

P. G. LEWIS

RESEARCH MACHINES

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RESEARCH MACHINES  
THE NEWSLETTER

RESEARCH MACHINES, P.O. BOX 75, OXFORD.

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Dear User,

It is a long time since we have managed to produce a Newsletter. The last issue was July 1979 and many of you have been writing in to ask if you have been missed off the mailing list! The mailing list is still intact; we have had to give other things a higher priority during these months in order to cope with the continuing increase in our work load.

In October 1979 the manufacturing side of the company moved to our spacious new premises in West Oxford. They were finally joined by the rest of the Company in February 1980. This means that for the first time in three years we are all working under the same roof. Already we have felt the beneficial effects of faster and easier inter-departmental communications and general efficiency within the company.

If you are writing to us, please continue to use this address:

Research Machines Ltd.  
PO Box 75,  
Oxford.

If you are coming to visit us, you will find us at this address:

Research Machines Ltd.  
Mill Street,  
Botley Road,  
Oxford. OX2 0BW.

The new building is near Oxford Railway Station.

We now have a switchboard, and if you are telephoning, you should ring Oxford (0865) 49791. This is one of our old numbers and should be the only one used in the future to get a quick response. We would be very grateful for any help you can give the girl operating the switchboard to place your call with the right person. A brief explanation of what you are calling about, your name and organisation, will enable her to put your call through to someone who can help you with the minimum of delay.

In order to cope with Oxford traffic problems, the new offices are now open at different times from in the past.

MORNING	8.30 a.m.
LUNCH	12.30 until 1.30 (The switchboard will be closed)
EVENING	4.30 p.m.

We are making more computers than ever before, to meet the continuing increase in demand for the 380Z. In addition to the move to larger and

more efficient premises, we have increased staffing levels generally and are introducing still more experienced middle management; we are confident that these factors will be reflected in the coming months by a better and more efficient service to our customers.

The absence of the Newsletter over the past months means that there is a great deal to be included. We have therefore put in an Index to help you find your way around.

#### BASF 8" FLOPPY DISC RECALL

We have recently recalled certain specific batches of BASF 8" floppy discs. If you have an FDS-2 and have not received a Recall Form from us, please write in for a 'BASF 8" Floppy Disc Recall Form'. One third of the people to whom we have sent the form have not yet returned it to us to have their discs exchanged.

We would like to remind everyone concerned that if the suspect discs are not exchanged now, they risk data loss and may incur servicing charges at some later date.

#### HIGH RESOLUTION GRAPHICS

Many of you are still waiting for your High Resolution Graphics black and white and colour boards. We have experienced a variety of 'new product' problems with the HRG package and sincerely apologise for the delays to which we have subjected you. We are now manufacturing a small but steady monthly volume of the black and white board and will clear the backlog of orders as quickly as production of the board allows.

A later issue of the HRG datasheet is now available giving the latest information and prices for the RGB and PAL boards. It also states more clearly than in the previous datasheet exactly what should be ordered by those who are adding HRG to an existing system, and for those who are purchasing a completely new computer system with HRG. This will be sent automatically to customers who have already placed an order with us for HRG. If you would like a copy, please write to the Sales Office.

Please also note that HRG can only be run on a COS 3.0 monitor machine. We are now taking orders for COS 3.0 upgrades and you should refer to page 3 of this Newsletter for full information.

Field Maintenance is available on the black and white HRG board, please see page 3 for further information.

MONITOR UPGRADE TO COS 3.0

In December 1977 Research Machines started to produce disc based 380Z machines, using the industry standard CP/M operating system. CP/M will only run in computer systems which have main memory starting at address zero. Therefore, the memory mapping of the 380Z was changed so that memory started at zero. User memory starts at 100 Hex, so cassette versions of the new standard machine were called 'C100' machines. All new standard disc machines had memory starting at zero, equivalent to a C100 cassette machine. The old type machine was then referred to as C4100 (the 'C' standing for cassette).

We are now in a position to take orders for the conversion of machines currently using version 2.3 and 2.2 COS monitors to the new standard COS 3.0 monitor. This involves modification to the CPU and VDU boards, as well as to any add-on board or SIO-1 interface.

It is theoretically possible for us to make new boards available for COS 2.2 and 2.3 machines as well as for COS 3.0 machines. However, the cost of creating and maintaining software to support new products on earlier versions of COS would be very high for products such as the High Resolution Graphics Board.

