AMATEUR COMPUTER CLUB NEWSLETTER

Annual General Meeting

Extracts from minutes of the Annual General Meeting held at the Nyholm Room, Chemistry Department, University College, London on Thursday April 5 1979.

Excluding the committee, 44 members attended.

Jim Cunningham, past chairman, stated that he felt the last year had been one of considerable progress during which membership had approximately doubled to about 1900, and numerous new local area and user groups had been formed.

Bob Warren, past General Secretary, echoed the comments of Jim Cunningham, but also felt that with the rapid expansion of the club membership and the general increase in computer construction and programming as a hobby, the club had to change its direction and improve organisation and motivation.

Because of heavy professional commitments in the future, he was reluctant to stand for the position of General Secretary again.

Treasurers Report

Mike Lord presented the Club accounts for the previous year. These had been audited by Clive Gates & Co.

He was not willing to stand again for either of the positions of Treasurer or Newsletter Editor.

Acceptance of the accounts was proposed by Richard Larkin, seconded by Alan Secker and carried unanimously.

Appointment of Newsletter Editor for year 1979/80

Jim Cunningham stated that since nobody had come forward offering to become Newsletter Editor on a voluntary basis, and since this position was vital to the Club's future existence, an offer from a professional Journalist, Boris Sedacca, of Editorship at a fee of £100 per issue had to be considered by the meeting.

A Proposal by A. Aylward, Seconded by M. Lord that Mr. Sedacca be employed, subject to satisfactory detailed negotiation by the new committee, was carried unanimously.

Changes to the Constitution

Jim Cunningham stated that the present Constitution had been designed for a far smaller club that the current ACC, and that the proposed changes (see Agenda) were to patch the old Constitution until a more suitable one could be written.

A motion, proposed by Jim McDonald, and seconded by Bob Warren, that the Committee should examine the Constitution and present a revised initial draft in the third Newsletter of the year, and the final draft, to be presented at the next AGM, in the last Newsletter of the year, was carried unanimously.

After discussion, a motion, proposed by Jim Cunningham and seconded by Tim Moore, that the amendments put forward in the Agenda should be accepted, was carried by 24 votes to 13, with 6 abstentions.

A motion that section (e) of the Constitution should be extended to include voting by letter of proxy, proposed by Tony Aylward, and seconded by S. Borthwick, was defeated by 20 votes to 14, with 9 abstentions.

A motion, proposed by Mike Lord, and seconded by Bob Warren, that no further discussion of the Constitution should take place at this AGM, was carried by 37 votes to 2, with 4 abstentions.

Other Business

An open letter from the North-West Group (Manchester) was tabled by Mike Lord and read to the AGM by Jim McDonald. (See in this issue).

A motion, proposed by Alan Secker, and seconded by Paul Lecker, that Clive Gates & Co. should be reappointed as auditors for the forthcoming year, was carried unanimously.

In order topay for a programme of expansion, outlined to the AGM, Alan Secker proposed that the membership fee should be increased to £3.50. This was seconded by Eddie Meadows, and carried overwhelmingly. A further motion, proposed by Jim McDonald, and seconded by Alan Secker, that members under 16 years of age, and those over the age of retirement, should continue to pay £1.00 for membership, was carried unanimously.

Thanks

Finally, on behalf of the ACC, the Committee would like to express its thanks to Mike Lord for his work on behalf of the Club during the years since its formation.

Full set of minutes can be obtained from the General Secretary, John Phillips.

Your new committee

In this issue:

Ed's bit

Hello, there. I'm your new editor. In case you have not heard by now, Mike Lord has resigned from both his positions as newsletter editor and club treasurer. His departure marks a great loss to the club and I can only hope that I will be able to keep up the excellent standard which he set.

Nevertheless, we must face up to the problems facing the club in the immediate future. I had a chat with Mike at the Annual General Meeting, and there is no doubting that his sentiments are being echoed by a good few club members, as the open letter from Dave Williamson in this issue, and letters in previous issues show.

The club is experiencing growth pains. With increasing size comes the problems of administration. The club committee is handling larger sums of members' money, both in terms of increased membership and fees. Members might well find themselves to be isolated from policy-making decisions in such a centralised set up.

Yet, the committee has been entrusted with your funds and centralised spending will give the ACC greater purchasing muscle, but it is up to the member to make his/her wishes known to the committee. The committee is going to meet at least every two months and perhaps even every month at some stage.

By the time this newsletter reaches you, the first meeting will have taken place on May 24th. The next meeting is scheduled for July. The main item on the agenda is a new club constitution, and we need your opinions before then.

Just in case you cannot think of anything right now, here are a few topics to consider. How should your money be spent? I hope to be able to publish the ACC budget in the next newsletter. Your comments could influence the shape of next year's budget.

How about the structure of the ACC? Can we retain the benefits of centralisation and still provide members the chance to participate in its running? It's up to you to decide really.

What about our relations with other clubs? Should we set up a system of affiliation for their members to gain restricted access to our libraries on the basis of institutional membership? Could we benefit from the interchange of information?

How much are you getting out of the newsletter? How much are you putting in? Do you really feel it is *your* newsletter? The committee has already decided to try to generate some revenue from advertising on a small scale — one eighth of a page per advertiser at about £5 per spot. Are you happy about this? Naturally this would not affect members who are still entitled to advertise for free. But do you think this might discourage manufacturers who are offering jobs or discounts to members?

Then of course, there are attractive financial rewards offered by the three newstand monthly magazines. Does the newsletter still have a role to play? Could it become a platform and an alternative avenue for publication where the monthlies would err on the side of not offending advertisers? Could the ACC become a pressure group as Dave Williamson suggests?

Let us have your views, and needless to say your contributions, circuit diagrams, cartoons, photographs, etc.

Boris Sedacca

AMATEUR COMPUTER CLUB

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31st MARCH 1979

Income

Receipts from Members		4008.75
Sale of Badges		116.80
Deposit Account Interest		34.31
		4159.86

Less: Expenditure

Postage	1032.20	
Stationery	296.57	
Printing of newsletter and other printing costs	1533.81	
Exhibition expenses	99.72	
Computer Data preparation services	113.40	
Cost of Badges	121.00	
Cost of collecting and enveloping	172.35	
Audit Fees	81.00	
Library Software	44.50	
		3494.55

Surplus of Income	**£665.31**

Report of the Auditors to the Members of Amateur Computer Club

We certify that the annexed Balance Sheet and Income and Expenditure Account have been prepared from records of the Club together with information supplied to us and that the Balance Sheet is correct and in accordance therewith and the Income and Expenditure Account shows a correct surplus of income for the year ended 31st March 1979.

