120REM **RIGHT**
130VDU 23,228,0,8,16,32,64,64,64,32
140VDU 23,229,0,32,16,8,4,4,4,8
150VDU 23,230,16,4,6,6,4,4,2,0
160VDU 23,231,16,64,192,192,64,64,128,0
170REM **UP**
180VDU 23,232,0,7,8,16,32,0,0,32
190VDU 23,233,0,224,16,8,4,0,0,4
200VDU 23,234,16,12,1,0,1,0,2,1
210VDU 23,235,8,48,128,0,128,0,64,128
220REM **DOWN**
230VDU 23,236,7,8,16,32,0,0,32,16
240VDU 23,237,224,16,8,4,0,0,4,8
250VDU 23,238,12,1,0,1,0,2,1,0
260VDU 23,239,48,128,0,128,0,64,128,0
270ON ERROR CLS:REPORT:PRINT" AT LINE
    ";ERL:GOTO9000
275GCOL 0,129:CLG:PROCBUILDINGS
280X%=600:Y%=YLEN%*16:VDU 5:GCOL 0,129:
    GCOL3,2
290MOVE X%,Y%:VDU 240,241,10,8,8,242,243
300*FX 11,1
310*FX 12,1
400REPEAT
410K$=INKEY$(0)
420*FX 15,1
430IF K$="K" THEN PROCUP
440IF K$="M" THEN PROCDOWN
450IF K$="Z" THEN PROCLEFT
460IF K$="X" THEN PROCRIGHT
470UNTIL FALSE
500DEF PROCLEFT
510IF X%<XLEN% THEN ENDPROC
520X%=X%-XLEN%

```



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Conference Programme
 In association with the 1st Australian Personal Computer Show the Australian Computer Society (NSW) is organizing a series of top-level seminars with presentations by leading international figures. For further details contact the Australian Computer Society 35-43 Clarence Street Sydney. Phone (02) 290 3887

Some of the great names you'll see at the show

Apple	Osborne
Commodore	Sanyo
DEC	Sharp
Hitachi	Sinclair
IBM	Sirius
NEC	Sord
National	Tandy

A must for the businessman, the professional, the manufacturer, the scientist, the educationalist, and the home user.