Since the cost of upgrading from earlier versions of COS to the new COS 3.0 standard is small, and other advantages to the customer in terms of software compatibility with the bulk of 380Zs are considerable, we are trying the approach of limiting development to COS 3.0 products.

We would be grateful if COS 2.2 and COS 2.3 customers would seriously consider upgrading to COS 3.0, rather than putting pressure on us to create COS 2.3 compatible products.

For full details, please write to the Sales Office for 'Monitor Upgrade to COS 3.0 Datasheet'.

380Z FIELD MAINTENANCE AND REPAIR

Field maintenance and repair for the main items in 380Z computer systems are now available with KODE SERVICES LTD.

We have found Kode a very pleasant and competent company to deal with and are confident that they will offer our customers a good service. A considerable investment has to be made by a field maintenance company to train its engineers in a new product, provide a country wide service and hold stocks of replacement parts. We think that Kode's charges are competitive with field maintenance companies offering a comparable service on other products.

It may be possible to arrange special terms with Kode where there are large concentrations of 380Zs within one area e.g. by a Local Education Authority. A direct approach should be made to Kode Services Ltd.

Kode are currently the only field maintenance company offering a service on 380Z computer systems.

We strongly recommend that a field maintenance agreement is taken out from day one on PRINTERS and DISC SYSTEMS. Please remember that any printer purchased from us has a 90 day warranty only.

If a maintenance agreement is taken out with Kode Services from day one, the customer does not require an RML warranty and a 2% discount may be taken on those items covered by the agreement PROVIDED this has been arranged with Kode beforehand, and we are instructed that this is the case when the order is placed with us. The 2% discount only applies to items normally given our twelve month warranty, i.e. not printers. We regret that the discount cannot be offered AFTER the order has been placed with us.

#### OUTLINE OF THE KODE SERVICE

The areas covered at present are East London, West London, the South West, Midlands, North and Scotland. Each engineer lives within his area and is mobile and equipped with tools, test equipment, essential spares and is fully trained in all aspects of preventive maintenance and equipment repair of COS 3.0 monitor 380Z systems. If you do not have a COS 3.0 system, upgrades to the new standard COS 3.0 monitor are available, please see page 3 for further information.

The engineers report to Area Managers and further back-up spares are available at these centres, including major units. Technical Support Engineers are also based at these centres who will be able to help with the isolation of difficult problems or system problems.

A Kode maintenance agreement provides two annual maintenance visits, plus any other call which may be required. The cost of replacement parts is included. Work carried out due to negligence or misuse is not included.

If you would like full details, please write to the Sales Office for the 'Kode Field Maintenance Datasheet'.

#### RML RETURN-TO-FACTORY ROUTINE MAINTENANCE/REPAIR SERVICE (AFTER WARRANTY)

We will continue to offer our return-to-factory service available after the warranty period has expired. This service is based on an individual charge for parts and labour.

We hope disc-based customers will use field maintenance rather than this service, due to the potential for damage during transit. If a disc based customer does decide to use this service, we do advise you to bring/collect the equipment by car as far as possible. If it must come in by carrier, do make certain that it is adequately packaged with at least 4" of shock absorbing material around it. Ideally, keep and use the packing material in which it was originally delivered to you.

LOCAL EDUCATION AUTHORITY QUANTITY DISCOUNT AGREEMENT FOR SCHOOLS  
AND SOME COLLEGES

In case you haven't yet heard about it, an LEA contract pricing system was introduced on 1st November, 1979. Eligibility for an LEA quantity discount is based on the number of computer systems to be purchased throughout an Authority, during a specified twelve month period. The twelve month period commences from the date a Contract Number is issued and the discounts may be applied to authorised official orders only, received at RML on or after that date. Purchases need not be made centrally to qualify for the discount but the Agreement can only be negotiated with the LEA itself.

This scheme is not available to individual organisations making quantity purchases, but they may be eligible for the same discounts under the Quantity Purchase Discount Schedule where quantity purchases can be made centrally and placed on a single order.

Many schools and some colleges (not Polytechnics) will be eligible for a 5% School and College discount which is also now available. Details are in the 'LEA Quantity Discount Agreement Datasheet'.