York House,
353a Station Road,
Harrow,
Middlesex
5th April 1979

Open Letter
An open letter to the AGM from the committee of the North-West Group.

We are in agreement with the members who have expressed concern about the direction in which the ACC is going — or the lack of it.

We observe an increasing membership nationally to a size which is administratively unwieldly and for which the old structure is perhaps inappropriate.

The North West experience is one of a rapidly increasing number of owners of personal machines (especially of the 'total package' type) who join no group and for whom we seem unable to cater. It is apparent nevertheless, that many are in need of help and advice.

In addition, many of our own members see no advantage in joining the National ACC, and some indeed view it as a regional subsidy of a London concern.

Warranted or not, these feelings cannot be expected to evaporate as long as meetings and facilities are concentrated in London making it expensive in time and money to have a say nationally.

The whole question of local group affiliations to the national club is even more contentious regarding its value depending on *real* and *mutual* benefits, which local and national groups can provide.

As a group, we believe, it would be a great loss if the ACC fragmented on regional or difference-of-interest grounds, not only because of the historical significance of the club, but because of the wealth of expertise it contains, the opportunity of a wider sharing of the hobby, and the possibility of the pressure group it could become.

If the ACC is not to fragment or be overtaken by financially motivated manufacturers and publications, a number of points need careful considerations:
a) Facilities should be equally available to ready-made system owners and to traditional home-brewers.
b) Careful assessment of the proper relationship between local and national groups is necessary.
c) More recognition of the needs and resources of the regions. For example, the club might consider the decentralisation of important meetings, the active encouragement of regional conferences and exhibitions, and perhaps most practically, financial support for official representatives of local groups attending the AGM and other important meetings held in another region.

(Dictated by Dave Williamson to Mike Lord 4.4.1979)

BALANCE SHEET AS AT 31st MARCH 1979

	£. p	£. p
Assets		
Current Bank Account	680.25	
Deposit Bank Account	642.53	
		1322.78
Less: Liabilities		
Accrued Charges	81.00	
		81.00
		£1241.78

REPRESENTED BY:

General Fund		
Balance at 1st April 1978	576.47	
Add: Surplus for the year to date	665.31	
		1241.78
		£1241.78

Newbear Monitor
77-68 Mon2 ROM monitor board.

By Tim Moore of Newbear Computing Store

This board contains all the advantages and disadvantages that come from supporting MIKBUG or SWATBUG. For example, it uses a PIA for its serial port. One advantage of this design is that a single step facility has been included which is only effective when MIKBUG is fitted.

Various other goodies are there, such as an additional PIA and ACIA, and are vectoring PROM for the top end of memory, so the partial address decoding trick does not apply.

One of the better features of this design is that an additional 2708 has been included at locations E400 to E7FF where many housekeeping routines may be stored.

A software monitor called T-bug has been developed to link Mon2 with the 77-68 VDU board; previously a weak point with the 77-68 system. Please note that this monitor can accept data through the ACIA serial port, or by a parallel ASCII keyboard through PIA port at 8010H and output via the ACIA port on the 77-68 VDU display.

As a foot note, the design for this board has taken the brunt of Murphy's law: during the photocopying process, in order to obtain the earliest release, the markers were lost and had to be regenerated — we have now installed word processing equipment.