```

1000PLOT5,260,600
1010PLOT85,500,600:PLOT5,260,0
1020PLOT85,500,0
1025GCOL0,3
1030PLOT5,500,200
1040PLOT85,1200,200:PLOT5,500,0
1050PLOT85,1200,0
1990ENDPROC
9000VDU4
9010*FX 12,0
9020*FX 15,1
9030END

```

Fig 2 Moving the balloon

If you miss our 3-Day Personal Computer Congress it could take you years to catch up.

The First Australian Personal Computer Congress, Sheraton Wentworth Hotel
March 9 – March 11, 1983.

The Personal Computer will change society as profoundly as the advent of the motor car and television have done before.

Within months, the effects of ready access to personal computing will be felt in the business community.

Within a few years, a personal computer in the home will be commonplace.

From now on, those without a basic understanding of how to exploit the potential of the personal computer will find themselves at a serious disadvantage.

Hence, the First Australian Personal Computer Congress.

The first congress to feature high calibre experts from the United States, Europe and Japan, as well as leading Australian speakers.

With a 3-day programme, the topics of papers selected by speakers will clearly direct the congress towards an examination of the Personal Computer's impact in the business and commercial world.

The congress will appeal to middle and upper management in both the public and private sector, educators and computer professionals.

The congress will be officially

opened by the Hon. D. S. Thomson, Minister for Science and Technology.

The impressive line-up of speakers includes:

Ron Brown, Vice President, International Division, Osborne Computing Corporation.

Dr. John Cribb, Manager, Computer Services, Corporate Services Group CSR.

Philip D. Estridge, General Manager of IBM's Special Business Unit for Personal Computers.

Ed Faber, President, Computerland Corporation.

Robert Fisher, General Manager, Peachtree (Aust.).

Professor Phillip Grouse, Information Systems, University of N.S.W.

Peter Johnson, Executive Director, Myer Pty. Ltd.

Barry Jones, M.P., Shadow Minister for Science and Technology.

Scott Oki, Director, International Operations, Microsoft.

Chuck Peddle, President, Victor Technologies, Inc., (designer/manufacturer of Sirius and Victor computers).

Seymour I. Rubinstein, President, MicroPro International.

Professor Arthur Sale, Department of Information

Science, University of Tasmania.

Takayoshi Shiina, President, SORD Computer Systems Inc.

Jerry Whitmore, Vice President, Information, Digital Equipment Corporation.

With expertise like this on tap, the only problem which may not be solved for you at the First Australian Personal Computer Congress will be the problem of getting a seat.

Numbers will be strictly limited. So please contact the Australian Computer Society now to enrol and ensure your attendance. It could take you years to catch up if you don't.

The congress is being held in conjunction with the First Australian Personal Computer Show.

The First Australian Personal Computer Congress, Australian Computer Society, (N.S.W. Branch) 35 Clarence Street, SYDNEY N.S.W. 2000. Tel: (02) 267 5726.

Please enrol me for the First Australian Computer Congress, Sheraton Wentworth Hotel, Sydney, 9-11 March, 1983.

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Title: _____

Company: _____

Address: _____

_____ P/Code _____

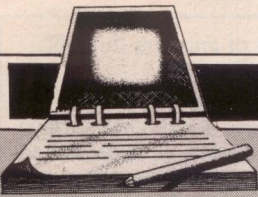
Tel: _____

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\$525 \$495 (ACS Members)

Congress organised by The Australian Computer Society (NSW Branch).

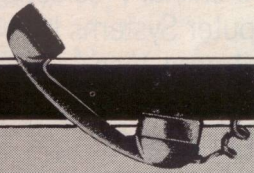
2532.001A



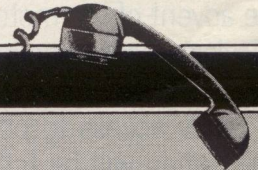
DIARY DATA

Readers are strongly advised to check details with exhibition organisers before making travel arrangements to avoid wasted journeys due to cancellations, printer's errors, etc. Organisers are requested to notify APC of forthcoming events well in advance to allow time for inclusion in 'Diary Data'.

Sydney	The 1st Australian Personal Computer Show, Centrepoint. Contact: Australian Exhibition Services	March 10-12, 1983
Tokyo	Data and Telecommunication Exhibition. Contact: Cahners Exhibition Group, 0483 38085	January 16-19, 1983
Sydney	Data '83. Contact: Graphic Directions, 28 Foreaux Street, Surrey Hills 2010. Tel: (02) 212 4199	May 17-19, 1983