REMINDER

For those of you already using the scheme, remember that individual orders will only be invoiced with discounts if the Contract Number is shown on the order. This is one of the conditions in your Agreement. Many orders are coming in under the LEA scheme and it is administratively impossible for us to check each order individually to see whether it should qualify for a discount. We invoice on receipt of order, and cannot grant discounts retrospectively.

For full details, please write in for the 'LEA Quantity Discount Agreement Datasheet'.

USER GROUPSTHE NATIONAL USER GROUP

The inaugural meeting of the National User Group was held at the Polytechnic of Central London on 5th October 1979.

About one hundred users attended the one day meeting. An Executive Committee was elected, Research Machines gave a report on current company and 380Z news, and several users described their applications. Many users particularly enjoyed and benefitted from the informal discussions which followed the presentations. The arrangements for the next meeting will provide even more opportunity for contact between users.

A newsletter is being produced by the User Group, and the first issue will be sent out with the RML Newsletter. It will be sent to all those who are on the RML Newsletter mailing list, but later issues will be sent only to members of the National User Group.

If you would like to join the National User Group, please write in for the 'National User Group Membership Application Form'. The annual membership fee is £5.00.

THE NEXT MEETING OF THE NATIONAL USER GROUP

The next meeting of the National User Group will be held on Wednesday, 7th May 1980 at the Birmingham Educational Computing Centre, Camp Hill Teachers Centre, Stratford Road, Birmingham, B11 1AR.

Outline Programme:

Meeting starts 11.30 a.m.

- MORNING
1. Report from the Executive.
  2. Report from RML.

LUNCH

AFTERNOON

Demonstrations and presentations by users of the 380Z. It is hoped that these demonstrations will continue on an informal basis during the afternoon and that other 380Zs will also be available for users to demonstrate their own software and for software exchange.

Lunch will be available at an approximate cost of £1. If you would like to attend and also to book your lunch, please send a stamped addressed envelope to Peter Smith at the above address, requesting a map and confirming your attendance/lunch booking.

WEST MIDLANDS USER GROUP

The first meeting of this group was held on 7th February at the University of Birmingham. The group is very active and meeting regularly.

Anyone who is interested or would like further information about the group and its activities should write ONLY please to:

Peter Smith,  
 Birmingham Educational Computing Centre,  
 Camp Hill Teachers Centre,  
 Stratford Road,  
 Birmingham. B11 1AR.

NEW DOCUMENTATION AND SOME PRELIMINARY DATASHEETS SHORTLY AVAILABLE

Please send your request(s) to the Sales Office and you will be supplied with them as they become available.

IEEE/PIO/CTC BOARD DATASHEET

The IEEE 488/PIO/CTC Board provides a flexible high speed IEEE 488 interface as well as a PIO and CTC function. The IEEE 488 interface is becoming the industry standard method of connecting all types of instruments and some peripherals to computers. It is an excellent



standard and over the next year or two, it will emerge as the overriding method of connecting equipment together.

Our board provides full controller and talker/listener facilities, as well as allowing disabling of the controller functions.

The PIO/CTC section has the following:

32 data line in four 8-bit ports

8 handshake lines (two per port)

3 CTC channels with trigger/count input and zero count/time output

1 CTC channel with trigger/count input only.

#### ANALOGUE I/O BOARD DATASHEET

The Analogue I/O board provides 16 channels of analogue inputs and 2 channels analogue output, both to 10-bit resolution. The input ADC may be set to one of seven voltage ranges and the outputs independently set to one of four voltage ranges compatible with most analogue circuitry and industrial/process control applications. The board also provides a serial I/O interface and a real time clock/timer.

#### MULTI USER SYSTEM DATASHEET

This contains the latest information from R & D on the proposed multi user system. Please note the later delivery date of Spring 1981. Please also remember that none of this information is final. It is a major project and at this early stage of development it is extremely difficult to define exactly what may be entailed, particularly for those customers who may want to 'upgrade' to multi user from an existing system. The prices given are not final and further items may be needed involving additional costs. All information is given to the best of our knowledge today, in an attempt to give you budgetary guidance.

#### CONNECTING PRINTERS WITH A READY LINE DATASHEET

This datasheet explains how to connect up a printer with a ready line to the 380Z using the SIO-1 (Option 4), the SIO-2 and SIO-3, and the SIO-4 interfaces.

The types of printers which need a ready line are those with a character buffer that can accept data faster than they can actually print it, thus they need some way of informing the sending equipment (the 380Z) that it should suspend transmission. They do this by means of an extra signal originating at the printer, called a BUSY line.