User groups
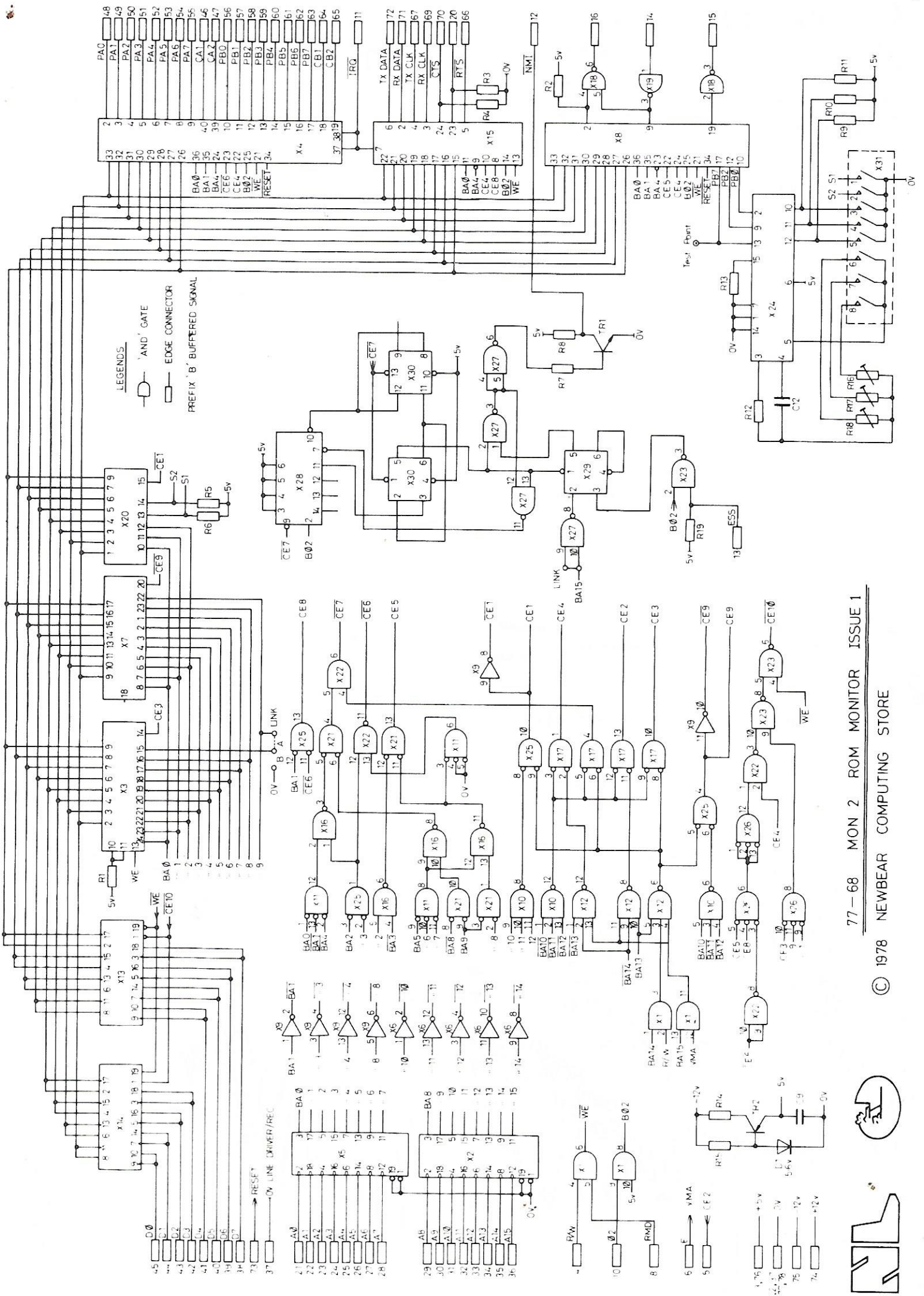### PDP/LSI-11 User Group

The group has only just come into existence and is still very definitely in the recruiting stage. It has received publicity in the ACC newsletter and in the 2 monthly magazines *Practical Computing* and *Personal Computer World*. I also intend to 'advertise' in the new *Computing Today* magazine, and in *GIGO* — the newsletter of the North London Hobby Computer Club. I am in contact with about a dozen people who use or own PDP11 systems and have already managed to produce some useful interchange of information. I have also had a couple of calls from representative's of DECUS, the official DEC user group asking why I feel the need for a second user group. At this early stage I must make it quite clear that this user group is not a substitute for, and is not in 'competition' with DECUS. It is merely a means of providing a quick and easy method to exchange ideas or get help with problems. This naturally means that each member of the group must be prepared to give as much as he/she takes — there is no other way that the group can work. It is hard to say how the group will progress, if at all, although I imagine that the next step will be to publish a list of names, addresses and telephone numbers of the groups members and list their interest in/knowledge of the PDP11. Then we sit back and wait for the phone to ring.

Peter Harris

COSMAC USERS CLUB

It is proposed to set up a club in Britain for those poeple using the RCA 1802 microprocessor, Cosmac ELF, ELFII, Super Elf etc. The unofficial assistance of RCA and HL Audio has been promised.

Please contact James Cunningham at 7 Harrowden Court,

LEGENDS
'AND' GATE
EDGE CONNECTOR
PREFIX 'B' BUFFERED SIGNAL

77-68 MON 2 ROM MONITOR   ISSUE 1

© 1978 NEWBEAR COMPUTING STORE

Cassette Interface
KANSAS CITY — without another UART
by Peter Bendall.

My 8085 microcomputer System communicates with my "Petitvid" Terminal using an 8251 USART at 300 Baud. Having built a pretty normal Kansas City Cassette interface (Best of Byte Vol. 1, page 184 — as designed by Phonetics Corp) I ended up with a pretty box with four wires hanging out of it and no idea how to connect it to the Computer.

Somehow I had to get a UART to use, but I didn't want to start building a Serial I/O board just at the moment, so I decided to look at the UART I was already using. I had to get a CLOCK OUT, a CLOCK IN, and the TTL data lines. The place to start is at the UART chip of course.

—	Tx Clock TXC	Rx Clock RXC	TTY Data TXD	KB Data RXD
MC 6850	4	3	6	2
AY-5-1013	40	17	25	20
Intel8251	9	25	19	3

The pins to find are listed above and (usually) are quite simple to get at. The RX clock and the two Data pins have to be isolated, and the signals that go to them also identified. The only problem is that the two clock signals are commoned at the UART and I was unlucky because the internal clock went first to the RXC pin and then on to the TXC pin. I had to isolate them both and re-connect the Clock source (the TIMER output of an 8155) to the TXC alone.

Next we have to bring the signals out of the board. If the lengths are going to be nice and short, just tack on thin wires (wire-wrap wire looks quite neat) and bring them out. If not you may put a CMOS hex buffer chip somewhere close to the UART and buffer the lines.

I was rather lucky because my CPU card is right at the front of the case so I mounted two 74LS32's on the back of a 2-pole changover switch. Then with it wired as in the diagram I have Terminal or Cassette at the turn of a switch. Because of the rather individual Monitor Routines that I use, I found it necessary to put a 2 second delay in the start of the read and write routines to make sure that everything has settled but with a "more normal" monitor it may be OK without.
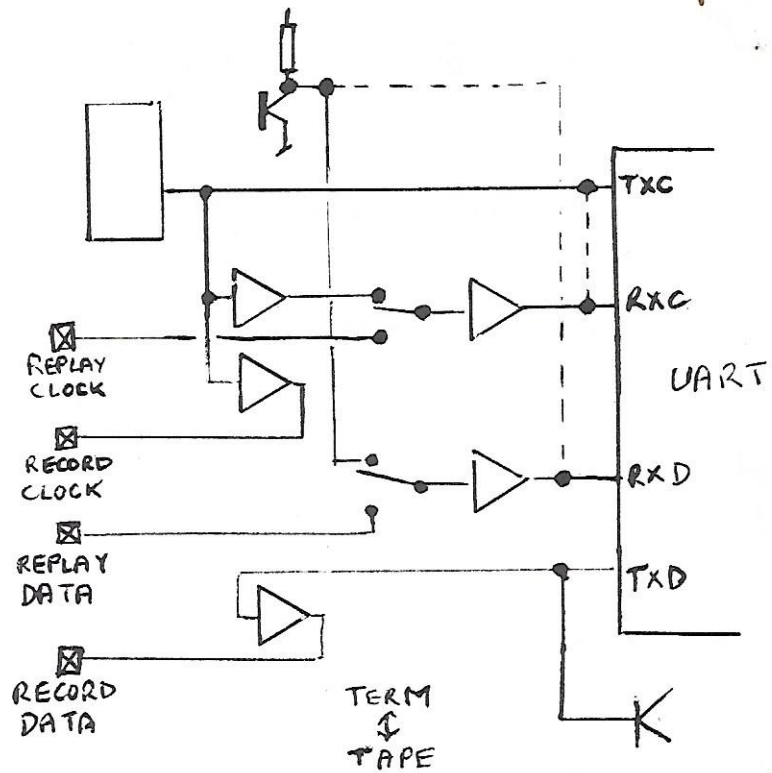
A note to those lucky enough to possess PDP11's (or LSI11's). The serial interface DL11 or DLV11 has the TTL Data signals already present on the Output Connector. The DL11 has a rotary switch that selects the Baud Rate Divider output, and one position of the switch (pos 9) selects an external clock from the Connector. (I haven't got an LSI so I can't say what happens there!) If you want to get a clock out from a DL11, there's a signal at the wiper of the other baud-rate switch and somewhere a spare. gate to buffer it. Everything packaged on one board.