Adelaide	IREE Conference: Creating Integrated Systems, An Australian Silicon Workshop. Contact: Conference Secretary, Box 56, North Adelaide 5006	May 23-25, 1983
Melbourne	Business Efficiency Fair '83. Contact: Exhibitions and Trade Fairs, 44 Cardigan Place, Albert Park 3206. Tel: (03) 699 9100	August 9-12, 1983



NETWORK NEWS



Here is a list of all Australian personal computer networks. As more networks appear — and as more facilities are added to existing ones — we'll report them in this section, which appears monthly.

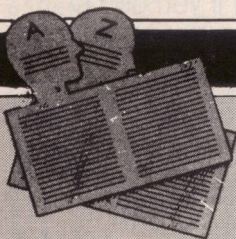
The Australian Beginning.
Operator: The Australian Beginning Pty. Ltd. 364 La Trobe Street, Melbourne. Tel: (03) 329 7998. Facilities: Information service, electronic mail, software storage, and software downloading. Hours: 24 hours/day, 7 days/week.

INFONET. Operator: Network Services Division of Computer

Sciences of Australia Pty. Ltd.,
460 Pacific Highway, St Leonards, NSW. Tel: (02) 439 0033. Facilities: Access to databases produced by the Australian Bureau of Statistics and the Institute of Economic and Social Research. Hours (E.S.T.): Monday to Friday (7am to 9pm), Saturday (8am to 5pm) and Sunday (8am to 11.30am).

AUSINET. Operator: ACI Computer Services, P.O. Box 42, Clayton, Victoria. Tel: (03) 544 8433. Facilities: Medium to databases whose subject coverage includes agriculture, education, energy, industry, public affairs, science and technology and an online Australian database directory. Hours: 8.30am to 9.00pm E.S.T. Monday to Friday.

IP Sharp Associates Network.
Operator: IP Sharp Associates Pty. Ltd., 13th Floor, 175 Pitt Street, Sydney. Tel: (02) 232 6366. Facilities: The network is an international time sharing data processing network, the host computers being located in Toronto, Canada. Hours: 24 hours/day. 7 days/week.



USER GROUPS INDEX

Below is a list of alterations and additions to the list of user groups published in the January issue. The next full listing will be published in the June issue of APC.

NEW SOUTH WALES

The Albury/Wodonga District Microbee User Group can be contacted at 202 Koobe Street, Albury 2640. Phone (060) 25 1601 and ask for Eric Eulenstein.

Details of a Sydney based Osborne users club are available from Ian Napier, BH (02) 635 3888 and from Iain MacCulloch, AH (02) 81 1908. The group has the "blessing" of Osborne Australia.

Hunter Users Group — All Microcomputers (HUGAM)

meets at the University of Newcastle, Room W308 of the Education building on the second Wednesday night of each month at 7.30pm. The group produces a newsletter and further information can be obtained from The Secretary, HUGAM, P.O. Box 39, Broadmeadow 2292.

VICTORIA

An update from Doron Karliner, The Secretary of NSZXUG states: "The group caters for ZX80 (8k and 4k ROM), ZX81 and the new Spectrum

machines. We also produce and sell a small range of quality software and hardware for these micros. A catalogue of these items and membership details are included with our free introductory issue. Interested parties can obtain the newsletter by sending a 27 cent stamp to: P.O. Box 148, Glen Waverley, Vic 3150."

Melbourne Atari Computer Enthusiasts (M.A.C.E.) has over one hundred members spread over Australia and publishes a monthly newsletter called the Australian Atari Gazette. Meetings are held on the first

Sunday of each month at midday at 3M Australia, cnr of Blackburn and Ferntree Gully Roads, Melbourne. Contact MACE, P.O. Box 246, Northcote, Vic or phone (03) 481 2215.

NEW ZEALAND

The Nelson VIC Users Group writes: "We wish to contact other VIC or Commodore Users Groups to exchange VIC public domain software, newsletters, etc. Contact us (airmail please) at: P.O. Box 860, Nelson, New Zealand. Phone: (054) 79361."

BLUDNERS

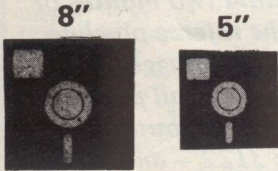


Two errors sneaked their way into December's Lazing Around.

The answer given for September's Prize Puzzle should have read $-5 + 6^7$ (not $-5 * 6^7$), and the example given for the December puzzle showed 321 equal to $19 + 2.1^2$. This should have read " $21 = 19 + 2.1^2$ ".

Last month's Printout stated that Computer Country was the exclusive distributor of the IXO Telecomputing System. In fact, the exclusive distributor of the IXO in Australia is MTM Galaxy Office Equipment in Sydney, Telephone: (02) 569 5500.

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 Heath Single Density * Oki if-800 * HP 87 and 125
