

DREAMER

Nö 6

FEB '81

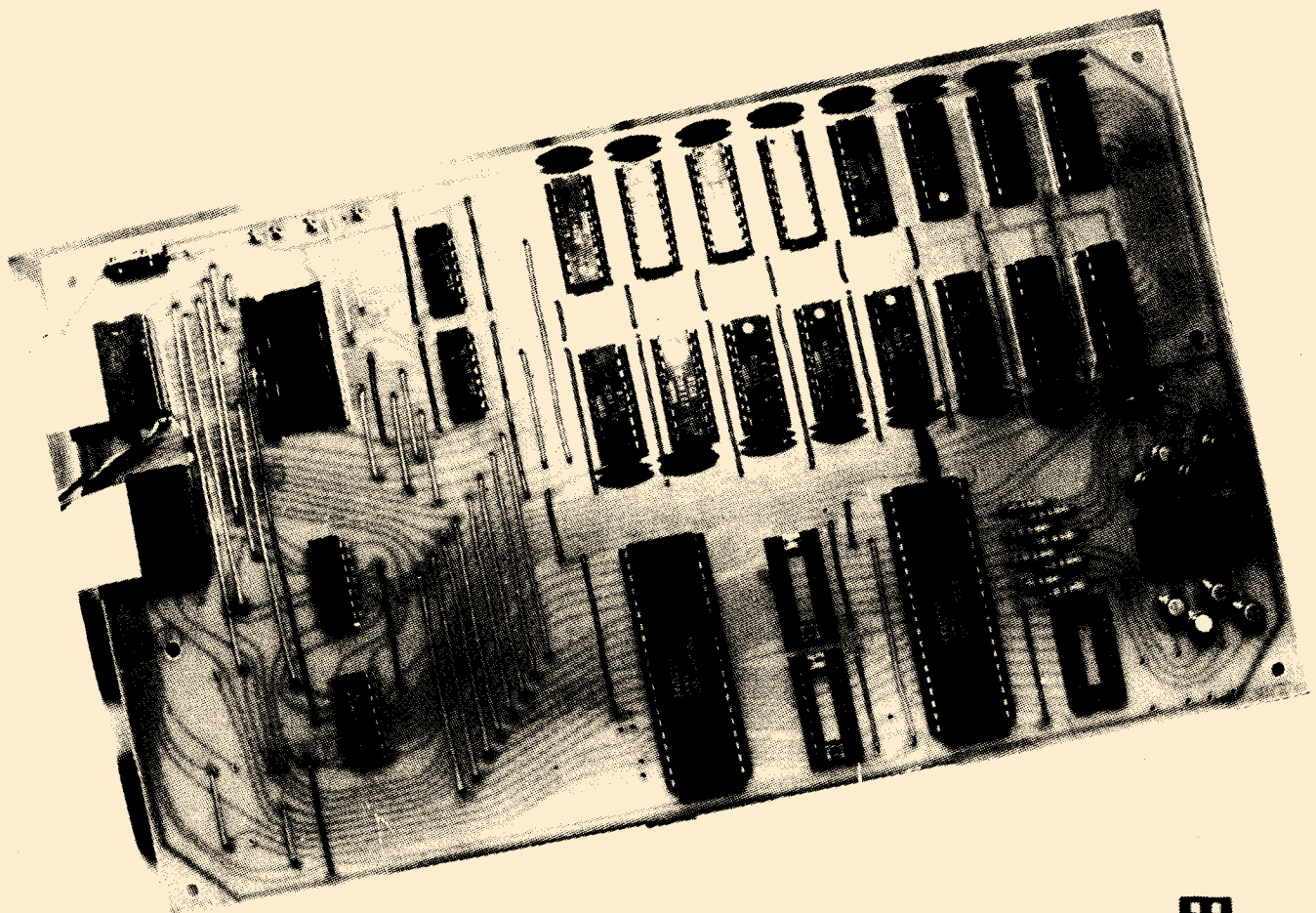
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'DREAM 6800'
NSW 6800 USERS
GROUP
G. SAMWAYS
G. NELSON



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D. R. E. A. M. EXPANSION KIT

DESIGNED ESPECIALLY FOR THE DREAM 6800 AND 6802 !!!
The printed circuit board in the kit has provision for:

* 8K RAM * TWO PIA's * ONE EPROM (2708 or 2716) * ADDRESS BUFFERS *
* SELECT LOGIC * DRIVE TRANSISTORS FOR OFF CARD OPTO-COUPERS *

4K EXPANSION KIT : \$99-00.