Z80 Library

It has come to the notice of the committee that people have been experiencing some difficulty in obtaining information from the Z80 library. The committee is looking into the matter in all urgency and will report to members as soons as possible.

Contributions to the newsletter

Would members please address all future contributions to me, Boris Sedacca at : 1a Kemplay Road, Hampstead, London NW3. Tel. (01) 435 5066.

The newsletter is now going to be professionally set by printers and I have to provide them with clean copy. This is going to require more discipline on my part so I want to appeal to contributors to please write as clearly as possible so that mistakes can be avoided; if articles can be typed all the better, but the emphasis is on clear handwriting and clear English. I am not much good at decyphering and some of the things I have had to work with look like a spider which has fallen out of an inkwell.

Also, where an article is referred to in a previous issue of the newsletter or of some publication, please try to indicate the date where possible for the benefit of readers.

Boris Sedacca

Letters
Manuals wanted

I would be glad of the loan of suitable documentation (postage refunded) for the following items:
1 Manual for the Solartron CT436 scope
2 Overhaul details for the Creed 75 teleprinter
3 Conversion details for the stepping motors which Chiltmead were selling before they closed down to make them operate from 12 volts instead of 110 volts
4 Buffer board from Nascom 1 to S100 standard — has any member bought the Teleplay conversion?
5 Any recommendations on Basic for an expanded Nascom?

Finally, any advice on the cheapest form of printer on standard paper (not heat sensitive etc) with upper and lower case?
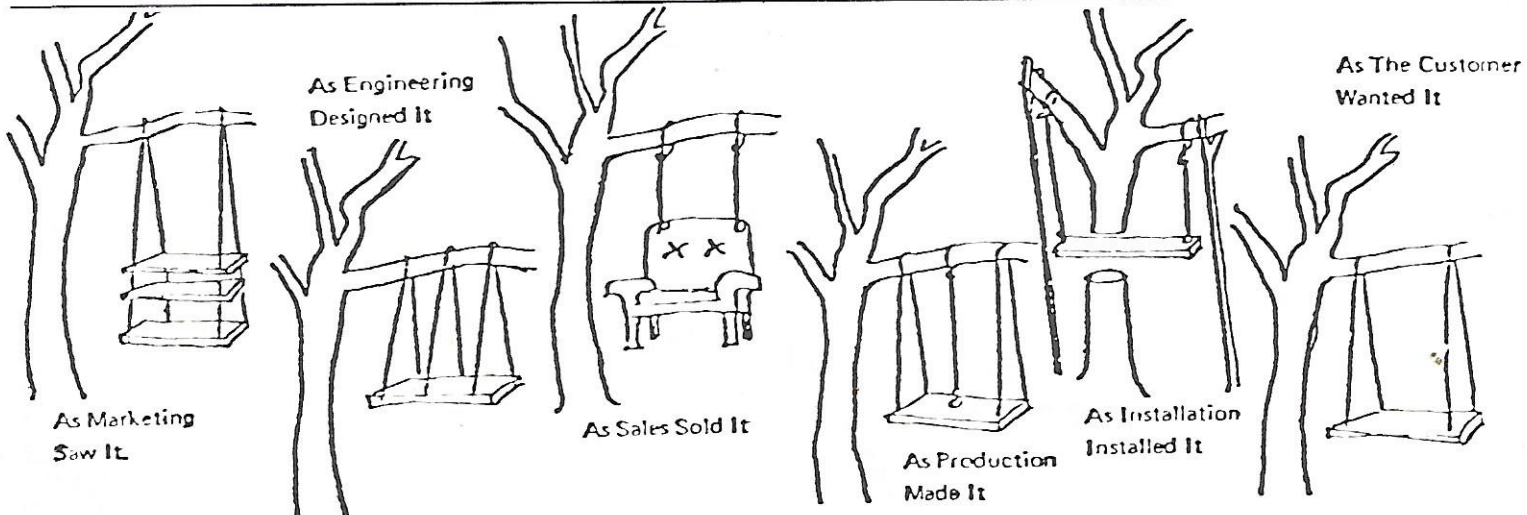
Please reply to A.W. Wood, The Limes, Druidstone Road, St Mellons, Cardiff CF3 9XD.

Hewlett Packard

If any member needs help with old Hewlett-Packard minis, Mike Drury can help with documentation and bits.

Further details from 48 Durnsford Avenue. Fleet, Hants. GU13 9TB.

Submitted by Roy Hall

ETI System 68

I'am writing in reply to the assertion made in the December A.C.C. newsletter by the Gwent regional group that they have the only working E.T.I. System 68 in Wales. I have one here in Swansea. I have been forced to make a number of modifications to the System 68 VDU (in addition to the corrections given in ETI) and would be happy to supply details of these to the ACC, or to anyone in difficulty.

Peter L. Skan, 6D7 Vivian House, Roman Bridge Close, Blackpill, Swansea, West Glamorgan.

P.S. A group of students including myself at the University College Swansea, Department of Electrical and Electronic Engineering, a considering the formation of a local ACC group for the Swansea/South-West Wales area. Anyone interested please write to me at the above address.

Puzzle

A donkey is tethered to a point on the circumference of a circular field, the diameter of which is 30 yards.

The length of the rope is such that it enables the donkey to graze in exactly one half of the area of the field. How long is the rope?

Submitted by L.W. King, 27 The Beeches, Lydiard Millicent, Swindon, Wilts.

Cassette Interface

I am 17 years old and have built the Newbear 7768. I have just finished the Mon1 card and had it set up for an RS232 serial interface. I wish to connect a cassette recorder to this, and as I cannot afford a Kansas City interface, I was wondering if anyone knows of a design for a circuit which would allow connection to the interface. I have seen a similar design for the Cosmac 1802 microprocessor which only uses a transistor and a few resistors.

Andrew Smith, 3 David Grove, Beeston, Nottingham, NG9 3AF. Tel: Notts. 257521.

Cassette Standard

A while ago Alan Secker called for discussion on the subject of cassette standards and now, owing to his involvement in other A.C.C. activities, he has passed the file of correspondance which resulted on to me. For the benefit of people designing circuits, and to prompt further letters to me or the newsletter, here are a few points that have come up.

1/ We require something about ten times faster than 300 baud CUTS standard.