#### SIO-4 and SIO-1A (LINE PRINTER OPTION 4) DATASHEET

This datasheet describes in detail the operation of the 8251 serial communications interface IC used on the SIO-4, in addition to preliminary data on connecting the SIO-4 and SIO-1.

CESIL INTERPRETER DATASHEET

A CESIL Interpreter is now available on cassette @ £9.00 for the 380Z. If you are interested in this, please ask for the one page 'CESIL Datasheet'.

CIRCUIT DIAGRAMS

New drawings of some 380Z circuit diagrams will be available shortly.

CPU Board

VDU Board

Floppy Disc Controller/SIO-4 Board. (This is also the circuit diagram for the SIO-1A [Lineprinter Option 4] Board).

TECHNICAL MANUALS FOR DISC DRIVE UNITS

Photocopies of the BASF 8" Disc Drives and the 5.25" Disc Drive Technical Manuals will be available shortly.

6104	(8")	Disc Drive Technical Manual	£ 14.60
6106	(5.25")	Disc Drive Technical Manual	£ 11.50

GENERAL INFORMATIONCOPYING RML SOFTWARE

We should just like to remind you of our policy regarding any software sold by Research Machines.

All software sold by Research Machines is licensed to run on a single system only. This is standard procedure by companies producing software and means that one item of software purchased to run on one 380Z system may not be copied for use on another 380Z system. Where software has been purchased from RML to run on a single machine only and additional copies are required to run on that same machine, e.g. for use in a classroom, a customer may make any number of copies.

Clearly, there is no restriction on the copying of software written by users themselves. Nor does this necessarily apply to software purchased from a supplier other than Research Machines, which will be covered by the terms of that individual supplier.

In support of this we would like to explain that any company producing software has to make a considerable financial investment if it is to produce good software of a high standard. If the company is to maintain its ability today and in the future to produce and continually support those software products, it must derive an income from their sale to finance a standard of support of benefit to every customer, both old and new.

We do feel strongly too that since the majority of our customers do order and pay for their software, and abide by our non-copying rules, it is most unfair that they should, in effect, be subsidising those few who do not.

If infringements come to our attention, we will therefore take steps to enforce this policy.

We are not expecting that those of our customers who are professionals in the educational sector will police their students, but we do expect those professionals to be honest themselves.

### 380Z MANUALS

We have had many, invariably justifiable, pleas for improvements to our existing software manuals and the System Manual. We heed all your comments and should like to let you know what is happening on this front.

Any new software manual will be written to a new and we hope improved, and often stand-alone format. This will include comprehensive indexing, interactive text, liberal use of examples for illustration and generally an improved page layout.

We are trying to tidy up the existing System Manual for the short term, and hope to produce an interim System Manual along the lines of the format above, currently in use for new software manuals.

In the long term our idea is to reorganise the documentation in stand-alone manuals and produce professionally designed, illustrated and printed manuals. This involves an enormous amount of work and will take many months.

### PROGRAM "BREAKS"

A few customers have reported to us that some of their system software (PIP or BASIC) occasionally BREAKS on loading or running, in circumstances where they are certain there has been no operator error. This has been tracked down to a peculiar failure mode in two batches of memory integrated circuits (ICs), such that the memory becomes marginal. The problem is more likely to show up on systems which include an add-on memory board, that is, systems with 48K or 56K of RAM.

The two batches of devices concerned have part numbers on them which end in:

NH

and JDH

(eg. 4116-NH). If you think you are having this kind of problem, and have these types of memory ICs on your add-on RAM or CPU boards, please telephone our technical support people on 0865 49791, and arrange to have the BOARDS returned for these ICs to be exchanged by us, free of charge.

Even if you have not had any problems, but have memory ICs ending in NH or JDH and would like them changed anyway, we will be pleased to do this free of charge - please telephone technical support as above.

SWTPC PR40 PRINTER

The wiring for the PR40 has been changed by the manufacturer and Research Machines no longer recommend this printer for use with the 380Z. The PR40 is no longer compatible with the 380Z and you are likely to cause damage to your 380Z if you try to connect it up with the system.

PERSONAL COMPUTER INSURANCE

Some people have asked us about this. We understand some insurance companies are offering cover and you may do well to enquire with your own insurance company before going elsewhere.