 DEC VT-180 and new Personal Computers * Otrona Atache
 Wangwriter * IBM PC * Kaypro

IBM Single Density (the universal standard)

New formats are being added all the time so check with us for formats not listed.

We also provide a copy service from one format to another, call for details.

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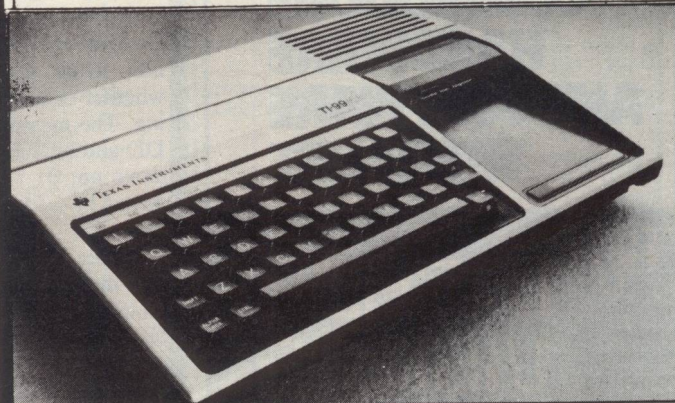
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PROGRAMS

APC is interested in programs written in Basic, Pascal, Forth, Logo and Comal — all of which being languages we've covered in previous issues. Please supply your programs on disk or cassette with all necessary documentation (so we've got a good idea what it's about and how much memory it uses) and, if you can, a clear listing on plain white paper.

As all programs in APC are checked either by a referee or by one of the editorial staff, it can take some time for a program to actually appear. If you don't hear from us within two months or so, it usually means your contribution is in the referee pipeline. It's essential to ensure that your program is fully debugged before you send it in — get a friend to try it out first — and all programs we publish are paid for at a regular rate. Send contributions to: APC Programs, P.O. Box 280, Hawthorn, Vic 3122 — and please enclose an SAE if you want material returned.

**Program
of the Month**

Apple Character Plotter

by R Hornby

APC's \$25 prize this month goes to Dr R P Hornby. I shall use his instructions verbatim (well, almost) as the use and understanding of this program is a little complicated.

'Characters can be plotted on the Apple II hi-res graphics page (thus allowing graphs to be labelled, etc) by using shape tables. These are described in detail in chapter 9 of the Apple II Basic Programming Reference manual. In brief, a shape is defined as a series of plotting vectors which are stored in a set of bytes in the Apple's memory. Each byte is divided into three sections and each section can specify a plotting vector:

BIT NO	SECTION 3		SECTION 2		SECTION 1		
	7	6	5	4	3	2	1 0
	D	D	P	D	D	P	D D

Each bit pair DD specifies the vector direction while the bits marked P indicate whether or not to plot a point before moving. The meaning attached to the bit pair DD and bit P is as follows. For DD: 00 — move up; 01 — move right; 10 — move down; 11 — move left. For P: 0 — no point plotted; 1 — point plotted.

'There is further restriction in that section three of the byte cannot be used as a plotting vector (since it cannot define a P bit) or a move up. Also a zero byte is used to terminate a shape table and the leftmost sections of a byte containing only zeros are ignored. For example, line 1792 of the program Charload gives the decimal byte values of a shape table defining the charac-

ter "O".

'The above gives some background for the programs Charplot and Charload listed below. Program Charload is run first and loads up shape tables for characters with decimal ASCII codes in the range 32 to 94 inclusive. For convenience, @ and & have been represented by a "+". Once the shape tables have been loaded the plotting subroutine (subroutine 1500) in charplot will plot out any character string assigned to Z\$(note: use CHR\$(34) for "). The character string may be placed anywhere on the screen (coordinates XS,YS) and scaled using SS (SS=1 gives the smallest scaling, SS=2 gives twice the smallest scaling and so on). The character string may be plotted horizontally (RS=0) or vertically (RS=48). Further details on the setting of RS and SS may be found on page 99 of the Applesoft Basic Reference Manual.

'Three pages, (9200, 9300, 9400) of Apple memory have been assigned for storing shape tables and associated data. The shape tables themselves are stored from 9300 (Charload, line 1216). The base page address (9200) may be changed by modifying lines 18 and 1208 of Charload and line 18 of Charplot. Further shape tables may be added to the end of the data block in charload. Then in Charplot, NS (line 32) must be changed to the new number of shape tables and the character representing the new shape table must be decoded to yield the correct shape table number (IS). The decoding section for the current set of shape tables is contained in lines 1514 to 1520 of Charplot.'