2/ 300 baud Cuts is still a good system for minimal development systems and can reasonably be expected to survive as the slow speed standard.

3/ We are trying to find an encoding technique, not a standard electronic design, so if you have invented a single chip FSK decoder publish it in the newsletter; it would be FSK that became the standard not your circuit.

4/ It must work on cheap cassette machines because, although some people have fancy HiFi recorders even they will eventually want a cassette or two dedicated to their computer. If you can afford £100 then you might as well get a proper professional digital drive with its associated electronics and adopt the commercial recording method.

5/ It should be self-clocking on one channel only; using two tracks is inefficient and requires stereo recorders. The second track could be used for optional file markers, but it should definitely not be essential.

6/ Tape saturation and DC bias as found in many systems has the major drawback of being difficult to copy reliably. Commercial Software suppliers use ordinary audio cassette copying machines and have problems with Tarbel, Pet, and other formats.

7/ Of all the designs I have seen, however fancy the digital may be, not one has a good analogue to digital circuit which is the source of 50% of the dropouts. Major modifications to the electronics of the recorder are not acceptable as an increasing number of hobbyists are ignorant of electronics.

8/ File headers must also be standardised so that the reading software does not have to be changed for every tape.

Bazyle Butcher, 16 St Peter's Close, Bushey Heath, Watford, Herts. 01-950 4771.

Meeting points

Nottingham

A new computer club has been formed in Nottingham, meeting on the first Monday of every month.

Contact Andrew Smith, 3 David Grove, Beeston, Nottingham NG9 3AF. Tel. 257521.

North East Surrey

Is anyone interested in forming or joining a microcomputer group in the Sutton, Croydon, Reigate, Epsom, Leatherhead and Esher areas i.e. mid-North/North-east Surrey. I am not aware of any such group's existence at this moment.

At some time I would like to try and set up a Sorcerer owners' group, and welcome any enquiries from prospective members at (01) 642 8362 — Mr Patrick.

South Yorkshire Personal Computing Group

Meet on the second Wednesday of every month at the Dept of Control Engineering, Floor D, St George's, Sheffield University for 7.00 pm.

The evenings will initially take the form of a demo, followed by two short talks, and then an open forum on all computing matters.

For further information, contact Tony Rycroft, 88 Spinneyfield, Moorgate, Rotherham, S. Yorks. Tel. Rotherham 74889 (evenings).

Herts/Beds

If anyone is interested in forming a group in the Herts/Beds area, please contact David James at 5 Ox Lane, Harpenden, Herts AL5 4HH. Tel. Harpenden 5366.

Aberdeen

In Aberdeen, the Grampian Amateur Computer Society has been formed with 16 people so far. The society intends to meet on the second day of each month at 7.30 pm and initially the meetings will take the form of demonstrations of members' systems.

Further details from Michael Brown, President, The Grampian Amateur Computer Society, 282 Queen's Road, Aberdeen AB1 8DR.

Southgate

A computer club, for amateurs and professionals, has started at Southgate Technical College; the first meeting took place at the College on Wednesday 4 April and ideas for future programmes were discussed, including "Help!" sessions, lecturettes and displays. Members brought hardware (the necessary machinery!) and software (such as programs) to the meeting.

The group welcomes anyone interested in computers, especially micro-computers. Please ring Paul Woolley on 01-886 6521 for further information.

THE A.C.C. HARROW GROUP

The A.C.C. Harrow Group meets at Harrow College of Higher Education on alternate Wednesdays at 7 pm in room 135. We welcome anyone interested in home computing, owners, non-owners of micro-computers to come along. Discussions, lectures, and practical demonstrations are planned for our summer programme. Afterwards, or if the college is closed, we gather in the "Travellers Rest" Kenton.

For further information contact N.P. Butcher, 01-950 4771.

South London

SELMIC, the South East London Microcomputer Club, has been formed with some 40 members. The venue for meetings is the South East London College, Breakspears Road, Lewisham Way, S.E.4.

The College has offered its full support to the Club and use of facilities, by arrangement through the Club Committee.

Details from: John P. Williamson, Chairman, SELMIC, 129 Greenvale Road, Eltham Park, London SE9 1PG.

The second Selmic meeting, at which the club was officially inaugurated featured about a dozen machines, including four Tandy TRS80s. Seen here in the photograph is John Williamson, Selmic chairman (pin stripes and specs), demonstrating his TRS80's capability to transmit audio signals to a nearby pocket transistor radio to produce a selection of excruciating computer music.

Shop

Horizon disc controller

For Sale. North Star Horizon MICRO DISK Controller Board Single Density (assembled) complete with manual and DOS and extended Basic on Diskette £220 ovno. Shugart SA400 Drive available extra if required.
P. Chamberlain, 10 Marl Hurst, Edenbridge, Kent, TN8 6LN.

Digital Cassette Recorder

Phillips digital cassette recorder. Model 8920.401.40501. Standard features include read after write facility, fast rewind, a positive file protect safeguard, cassette side A or B discrimation, and a bot/eot sensor. The drive system is 3 motor, bi-directional and capstan controlled. Recording technique is bit serial, phase-encoded, and at a packing density of 800 bpi the total capacity of one cassette is over 5 million bits. The recorder comes with manual and another recorder (below spec) for spares. Best offer over three figures secures this bargain.
Mike Alger, The Old Orchard, Main Rd., Saltfleetby, Louth, Lincolnshire.

MK14 For Sale

Ready built Science of Cambridge Micro. with fitted connector, extra calculator keyboard, I/O chip, untested cassette interface board and all SC/MP data sheets, plus Kemitrons "Guide to SC/MP Programming." Cost £67 — Only £50. Steve Holmes, Hemel Hempstead 41826, after 6.30 pm.

For Sale

"Newbear 4K RAM/Prototyping Double Eurocard, unused, £5. Vero S100 Prototyping Card (2 available), £10 each.
Motorola D2 system, built and tested, manuals and special connector, unused — best cash offer or trade for V.D.U., S100 cards or anything of interest.
J.D. Millne, 38 Front Street West, Bedlington, Northumberland, NE22 5UB.

Adam Osborne book

'An introduction to Microcomputers' Vol.2. 'Some real products' new condition £9. 800pp.
R.G. Silson, Nr Station, Tring, Herts. (Tring 3281).

Video Monitor

Westinghouse 23" video monitor, fully working, input 0.5M 1pF .25 to 4V p.p sync. neg. with documentation £100.
Geoff Lupton, 1 Rosherville Villas, North Road, Havering atte Bower, Essex. Tel: Romford 49272.