We know nothing about them, but received some unsolicited literature from R J Dee Insurance Services, 14 York Place, Clifton, Bristol BS8 1AH, who also offer insurance for groups' meetings etc. We take no liability!

A CLEAN ENVIRONMENT FOR 380Z COMPUTER SYSTEMS

Some equipment has been coming back to us either for repair or upgrading, and can only be described as extremely dirty! We are anxious to stress that it is very important, particularly for disc based equipment, that it is only used in an 'office' standard environment. You will cause damage to your equipment and media if care is not taken in this respect.

BUS CABLES FOR ADD-ON BOARDS

If you already have a 380Z and wish to purchase an add-on board, e.g. SI0-1A/B, PIO/CTC or HRG Board, you may need an extended bus cable to take the new board(s). The cost of a bus cable is not included in the various board prices, and will not be supplied automatically. Exchange bus cables are available from RML for the difference in price between the one you have and a 7-way bus cable at £32.50.

In some cases, you may also need a bus terminator board, e.g. please see section on High Resolution Graphics Package on page 2.

EQUIPMENT RETURNED FOR REPAIR OR UPGRADING

1. Please ensure that the doors on the disc drives are firmly TAPED shut.
2. If you do not wrap the machine in polythene and are using Flopak or similar, make sure that you tape some protective material over the fan on the back panel. This will prevent pieces of Flopak making their way into the machine and causing damage on switch on.
3. Preferably bring/collect your disc machine by car. They are delicate and do not travel well by carrier due to the rough handling to which they are often subjected.

4. If you are sending equipment back by carrier PLEASE MAKE SURE IT IS ADEQUATELY PACKED. We recently received a machine wrapped simply in newspaper! Needless to say it was badly damaged. You MUST put at least 4" of shock absorbing packaging around the equipment before entrusting it to a carrier.
5. If you are returning a disc to RML please make sure it is labelled with your name and address, and what is on it.
6. Any board to which you have made modifications must have those modifications labelled ON THE BOARD before return to us. It can save us hours of work when trying to find a fault if we know what modifications have been made.
7. If you are returning faulty equipment to RML, please make sure that you attach a note giving the symptoms in detail. This is particularly important with intermittent faults. It is necessary to do this, even if you had previously given a description of the fault over the telephone.

Your co-operation in this respect may significantly reduce the amount of time we have the system in for repair.

#### SINTEL

Our very early customers will recall that the first 380Zs were sold under our old trading name of SINTEL. Since many of you still address your correspondence and orders to Sintel, we should like to let you know that we have closed down SINTEL. All correspondence should be addressed to Research Machines.

#### ADVERTISEMENTS

##### PROGRAMMERS AND DESIGN ENGINEERS

Research Machines is always on the lookout for very good programmers and design engineers. If, in spite of your natural modesty, you think you qualify and are interested in the possibility of a job with us, please write to Mike Fischer at Research Machines.

##### ANYONE INTERESTED IN A SECOND-HAND CASSETTE BASED SYSTEM?

We had a telephone call from one of our early customers. He has one of the very first blue case cassette based 380Z systems which he would like to sell - they have two systems and no longer make full use of this one. He would also like to sell a Teletype with the system. No prices given.

Please contact:

Mr. Ford,  
T. H. Quinton Ltd.,  
Hamlet Works,  
Brook Road, Rayleigh, Essex.

380Z SCHOOL ADMINISTRATION SOFTWARE

Ian Tate, Lecturer in Computer Education at Aberdeen College of Education, has asked us to put out a general request for any reader who has written 380Z compatible software for administration jobs in schools, to get in touch with him. He asks if anyone would be prepared to release this software for general use with a view to cutting down duplication of effort.

Address: Hilton Place, Aberdeen. AB9 1FA.

NOTE:

If you have produced administration software, in particular for schools, and would like to make your own programs available to other users, we would be very happy to hold a list of names and addresses at RML with details of what you have available. We will then pass on this information to other users when requested.

TELETYPE 33 CONNECTIONS

Does anyone have experience of connecting a 15 pin plug Teletype 33 to a 380Z? A user has been given a Teletype 33 and is having difficulty connecting it up to the 380Z. If you can help, would you contact:

W. F. Pollard,  
Stand College,  
Church Lane,  
Whitefield,  
Manchester. M25 7NH.           Tel. 061 766 2261

SPACE INVADERS

A version of this popular arcade game on cassette tape is available for the 380Z (COS version 3.0) at £2.95 from:

Mr. J. Watson,  
Oldham's Hall,  
The Schools,  
Shrewsbury.