```
10 REM *****
**
12 REM * PROGRAM TO LOAD
*
14 REM * SHAPE TABLES
*
16 REM *****
```

```
**
18 HIMEM: ? * 16 ↑ 3 + 2 * 16 ↑
2
20 REM LOAD SHAPE TABLE
22 GOSUB 1200
24 PRINT "***SHAPE TABLES LOADED*"
**
```


PROGRAMS

```

26 END
1200 REM SHAPE TABLE SETUP SUB*
***
1202 REM CONSTANTS
1204 C = 256
1206 REM START ADDRESS
1208 A0 = 9 * 16 + 3 + 2 * 16 + 2

1210 REM SHAPE POINTER ADDRESS
1212 A1 = A0 + 2
1214 REM START OF SHAPE TABLE
1216 A2 = A0 + C
1218 REM SETUP FIRST POINTER
1220 A3 = A2 - A0
1222 A4 = INT (A3 / C)
1224 POKE A1:A3 - C * A4: POKE A
1 + 1:A4
1226 A1 = A1 + 2
1228 REM NUMBER OF SHAPES
1230 NS = 0
1232 REM READ IN SHAPE TABLES
1234 READ D
1236 IF D < 0 THEN 1258
1238 POKE A2:D
1240 A2 = A2 + 1
1242 IF D < 0 THEN 1258
1244 NS = NS + 1
1246 A3 = A2 - A0
1248 A4 = INT (A3 / C)
1250 POKE A1:A3 - C * A4
1252 POKE A1 + 1:A4
1254 A1 = A1 + 2
1256 GOTO 1234
1258 REM POKE START ADDRESS INT
O SYSTEM
1260 A4 = INT (A0 / C)
1262 POKE 14 * 16 + 8:A0 - C * A
4: POKE 14 * 16 + 8:A4
1264 REM POKE NUMBER OF SHAPES
1266 POKE A0:NS
1268 RETURN
1600 REM DATA BLOCK FOR SHAPE T
ABLES**
1602 REM CHARACTERS IN ASCII SE
QUENCE
1604 REM SHAPE TABLE FOR SPACE
1606 DATA 0
1608 REM SHAPE TABLE FOR !
1610 DATA 36,22,18,4,0
1612 REM SHAPE TABLE FOR "
1614 DATA 33,30,35,6,0
1616 REM SHAPE TABLE FOR #
1618 DATA 33,52,61,62,52,47,54,
47,38,45,20,51,38,0
1620 REM SHAPE TABLE FOR $
1622 DATA 63,4,45,48,45,7,51,54
,60,47,41,37,63,0
1624 REM SHAPE TABLE FOR %
1626 DATA 9,128,184,23,18,27,69
,107,10,44,62,27,57,27,128,3
2,5,62,0
1628 REM SHAPE TABLE FOR &(USE
+)
1630 DATA 36,22,54,68,3,45,31,6
3,5,0
1632 REM SHAPE TABLE FOR *
1634 DATA 128,32,0
1636 REM SHAPE TABLE FOR (
1638 DATA 192,30,22,20,10,4,0
1640 REM SHAPE TABLE FOR )
1642 DATA 64,14,22,20,26,4,0
1644 REM SHAPE TABLE FOR +
1646 DATA 36,198,3,14,30,45,64,
49,51,57,55,38,26,35,33,17,1
0,33,35,0
1648 REM SHAPE TABLE FOR -
1650 DATA 36,22,54,68,3,45,31,6
3,5,0
1652 REM SHAPE TABLE FOR ,
1654 DATA 18,53,49,30,7,0
1656 REM SHAPE TABLE FOR .
1658 DATA 45,31,63,5,0
1660 REM SHAPE TABLE FOR /
1662 DATA 18,4,0
1664 REM SHAPE TABLE FOR \
1666 DATA 18,27,12,12,12,12,4,0

1668 REM SHAPE TABLE FOR 0
1670 DATA 18,63,36,36,45,45,54,
54,63,0
1672 REM SHAPE TABLE FOR 1
1674 DATA 54,36,36,5,0
1676 REM SHAPE TABLE FOR 2
1678 DATA 18,1,57,63,39,44,45,3
7,60,63,47,0
1680 REM SHAPE TABLE FOR 3
1682 DATA 210,43,45,37,60,47,33
,60,63,47,0
1684 REM SHAPE TABLE FOR 4
1686 DATA 54,36,48,41,31,63,36,
6,0
1688 REM SHAPE TABLE FOR 5
1690 DATA 45,54,63,63,77,33,216

```

```

,63,36,45,45,7,0
1692 REM SHAPE TABLE FOR 6
1694 DATA 45,54,63,63,36,9,63,3
6,6,0
1696 DATA 137,34,36,50,63,47,0
1698 REM SHAPE TABLE FOR 8
1700 DATA 63,54,45,45,228,43,37
,60,63,55,6,0
1702 REM SHAPE TABLE FOR ?
1704 DATA 63,36,45,45,54,27,45,
54,4,0
1706 REM SHAPE TABLE FOR :
1708 DATA 48,18,4,0
1710 REM SHAPE TABLE FOR ;
1712 DATA 20,18,53,49,30,7,0
1714 REM SHAPE TABLE FOR <
1716 DATA 27,5,40,40,27,3,18,17
,21,5,0
1718 REM SHAPE TABLE FOR =
1720 DATA 24,43,45,29,27,19,42,
45,5,0
1722 REM SHAPE TABLE FOR >
1724 DATA 9,7,56,56,7,17,24,58,
58,0
1726 REM SHAPE TABLE FOR ?
1728 DATA 45,36,63,23,10,54,34,
0
1730 REM SHAPE TABLE FOR @ (USE
+)
1732 DATA 36,22,54,68,3,45,31,6
3,5,0
1734 REM SHAPE TABLE FOR A
1736 DATA 63,36,41,45,50,63,9,5
4,20,27,27,36,0
1746 REM SHAPE TABLE FOR D
1748 DATA 9,36,59,63,54,54,45,4
5,32,0
1750 REM SHAPE TABLE FOR E
1752 DATA 63,36,45,45,15,18,18,
63,63,36,0
1754 REM SHAPE TABLE FOR F
1756 DATA 3,5,45,24,9,56,63,55,
54,38,0
1758 REM SHAPE TABLE FOR G
1760 DATA 45,55,62,63,36,36,45,
45,0
1762 REM SHAPE TABLE FOR H
1764 DATA 45,36,22,54,4,24,59,3
9,52,50,38,0
1766 REM SHAPE TABLE FOR I
1768 DATA 36,45,27,63,9,18,54,4
5,27,63,0
1770 REM SHAPE TABLE FOR J
1772 DATA 36,63,13,45,15,18,27,
54,59,5,0
1774 REM SHAPE TABLE FOR K
1776 DATA 234,7,31,32,40,8,223
,51,54,38,0
1778 REM SHAPE TABLE FOR L
1780 DATA 27,36,22,54,45,45,7,0