8K BASIC for 77-68

Now available: 8K BASIC for 77-68 using Mon Board 1, VDU and bug 2 (as in ACC Newsletter). Supplied on Kansas City standard cassette complete with documentation. £15.
Contact B. Benson, Plumtree Cottage, Mill Lane, Legbourne, Louth, Lincs LN11 8LT.

For Sale

Data capture unit — actually consists of a digital cassette recorder (not audio) and contains about 50 ICs (CMOS) including 4-bit CPU. Size approximately 12"x9"x4". I/O via socket at rear or via 16-key keyboard and 16 7-segment LED readout. Keyboard in separate box attaches to main unit by multi-way coiled cord to main unit. The keyboard itself has rather weak springs so ought to be replaced. Full logic diagram supplied in 16 fullscap pages giving all pin connections and component values. £15.
Magnetic core storage (Mullard). No electronics but full Mullard data supplied (4096 x 25-bit words). Stack of 25 planes x 64 x 64. £8.
Graphics board. Contains 14 TTL ICs but needs 4 memory chips (21L02) and 2 D/A MC1406 chips. Intended for use with oscilloscope for display. See Byte article by James Hogenson (64 x 64 matrix display. PCB from Computabits Ltd. £5.
Light pen for interactive graphics (data supplied). See also SS Loomis article in Byte magazine. £1.
Bar decode pen fitted with coiled cable. For use with DCU and two circuit boards to convert from printed page to audio tones and to feed ordinary cassette recorder. Also included is a copy of a 'Paperbyte' version of Tiny assembler for 6800 bar code printed on good quality paper with listing (40 pages) — this alone costs $7. Also different separate Byte version of decoder PCB built. £5 the lot.
Plug-in board SS50 bus cassette interface, built using TTL to Microtrek design. 300 baud CUTS. Wired on Vero breadboard DIL. £4.
VDU Board. Bear Petitevid, built using 16 x 64 format sockets. ASCII keyboard thrown in. £80.
Metal case for microprocessor. Light grey ventilated top with 4" fan at rear (240 v) has sloping front panels for controls, and will take about 14 SS50 bus boards and PSU (that is what I had in mind anyway). Approximate size 16" x 17" x 8" with large transformer for PSU. £10.
Buyers collect. Details from John Smith, 7 Kettlebaston Road, Leyton, London E10. Tel: (01) 558 2397 (please ring first).

Photo credit: Dougie Firth

Jobs

For Sale

Honeywell Hall effect keyboard switches; 65p each, 10 for £5, 50 for £20. New blank key tops 10p each.
Cartridge tape drive with read/write electronics up to 1600 bpi, complete with new 300' cartridge. £80.
Large pc boards with over 200 ICs including 48x1K dynamics RAMs. £30 each.
SAE for further details to R.C. Harvey, 30 Wimbourne Close, Coombe Glen, Cheltenham, Glos.

Motorola Kit

Motorola D1 kit pcb and MIKBUG ROM for sale with full documentation. £10.
N.K. Wright, 25 Penny Park Lane, Coventry. Tel 0203 332527.

RAM card

One unused but tested 8K RAM card, suitable for SWTPC system. £105. Mike Watkiss, 49 Colville Gardens, London W11. Tel (01) 221 4829.

Texas RAMs

16 Texas TMS 4044-25 4K static RAMs. At preent burned in (though in sockets) in a 4K x 16 bit format but could easily be converted to 8K x 8 bit. Current list price for chips about £300. Selling for £130.
Details from Simon Garth, 8 Kestrel Place, St Neots, Huntingdon, Cambs.

Cassettes

DJM Services is offering 10% discount to ACC members off C-12 cassette prices (manufactured by Racal Zonal Ltd) provided they mention membership on their order. Discounts off the following prices: 5 for £3, 10 for £5, and 50 for £22.50 including postage and VAT. Cash with order only. Contact D.J. Murray, 82 Hilden Park Road, Hildenborough, Kent TN11 9BN. Tel: 0732 832815.

Pet wanted

Contact Nigel Worthington, 18 Iffley Road, London W6. Tel. (01) 748 1074.

Shop Cont'd

Paper Tape Punch

GNT Model 34 paper tape punch for sale, also paper tape reader (no info), 12 reels paper (8-hole). £20 or offers.

Richard Carrison, 9 Woodland Close, Penendon Heath, Maidstone, Kent. Tel: 61919.

Teletype

1 ASR33 (electrically sound but needs some mechanical attention) with full set teletype manuals and 10 rolls paper. £150 o.n.o.

Nigel Lewis, 24 Spring Terrace, Marston Road, Frome, Somerset. Tel: 0373 66492.

Libraries

General Library

I have been operating the General Library since July '77, say 20 months.

I have handled 94 transactions, of which only 12 were from the Greater London area, the rest covering the country nicely including the Isle of Man and Belfast, but thinning out towards the North.

Requests have tended to come in more frequently during the weeks following publication of the Newsletter. Activity amongst the Items was as follows:

Item	No. of Requests
Back Numbers of ACCN	43
Kansas City I/F	33
RS — 232 — C	19
7768 Manual	13
Kemitron Guide to SC/MP	12
Weeny-Bitter Manual	7
Baudot-machine Articles	4
MU-bus	1

Many pleasant memories crowd in on me as I come to the time to hand over to my successor. Often a member has added a helpful note when returning his items; others have held long and fascinating phone chats about their systems. You could honestly say that to have actioned a request has been to make a friend. One youngster brought his parents round to see me — charming people. I have been sent advice and tips, yes — whole listings to help me with Flic (Frank's Last In-house Computer).

I have made a point of asking members to include return postage when they write for information, and I have only twice been let down. On the other hand, not one of my clients has failed to return items and to pay two-way postage. I recall one member who, paying by cheque, included also the next one from the book, blank but signed! In several cases items which were wearing out have been photo-copied, supplies of envelopes have been included, etc. etc. As you will know, the General Library has been self funding.

I cannot think of any concomitant unpleasant events, though I have been badly frightened twice.

Once was when a member sent me his 6800 microprocessor chip to test in my 7768 by substitution. Not only am I old and clumsy, but having been terrified by the CMOS publicity, I felt I should work in full armour, with the soles spiked through to the subsoil, and I was certain I was going to break the tiny little legs under the chip, and have to buy him another.