Consists of; DREAM sized fibreglass P.C.B.; 4K RAM ; All sockets ;
Address Buffers ; Select Logic ; Connectors and Instructions.

The 1K on the DREAM board is transferred to this board, making 5K in total,
expandable to 8K. The EPROM, if used, connects to one of the RAM addresses.

A "fully populated" board draws less than 2 AMPS. The P.C.B. is not sold
separately.

3 AMP POWER SUPPLY KIT : \$45-00. Now available separately.

Post, Packing and Insurance : \$5-00 on all orders. Phone Cash-on-Delivery
orders accepted. C.O.D. \$2-00 extra. Phone for details of Sydney counter sales.

Orders subject to a 7 day Money Back Guarantee. Use separate order coupon
enclosed with newsletter so you don't have to mutilate your copy. Available
only from:

J. R. COMPONENTS PTY LTD

P.O. BOX 128, EASTWOOD. N.S.W. 2122. TELEPHONE (02) 853385.



'DREAM INVADERS'!

This exciting action game, written by
Michael J. Bauer, is a must for all owners
of a DREAM-6800. Level of difficulty
increases as the game progresses, so it
suits everyone from beginner to seasoned
Space Invaders fans.
(Note: 2K RAM required.)

DREAMWARE

PO Box 343
Belmont VIC. 3216



Cassette plus instructions:
\$10. (incl. post; allow
2 - 3 weeks delivery.)
Program listing (6800 mach.
code) also available:
\$5 extra.



DREAMWARE TECHNICAL INFORMATION

From time to time, I hope to take a little space in the
'NSW 6800 User Group' newsletter to answer some of the more
common queries concerning the DREAM project. I will continue,
however, to answer individual queries, if time permits, but
please send a stamped S.A.E. if you hope to receive a personal
reply. In either case, you should write to:-

DREAMWARE Information
P.O. Box 343
Belmont VIC. 3216

We would like to make it clear to all our readers that this newsletter is compiled and published by THE N.S.W. 6800 USERS GROUP, and that we have no connection with Michael Bauer's "Dreamware", Graham Leadbeater's "Dreamsoft", J.R.Components, or any other organisation which may advertise in the DREAMER. We will review any products connected with the DREAM 6800 whenever we can, but please, check which organisation has advertised the product before you order it, as some orders have been going to the wrong places. E.G. It is no good ordering the 'Dreamsoft' EPROM, or 'Dream Invaders' from US, because we don't deal in them. Speaking of 'Dream Invaders', have you got your copy yet? It is a GREAT game, and where else can you buy a 'Space Invaders' game for \$10-00? We checked around the other day, and similar games for System 80, TRS-80, OSI, Apple, Pet etc., range from \$15 to \$35, and that is just for the program on a cassette. If you order 'Dream Invaders' from DREAMWARE, for \$10-00, you also have the option of purchasing the program listing for an extra \$5-00. The listing is not normally available separately, but if for some reason you don't want the cassette, the cost of the listing and instructions is \$14-00. We think that it is GREAT VALUE!!

We have had to depart from our usual practice of testing all programs before publication in the case of the BAUDOT TELEPRINTER article in this issue, as neither of us has a teleprinter. We hope it works okay for you. If you are a beginner, and do not feel that you can build up an interface in the manner described in this article, the 'DREAMSOFT' package contains very full instructions on how to build one, and there is also an article in Electronics Australia, January issue. Our thanks go to Kevin Shannahan, of Thornbury, Vic., who wrote to tell us that he had purchased a 'Dreamsoft' EPROM and was very happy with it, but had trouble finding a teleprinter. He eventually found a store that had "a half dozen or so". If you live in Melbourne, and are looking for one, try "Aussie Disposals", Cnr Roundtower Road & Sth.Gippsland Highway, Dandenong.

Our printer must have had too much 'Christmas spirit' the day he printed the January issue, as one page went through twice in some newsletters. If the last page of the article on 'How to Use Chip-8' is the same on both sides in yours, let us know, and we will send you the right page. The last page of the article should have the program listing from 0240 to 02A0, and the 'Radio Amateurs' bit on the bottom.