1782 REM SHAPE TABLE FOR M
1784 DATA 36,63,54,54,12,1,32,4
4,53,54,38,0
1786 REM SHAPE TABLE FOR N
1788 DATA 7,56,48,54,38,74,9,28
,37,36,6,0
1790 REM SHAPE TABLE FOR O
1792 DATA 18,63,36,36,45,45,54,
54,63,0
1794 REM SHAPE TABLE FOR P
1796 DATA 45,36,63,63,54,45,27,
54,4,0
1798 REM SHAPE TABLE FOR Q
1800 DATA 22,63,32,36,41,45,50,
54,63,1,48,10,6,0
1802 REM SHAPE TABLE FOR R
1804 DATA 45,36,63,63,54,45,27,
54,84,65,21,4,0
1806 REM SHAPE TABLE FOR S
1808 DATA 57,63,32,41,45,23,2,1
7,30,63,47,0
1810 REM SHAPE TABLE FOR T
1812 DATA 18,36,36,45,31,63,5,0

1814 REM SHAPE TABLE FOR U
1816 DATA 18,53,32,35,14,17,18,
45,36,36,22,18,0
1818 REM SHAPE TABLE FOR V
1820 DATA 2,34,33,33,52,27,18,3
5,35,52,0
1822 REM SHAPE TABLE FOR W
1824 DATA 54,41,32,35,30,19,18,
59,32,36,6,0
1826 REM SHAPE TABLE FOR X
1828 DATA 18,27,12,12,12,12,20,
18,18,28,28,24,29,4,0
1830 REM SHAPE TABLE FOR Y
1832 DATA 18,36,12,12,20,25,27,
28,4,0
1834 REM SHAPE TABLE FOR Z
1836 DATA 18,9,63,63,12,12,12,1
2,20,59,63,5,0

```



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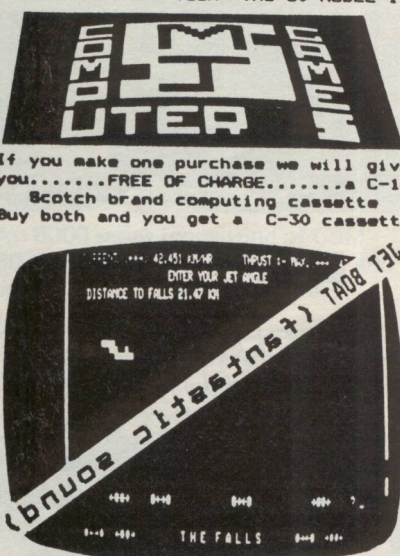
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DEFSTR...P	DELETE...D	EDIT....E	ERROR...B	FOR....F
GOSUB...H	GOTO...G	INKEY...K	INPUT...I	LEFT...L
LIST....L	MTD....M	NEW....N	NEXT...N	PEEK...P
POINT...Z	POKE...O	RANDOM...M	READ...R	RESET...Y
RESTORE...O	RESUME...M	RETURN...J	RIGHT...K	ROW....Y
RUN....R	SET....E	STEP...D	STOP...G	STRING...S
STR...Z	SYSTEM...S	TAB....T	TROFF...T	TRON...Y
		USING...U	VARPTR...V	

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PROGRAMS