We have not had time to test it but Mr. Watson says that it is 'idiot proof'.

THE SOFTWARE SECTIONSCHOOLS COUNCIL AND CHELSEA COLLEGE SOFTWARE

Programs from the Schools Council project 'Computers in the Curriculum' and the Chelsea Science Simulations, are now available on cassette. The programs have been adapted to run on 380Z systems running 9K BASIC; the majority will run in 20K RAM systems, some in 16K. The software is only available to those who have purchased the packs of teaching material from the publishers EDWARD ARNOLD LTD. Whilst it is free as paper tape or listings (not modified for the 380Z), a marginal cost of £1 per subject has to be made for the cassettes.

You can apply for this software using the printed pro formas which are enclosed in the published packs from Edward Arnold. For more information on what is available, and for ordering details, please write to:

Educational Computing Section,  
Chelsea College,  
University of London,  
Pulton Place,  
London SW6 5PR.

Software available:

Schools Council 'Computers in the Curriculum'

Biology  
Chemistry  
Economics  
Geography  
Home Heating  
Physics

Chelsea Science Simulations

Biology  
Physical Sciences

NEW SOFTWARE PRODUCTS

Version 1 of the HRG software is available for BASIC, FORTRAN and ALGOL. This allows the user to plot points, draw lines and fill rectangular blocks, at a specified intensity. Commands are provided to set resolution and page and to modify black and white intensity or colour. Pictures can be saved in a disc file and reloaded.

Please send for the 'HRG Hardware and Software Ordering Information Datasheet' and the 'High Resolution Graphics Datasheet'.

LONG INTEGER ALGOL

An Algol runtime system has been added to the standard disc in which real variables are represented not in the normal mantissa/exponent form but rather as 32 bit 2's complement integers. This runtime system is useful for those applications where greater precision is desirable but without the need to extend the number range to the extent allowed by the floating point representation. e.g. business programs. The number range allowed is from  $(2^{31})-1$  to  $-(2^{31})$ .

Long Integer Algol Upgrade: Price £17.00.

DON'T FORGET TO COPY CP/M USING SYSGEN!

Users often telephone us saying that they have copied 'everything' onto a new disc using PIP but are unable to boot from that disc.

What they have forgotten or not realised is that they must copy CP/M over first of all, using SYSGEN. It is necessary to put CP/M onto a new disc using SYSGEN, before it is possible to boot from that disc. PIP cannot put CP/M on a new disc and is only used for transferring other files. Note that the presence or absence of CP/M is not indicated when you do a DIR.

SOME CP/M MANUALS YOU MAY WANT TO ORDER

The following CP/M manuals are available ex-stock from us. Please don't forget to send a cheque if you are a cash with order customer and include £1 for postage and handling.

CP/M Assembler (ASM)	£1.60	each
ED: A Context Editor for the CP/M Disc System	£1.40	each
CP/M Dynamic Debugging Tool (DDT)	£1.50	each
CP/M Interface Guide	£2.55	each
Introduction to CP/M Features and Facilities	£2.30	each
CP/M System Alteration Guide	£3.15	each
A complete set	£12.50	

The most useful of these is the Interface Guide which explains how to write Assembly language programs that use CP/M for Input/Output. ASM is a simple 8080 Assembler, comparable with ZASM.



USING ALTMODE IN TXED VERSION 3.0A

A problem exists in TXED 3.0A whereby Altmode characters (right brace, ASCII 7D hex) cannot be inserted into the text buffer, because they are converted on input to Escape. This is of significance chiefly in Algol, where this character can be used to terminate comments. The mapping can be avoided by making the following changes to TXED.

Location	Old Contents	New Contents
227	7D	1B
42C	FE	00
42D	7D	00
42E	28	00
42F	04	00

These changes should be made in the normal way by loading TXED into memory with DDT, using the Front Panel to alter memory, and using the CP/M SAVE command to store the new copy.

FORTRAN VERSION 3.20

An upgrade to this version of the Fortran system is now available. Details have already been circulated to all users who have returned their Fortran Registration Forms.

Those who have not yet registered should do so now; you will not be eligible for the upgrade unless you have done so.