The other time was when "Ms." came into vogue meaning Mr. Mrs. or Miss (this must have been about when 'Ball-park' was going out and 'Situation' coming in). No one ever puts a title on when writing to me, so I tried using "Ms." for a while; but stopped after I had a really roaring phone call in one of those tough Falkirk brogues — "Ye'll no' address me as MONSIGNOR, laddie, there's nae but rrreal meat under *my* kilt."

All in all, my tenure of office has been a source of great pleasure to me. Just a tiny note of regret, I don't number among my Library acquaintances even ONE girl!

Frank Cato, 3 Rykneld Way, Derby, DE3 7AT. Tel: Derby (0332) 513769

2650 Library

Enquiries run at the rate of about two per week on average during the winter months, slackening to about one a month during the summer. I have not yet had a specific request to obtain software not already available from the library.

Currently held library software includes monitors, editors, assemblers, disassemblers and games, and BASIC interpreters up to 8K. Enquiries seem to be on the increase, probably due to the increasing number of TV games which the 2650 is suited to.

However progress is also inhibited by the lack of locally produced 2650 printed circuit cards, although there has been some talk about the possibility of producing a pc card to the E78 standard (when it becomes finalised), if enough members show an interest.

Most 2650 users seem to be at a relatively early stage in assembling their hardware, so there has not been much library interchange of programs with members' software as yet.

51 Beechwood Drive, Feniscowles, Blackburn, Lancs. BB2 5AT.

Vendors' blurb

Comart

Comart has launched two new standard configurations of the Cromemco Z80A based microcomputer system.

The Computer System 3/64 featuring dual 8" diskette drives, Z80A processor and 64k bytes of 4MHz memory and including console and printer interfaces with language support of Macro Assembler, Fortran IV, Extended Basic, COBOL and Multi User Basic is announced at a price of £4385.

The Computer System 2/64 offering mini-diskette drives and 64k bytes memory is listed at £3050.

Information on these products is available from Comart Ltd., PO Box 2, St. Neots, Cambs. Tel. Huntingdon (0480) 215005.

Intel

The Intel 8022 has an on-chip 2K-byte mask programmed program memory which makes it impossible to employ a production 8022 for program development, so Intel has just announced an emulator board for this purpose called the EM2.

The EM2 is a small circuit board (5.24 x 2.75 inches) containing a special bond-out version of the 8022 (the 8022E) and a 2K-byte EPROM (8755A). The EPROM emulates the masked ROM in the production of 8022 and enables programs to be checked and debugged, since the 8755A can be erased and reprogrammed as often as required.

The 8022E in the emulator is a standard component and will not be offered separately. It contains a modified 8022 chip and is housed in a 64-pin package. The extra pins are used to bring out the 8022's address, data and control buses to allow the connection to the 8755A. Normally these lines are internal to the device and are not available to the user.

The EM2 plugs straight into the 8022 socket of the prototype system and there is no need for special leads or interfaces. Power for the EM2 is derived from the prototype system.

Using the EM2, a designer can develop the applications software on an Intellec development system and program the 8755A EPROM using a UPP 103 and UPP 955 personality card. The 8755A can also be programmed using either a Prompt 48 or 80/85.

Development software available includes the standard MCS-48 family macro assembler. If the control word 'Mod 22' is used, the assembler generates 8022 object code and issues a warning if a non-8022 mnemonic is encountered in the source code.

Intel Corporation (UK) Ltd., 4 Between Towns Road, Cowley, Oxford OX4 3NB. Tel: Oxford (0865) 771431.

Zilog

Zilog has announced a sophisticated software support package for users of the Microcomputer Board family.

The package consists of a FLOPPY DISC-BASED OPERATING SYSTEM, including DEBUGGING MONITOR, TEXT EDITOR, MACRO ASSEMBLER, and many file manipulation utilities.

The entire Z80-OS 2.1 operating system, and its software components, is *completely free from licenses or usage restrictions*, and is supplied against one-time-only charges. No royalty payments have to be paid by users who embody the software, or derivatives of it, in their products.

The most likely users are those who wish to implement industrial control instrumentation, data logging systems, educational computers, and their own small business systems. The package includes SOURCE CODE FILES for almost all of the operating system and utilities, with source of the EDITOR and ASSEMBLER remaining optional.

The source code of the 3Kbyte DEBUGGING MONITOR, which contains the floppy disc driver, is also included.

Zilog (UK) Limited, Nicholson House, Maidenhead SL6 1LD, Berks., U.K. Telephone: (0628) 36131. *(Cont'd)*

Cosmac Library

The Cosmac library was established in the autumn of last year from small beginnings with a list of 17 articles concerned mostly with RCA CDP1802 microprocessor hardware applications. There was a rapid response to calls for additional literature, and by December the list had grown to 60 items and now stands at more than 80. This rapid growth is largely due to the generosity of Geoff Ellis of RCA and Peter Halstead of Newark. The library now contains a seemingly complete set of RCA manuals and data sheets for a wide variety of support chips. Software is less well supported but listings of two versions of Tiny Basic are now available. Thus so far about 50 items have been loaned.

R.C. Sheppard, 15 Kinnaird Way, Cambridge.

6800 Hardware Library

The hardware side of the library is doing quite well and the list has just been updated, which brings the total number of items to 326. There are about 80 members continuously requesting items, and 145 lists have been previously dispatched.

Further details may be obtained from R.A. Forster, 18a The Barons, St. Margarets, Twickenham, Middlesex.

Cramer

Cramer has stocks of Motorola's latest monitors ranging from five-inch up to 21-inch.

Each modular display is supplied fully assembled on a light metal frame, and units are available for AC or DC operation.

Cramer are also franchised distributors for AMD, Motorola, TI and Zilog, as well as Alpha Wire.

SASCO

Newly available from SASCO, the International Rectifier IRF100 and IRF300 ranges of power MOSFETs offer a unique combination of drive characteristics, inncluding the ability to switch high current levels in nanoseconds, low drive current, the absence of second breakdown, ease of paralleling, and very high temperature stability. The IRF100 and IRF101 are high-current devices (16A drive current 80V and 60V drive voltages, respectively), while the IRF300, IRF301, IRF305 and IRF306 are high-voltage devices (350V and 400V, 4A or 5A).

The new high-power devices simplify control-circuit design because they are voltage controlled. Drive power is extremely low and gain very high, and there is essentially no deterioration of switching time with temperature. The devices' safe operating area leads to ruggedness in use, the transfer characteristic is relatively linear, and the ease of paralleling allows high current ratings to be achieved.