```

1838 REM SHAPE TABLE FOR LEFT S
      QUARE BRACKET
1840 DATA 18,63,36,36,45,7,0
1842 REM SHAPE TABLE FOR /
1844 DATA 18,9,28,28,28,28,4,0
1846 REM SHAPE TABLE FOR J
1848 DATA 18,45,36,36,63,5,0
1850 REM SHAPE TABLE FOR ^
1852 DATA 18,36,36,20,18,9,28,2
      8,18,27,12,4,0
1854 REM TERMINATOR
1856 DATA -1
1738 REM SHAPE TABLE FOR B
1740 DATA 63,54,45,45,32,27,45,
      36,59,63,54,0
1742 REM SHAPE TABLE FOR C
1744 DATA 73,24,56,63,55,54,45,
      45,61,0

10 REM *****
   ***
12 REM * PROGRAM TO PLOT
   *
14 REM * A CHARACTER STRING
   *
16 REM *****
   ***
18 HIMEM: 9 * 16 ^ 3 + 2 * 16 ^
   2
20 REM XS,YS ARE SCREEN COORDIN
      ATES OF CENTRE OF FIRST CHAR
      ACTER OF STRING
22 REM RS=0 FOR PLOTTING HORIZO
      NTALLY(LEFT TO RIGHT),RS=48
      FOR PLOTTING VERTICALLY(SCREEN
      BOTTOM TO SCREEN TOP)
24 REM SS(1-255) IS A CHARACTE
      R SCALE FACTOR
26 REM Z# CONTAINS STRING TO BE
      PLOTTED
    
```

```

28 REM NS IS THE NUMBER OF SHAP
      E TABLES LOADED
30 HGR
32 NS = 63
34 REM PLOT SHAPE
36 INPUT "CHARACTER STRING?"Z#
38 INPUT "XS,YS SCREEN COORDINAT
      ES?"XS,YS
40 INPUT "RS=0=HORIZONTAL: 48=VER
      TICAL?"RS
42 INPUT "SCALE(1-255)?"SS
44 GOSUB 1000
46 END
1500 REM CHAR PLOT SUB*****
1502 REM SUB USES C1,C2,I,A#,I
      S,NS,Z#,SS,RS,XS,YS,XR,YB
1504 REM CONSTANTS
1506 C1 = 31:C2 = 8:XR = 290:YB =
      160
1508 SCALE= SS
1510 ROT= RS
1512 FOR I = 1 TO LEN(Z#)
1514 A# = MID$(Z#,I,1)
1516 IF A# = " " THEN IS30
1518 IF A# = CHR$(34) THEN IS =
      3:GOTO 1522
1520 IS = ASC(A#) - C1
1522 IF IS < 1 OR IS > NS THEN I
      530
1524 IF XS < 0 OR XS > = XR THEN
      XS = 0
1526 IF YS < 0 OR YS > = YB THEN
      YS = 0
1528 DRAW IS AT XS,YS
1530 IF RS = 0 THEN XS = XS + C2
      * SS
1532 IF RS = 48 THEN YS = YS - C
      2 * SS
1534 NEXT I
1536 RETURN
    
```

System Tape Copier

by G Lohrere

As the name suggests, this program copies machine language programs from tape to tape for TRS-80 and System 80s.

To use it, first type-in and save the Basic program in listing 2, execute the three pokes in listing 1, type NEW and CLOAD the program back into memory. The pokes relocate the 'beginning of Basic pointers' to a higher RAM position to allow room for the machine language copying program. Run the Basic program which will indicate each byte as it is being poked into low RAM and then control will be transferred to the machine language program.

The message 'Copier Select: B/L/N/W/V' will be displayed providing the following functions:

- B - transfers control back to Basic
- L - loads a machine language tape into memory, first asking you to 'Ready Cassette' by depressing the play button and hitting 'Enter'. It also displays the name of the program as it is loading
- N - enables you to rename a machine language program (by first loading it into memory) with a six character name
- W - writes a stored machine language program to tape, again asking you to 'Ready Cassette' by depressing the play and record buttons.
- V - this routine verifies a machine language program stored on tape with one in memory indicating any discrepancies with a 'Bad File' message.

Other messages which may be displayed are '?OM ERROR' (the machine language program you're trying to load is too large for the available memory), 'CHECKSUM ERROR' (an error has been detected in the M/L program currently being loaded) and 'INVALID BLOCK' (the data currently being read from tape is not a machine language program).

Listing 1