A PROBLEM WITH PIOS

The 380Z reset button does not clear an incompletely serviced interrupt request, i.e. if the reset button is pressed while in an interrupt service routine IEO will remain low and the PIO will not respond correctly if the program is restarted.

This is inherent in the design of the Z80 PIO but can be circumvented by using a dummy RETI at the start of the program.

```
E.g.      LD      HL,START
           PUSH   HL
           RETI
```

```
START:    .
           .
           .
           .
```

If more than one PIO is being allowed to interrupt a corresponding number of RETIS will be required to ensure correct operation.

A PROBLEM WITH DBAS9

There is a problem with file handling in DBAS9, which several users have found confusing, involving the use of ON EOF. The ON EOF mechanism can only 'look' one data item ahead. This means that an error will occur if more than one item is read after the end of the file. For example, if a file contains a series of pairs of numbers, ending with just a new line after the last pair, a program to attempt to read it might be:

```
10 FILES 1,"DATA"  
20 FOR I=1 TO 1000  
30 ON EOF GOTO 100  
40 INPUT#; X(I),Y(I)  
50 NEXT I  
100 REM PROCESS DATA ...
```

Unfortunately, this program fails. The solution is either to end the file with a line containing a single number, or to trap the end of file with some sort of flag numbers (e.g. zero).

ERROR IN XDB VERSION 1.06C

There is an error in the UPDATE mode of file handling such that the default behaviour of the output pointer is incorrect after a PRINT to a disc file. Thus, the following program is intended to update a file containing single letters, each on a new line, by overwriting the second letter with 'X'. Instead, it overwrites the first.

```
100 OPEN #10,"U","FILE"  
110 INPUT #10,A$  
120 INPUT #10,B$  
130 PRINT #10,"X"  
140 CLOSE
```

The problem can only be surmounted by modifying the program to make a note of the position of the output pointer before the INPUT and restoring it in the PRINT statement.

The behaviour of Update mode appears to be correct when the keywords READ and WRITE are used instead of INPUT and PRINT.

XDB EXAMPLE PROGRAMS

Here are some very simple XDB example programs demonstrating the use of files. While none of the programs are particularly useful in themselves, they do at least demonstrate the syntax of the various commands, and show that, in spite of the manual, there is really nothing very difficult about file handling in XDB.

In each case, the choice of channel number is totally arbitrary (except that disc channels must be in the range 10-255), and the fact that the channel numbers differ between examples merely indicates that there is little restriction.

The following program sets up a data file in random mode.

```
EXAMPLE 1.      10 REM EXAMPLE 1 - CREATE DATA FILE
                 20 OPEN #10,"R","DATA",30
                 30 FOR I=1 TO 10
                 40 READ AGE, NAME$
                 50 WRITE #10@I, AGE, NAME$
                 60 NEXT I
                 70 CLOSE
                 80 DATA 20,ALBERT
                 90 DATA 23,BARRY
                100 DATA 36,CHARLES
                110 DATA 16,DAVID
                120 DATA 65,ELIZABETH
                130 DATA 25,FRANK
                140 DATA 35,GEORGE
                150 DATA 36,HARRY
                160 DATA 45,IAN
                170 DATA 50,JOHN
```

The next two programs perform identically, updating the data file produced in Example 1.

```
EXAMPLE 2.      10 REM EXAMPLE 2 - UPDATE DATA FILE
                 20 OPEN #11,"R","DATA",30
                 30 INPUT "WHICH RECORD"; R
                 40 IF R<1 THEN 100
                 50 READ #11@R, AGE, NAME$
                 60 PRINT NAME$; " HAS HAD A BIRTHDAY AND "
                 70 PRINT "IS NOW"; AGE+1; "YEARS OLD"
                 80 WRITE #11@R, AGE+1
                 90 GOTO 30
                100 CLOSE
```

EXAMPLE 3.

```

10 REM EXAMPLE 3 - UPDATE DATA FILE
20 OPEN #12,"U","DATA",30 'UPDATE MODE
30 INPUT "WHICH RECORD"; R
40 IF R<1 THEN 100
50 READ #12@R, AGE, NAME$
60 PRINT NAME$; " HAS HAD A BIRTHDAY AND "
70 PRINT "IS NOW"; AGE+1; "YEARS OLD"
80 WRITE #12, AGE+1 'NOTE NO RECORD NUMBER
90 GOTO 30
100 CLOSE

```

The next two programs simply write and read a serial file.