Applications include low-voltage switching and linear power supplies, audio amplifiers, d.c. motor control, invertors, choppers and micro-electronic-logic/power-interface devices, while the high-voltage transistors will find use in switching power supplies, motor controls, invertors, convertors, choppers and high-energy pulse circuits.

SASCO, P O Box 2000, Crawley, Sussex, RH10 2RU.

AMI

AMI Microsystems has announced the introduction of two new products.

The S6802 and S6808 microprocessors, which further integrate system function on board the chip, are object-code compatible with the S6800, and can address up to 64K bytes of memory. Each incorporates clock circuitry, thus eliminating the need for the S6875 clock chip.

The S6802 includes 128 bytes of RAM of which 32 bytes are retainable under stand-by power in power-down situation.

Only a 4MHz crystal is additionally needed for the operation of these 1MHz devices, which use the divided-down crystal output. They may therefore alternatively be used with a low-cost 3.58MHz colour burst crystal.

The S6802 and S6808 are both depletion load N-channel devices, and are available in 40-pin ceramic or plastic packages.

AMI Microsystems Ltd., 108A Commercial Road, Swindon, Wiltshire, England. Tel: Swindon (0793) 31345 Telex: 449349.

Distronic

Now available off-the-shelf from Distronic are two low-cost micro-processor development systems for the RCA CDP1800 COSMAC microprocessor family. Costing £100 (plus V.A.T.), the CDP18S020 evaluation kit is a complete kit of components for building an evaluation board for the CDP1802 COSMAC microprocessor, while the CDP18S021 Microterminal, which costs only £70 (plus V.A.T.), is a hand-held, non-hard-copy alternative to a teletypewriter data terminal.

The two systems are ideally suited to combined operation. The evaluation kit incorporates on-board utility read-only memory for terminal control. The Microterminal provides means of controlling a COSMAC system, reading and modifying memory, and providing hexadecimal input/output capability.

Distronic Limited, 50-51 Burnt Mill, Elizabeth Way, Harlow, Essex.

Stop Press

Committee Meeting 24th May 1979

Your newsletter now has a name: ACCumulator. We could not really go on just calling it the 'ACC newsletter'. It's quite a punchy name, don't you think?

Two new appointments have been created: local group co-ordinator and library co-ordinator — these two positions are taken up by committee member Paul Lecker and Peter Whittle respectively. The functions are not fully defined as yet, but we hope to give more details in the next newsletter.

Also, a subcommittee has been set up to organise publicity, exhibitions and promotions.

The new ACC constitution was briefly discussed too. Alan Secker is going to bounce it around with a solicitor pal of his and report back to the committee. In the meantime (I'm saying it again), let us have your views. The next committee meeting takes place around the middle of July.

Another cassette interface

As part of a local group project, I have designed a high-speed, high-reliability cassette interface. Although it is designed for a transfer rate of 4,800 baud, it seems quite happy at 9,600 baud. I believe it will go at least 50% faster than this if I change my baud rate generator.

It encodes at 97% (or better) of the Ahannon limit compared with a maximum of 80% with CUTS, so that 9,600 baud is effectively over 10K. It is based on an old technique used by IBM for over 20 years.

I have a TTL version of this (over a wire link) at 1MHz and I have heard of someone in the United States who has run a similar circuit at 10MHz.

The design certainly works; all that remains to be established is how other people outside the Gillingham Group can make use of this interface. To this end I am willing to make the circuit available to anyone who is:

1) willing to build it
2) willing to try it out
3) willing to inform me and other users of the results, and
4) willing to exchange tapes with other people trying out this interface.

If anyone is interested, please contact Tony Aylward, c/o Medway Groupp and program library, 194 Balmoral Road, Gillingham, Kent. There will be a charge for anyone who wants a copy of the circuit *and documentation* of £1.50.

The Zilog Z8000 — a winner?

Microcomputer Analysis, a monthly information service from Mackintosh Publications has carried out benchmarks on the Zilog Z8000 against a DEC PDP11-45 minicomputer and Intel 8086 microprocessor, and is of the opinion that Zilog's claim that it is two to five times faster than other 16-bit machines is, in the main, substantiated. Here are some extracts from the report:

An unusual feature of this machine is that it can run in either of two modes; system and normal. This, combined with two types of stack pointer which in the system mode uses one to store the information on the occurence of interrupts or traps and leaving the second in the normal mode free of system information overcomes some of the problems users experience in stack manipulation which are nototiously prone to error.

The Z8000 is available in two versions, the non-segmented version which can directly access 64K bytes of memory, and the segmented version which uses a 23-bit address bus to access up to 8 megabytes of external memory.

Zilog has also developed an automatic translator to enable present users of the Z80 to convert programs, although it is doubtful whether this level of compatibility is a real advantage, because extensive program alteration would be required to obtain the benefits of this feature.

The segmented Z8000 uses a separate chip, termed the memory management unit (MMU) to transform the 23-bit logical address to a 24-bit physical address. In effect the Z8000 can address 8 megabytes directly within a 16 megatbyte physical memory space.

Within an address space, any number of MMUs may be used to accommodate multiple translation tables; translation and protection tables may also be loaded and unloaded by the CPU treating it as an I/O peripheral.

The Z8000 offers over 110 distinct instruction types. The length of an instruction can vary from one to five 16-bit words, depending on its type and the addressing mode. With few exceptions, all data types and all eight addressing modes can be processed by all the instructions.

The Z8000 also provides signed-multiply and signed-divide instructions implemented in hardware for both 16 and 32-bit values.

The microcomputer analysis document looks at the benchmark comparisons with the PDP11-45 and the Intel 8086. In a summary of the more important results it is seen that the execution times for the single instructions are similar for both the Z8000 and the 8086. However in the area for which the Z8000 was designed, that is, the ability to handle long-word data input (32 bits) its performance is superior to the 8086. In all but multiplying memory and register the Z8000 s faster than the PDP11-45. However this comparison is somewhat suspect in that the PDP11-45 raw instruction execution speed is at least two to three times faster when matched with semiconductor memory with appropriately fast access times.

Zilog has taken particular care to minimise the number of words required to specify frequently used instructions, such as Jump Relative, Call Relative, Load Byte Register Immediate, Increment Address and Repeat Loop. This combined with a regular structure of architecture enables the number of instructions to accomplish a given task to be reduced, leading to faster execution times.

Next Issue

The ACC budget
Reclaiming ICs from old boards
Z8000 instruction set overview