```
POKE 17505,0 : POKE 16548,98 : POKE 16549,68
```

Listing 2

```

10 CLS:PRINT"LOADING SYSTEM TAPE COPIER"
20 READ H#:C%=C%+1:PRINT@56, C%
30 IF LEN(H#) >2 THEN 70
40 H%=ASC(LEFT$(H#,1))-48
   :IF H%>9 THEN H%=H%-7
    
```


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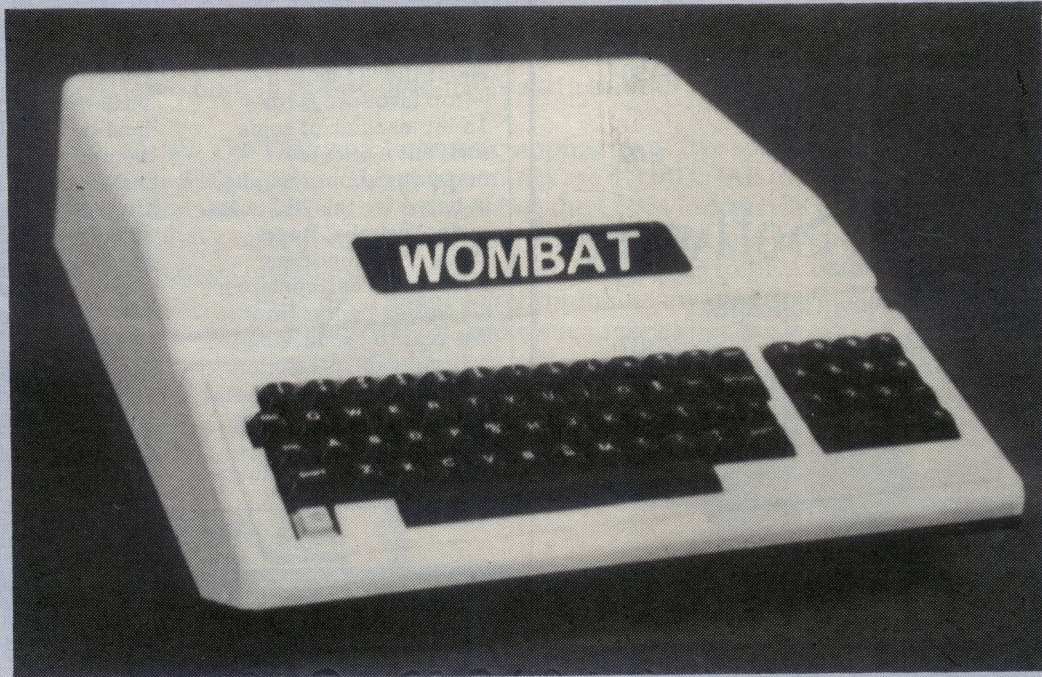
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Commodore now seems to have chosen the Hanover Trade Fair as *the* place to launch new products. Before some of the machines launched at the '82 Fair were even available in shops, rumours were already circulating about the '83 launch — top favourite is for a 16-bit machine of some sort, but cynics are muttering about this plug-in board for the 700 series.

In Australia, Roger Davis of Commodore seems to be extrapolating his closing figures from last year to produce his "crystal ball" prediction for the growth of the home computer market during '83. A quote from The Financial Review, January

11: "Roger Davis said he expected the home computer market to grow to 10 times its present size this year." It'd be nice, but it's a little hard to believe.

At Apple's simultaneous worldwide January 19 launch of the new Lisa business micro (which was held in Melbourne on January 25) a video tape was played. The star of the show who had just purchased a Lisa, answered the question "What's so special about Lisa", with "I've had other computers before, but my Lisa is different." Seems Apple is taking its marketing further than David Tebbutt even dared to suggest in this month's article

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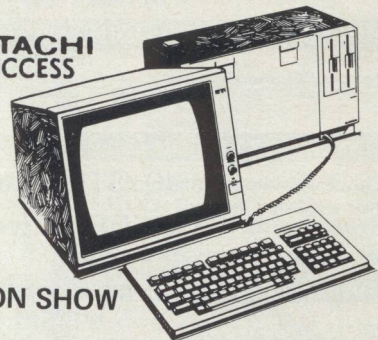
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