EXAMPLE 4.

```

10 REM EXAMPLE 4 - WRITE A SERIAL FILE
20 OPEN #22,"O","SERDATA"
30 PRINT "TYPE $ TO FINISH ENTRIES"
40 PRINT: PRINT :PRINT
50 INPUT "NAME"; NAME$
60 IF NAME$="$" THEN 90
70 PRINT #22,NAME$
80 GOTO 50
90 CLOSE #22

```

EXAMPLE 5.

```

10 EXAMPLE 5 - READ A SERIAL FILE
20 OPEN #17,"I","SERDATA"
30 PRINT "NAMES ARE:"
40 PRINT :PRINT
50 ON EOF#17 GOTO 90
60 INPUT #17, NAME$
70 PRINT NAME$
80 GOTO 60
90 CLOSE #17

```

The final example calculates all the prime numbers less than 1000, using the sieve of Eratosthenes. The program is far from optimal.

EXAMPLE 6.

```

10 REM EXAMPLE 6 - PRIME NUMBERS
20 CLEAR ,2
30 OPEN #10,"R","PRIMES.WRK"
40 FOR P=1 TO 1000
50 OUTBYTE #10,0 'CLEAR THE ARRAY
60 NEXT P
70 OUTBYTE #10@1,1
80 FOR P=2 TO 31
90 SETLOC #10@P :IF BYTE(10)<>0 THEN 130
100 FOR Q=P*2 TO 1000 STEP P
110 OUTBYTE #10@Q, 1 'CROSS OFF COMPOSITES
120 NEXT Q
130 NEXT P
140 OPEN #12,"O","PRIMES.DAT"
150 SETLOC #10@1 :FOR P=1 TO 1000
160 IF BYTE(10)=0 THEN PRINT#12,P
170 NEXT P
180 CLOSE 'EVERYTHING
190 ERASE "PRIMES.WRK"

```

PATCHES TO CP/M TO MAKE DELETE FRIENDLY

CP/M 1.4 echoes deleted characters on the screen, making it possible but difficult to see what has been deleted. The following patches change CP/M so that deleting simply deletes the character. This makes CP/M much more user friendly.

The patching is done to MOVCPM. Once MOVCPM has been patched any CP/M produced using it, will be suitably adjusted. The actual MOVCPM program is loaded into memory using DDT (to load it without running it). The changes are made using the front panel.

Boot up on a disc with MOVCPM.COM and DDT.COM and at least 9K space on it in drive A. Make sure you have a backup copy of MOVCPM.COM to recover with if you make a mistake.

Type the following in. Underlined text is the computer response. Text on the left hand side in brackets, corresponds to a single keystroke, e.g. (RETURN) means hit the return key.

DIALOGUE

COMMENTS

(Boot up)

A> DDT MOVCPM.COM(RETURN)  
(some DDT sign on message)

(get MOVCPM.COM into memory using DDT)

(Control F)

(this enters the bewildering front panel)

!M ≥1386 (RETURN)

(Move pointer to 1386)

!04 (RETURN)

78

(put 04 in 1386)

!05 (RETURN)

B7

(put 05 in 1387)

!M ≥138B (RETURN)

(move pointer to 138B)

!00 (RETURN)

76

(put 00 in 138B)

!M ≥1FFD (RETURN)

(move pointer to 1FFD)

!00 (RETURN)

C8

(put 00 in 1FFD)

A>SAVE 35 PATCPM.COM(RETURN)

(you are back in CP/M and are saving a modified version of MOVCPM called PATCPM.COM on disc)

A>

MOVCPM is now modified and the new version is called PATCPM. Use this as you would use MOVCPM and create a CP/M of the size you want in memory - ready to save on disc with SYSGEN.

E.g.

A>PATCPM 31 \*(RETURN)

(for a 31K CP/M)  
(note space between 31 and \*, not dot).

Etc.

followed by SYSGEN with no source drive (just [RETURN]) and A or B as destination drive as desired.

NOTE: CONTROL KEYS ARE ECHOED AS UPARROW FOLLOWED BY THE KEY AND WILL NOT BE FULLY DELETED ON THE SCREEN. DELETING WILL NOT COPE WITH DELETING BACK TO A PREVIOUS LINE ON THE SCREEN.