Have a close look at the program listings in this issue. Yes, that's right, they are done on our new Centronics 779 printer, not typed. We will be printing them directly from the DREAM after we test them from now on, to eliminate Garry's typing errors. Within the next couple of months, there will be an article on how to connect up a low cost printer, (not teleprinter) to your DREAM, for about \$250-00. It is the one shown on the front cover of issues two to four. Later on we will do the same for a Centronics Parallel Interface type, although these are much more expensive to buy.

Now that extra memory is readily available for the DREAM, (you have a choice of our 1-5K expansion board described in the first issue, the J.R. Components 8K board, and the 4K board described in Electronics Australia, December, 1980,) we will try to include a program each month that requires more than 1K RAM to run. Of course, for us to continue doing so, we will need MORE PROGRAMS, so if you have something half written, finish it off and send it in to us, please.

NEXT MONTH, we will have,

- Four new programs, SUPER SUB, (requires 2K), BLACKJACK, (break the bank of Monte DREAMo), PING PONG, (play against the computer), and MATHS TABLES, (help your children with their maths.)
- 8 BUG. A utility program which shows the contents of the variables on the screen.

- The next instalment of 'How to Use Chip-8.'
- How to add SOUND EFFECTS TO YOUR DREAM, by Michael Bauer.

Until next month,

Happy DREAMing,

Garry Nelson and Graeme Samways,

N.S.W. 6800 USERS GROUP,

[REDACTED]

ADVERTISING

If you would like some help, can offer some help, have something to sell, or would like to buy something, send it in to us with a fee of \$1-00, and we will print it in two newsletters. THIS OFFER ONLY APPLIES TO PRIVATE ADVERTISERS, and we would ask you to keep them reasonably short, something like the ones below. Commercial enterprises who wish to advertise in the DREAMER are invited to contact us for details of rates etc.

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WANTED : DREAM 6800. I literally destroyed my last DREAM 6802. (At a rough guess I think I internally haemorrhaged 18 of the I.C.'s one way or another.) Case, Keyboard, or Power Supply not required. Must be working, will pay any reasonable price. Write to B. SKEHAN, [REDACTED]

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DREAMER would like to contact other learner beginners with broad Micro-computer interest, to share information, routines and programs. If you would like some useful routines, send S.S.A.E. to FRANK REES, [REDACTED]
[REDACTED] (See Frank's article in this issue - Garry.)

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SERVICE FOR DREAM SYSTEMS.

Fred Lever, (Snr) is happy to discuss problems after hours on [REDACTED] or send letter with S.S.A.E., tale of woe and symptoms to [REDACTED]
[REDACTED]

If repair is required on DREAM send (P.C.B. only preferred) to above address. With faulty expansion boards, send BOTH P.C.B.'s as the problem may be on the main board. A fee of \$33-00 will cover post and normal repairs, exceptional repairs may cost more, but the owner will be advised before proceeding.

If you have a DREAM or EXPANSION KIT partly built, I will complete it for you, price will be quoted on individual jobs.

ERRATTA

The gremlins got at my typewriter last month. In 'How to Use Chip-8', Part 3, the addresses in the program listing read 0200 - 0232, as they should, then 0324, 6, 8, A, C, E, then revert to 0240 and so on over the page. This should read 0200 - 0240 in the normal manner. - Garry.

HOW TO USE CHIP - 8. (Part 4)

This month I will deal with some of the straight forward (?) instructions. The next two months will see the CHIP-8 instruction set completed, and I will then begin to explain groups of instructions, and programming hints, so please send in what you want explained, and I will start with the items most requested.

LOAD KK INTO X (6XKK)

This instruction stores the value specified by KK in the variable X. (Don't forget, that where we underline a character, such as X, this indicates that it is a CHIP-8 VARIABLE, to distinguish it from CONSTANTS.)

Say we want A = 00

We have 6XKK

We use 6A00

or,

We want 8 = C9

we have 6XKK

we use 68C9

ADD KK TO X (7XKK)

This instruction adds the value specified by KK to the existing value of X. Overflow is ignored in both directions, so that you go from FF to 00 without carry indication.

So, if we have C = 08,

and we want to add 08,

we have 7XKK

we use 7C08

the result will be C = 10

or,

if we have E = FF,

and we want to add 02,

we have 7XKK

we use 7E02

the result will be E = 01.

Alternatively, if L = 06,

and we want to subtract 01

we only have 7XKK

so we use 71FF

this effectively subtracts 01.

The number to be used for subtracting in this manner can be calculated by subtracting the number you wish to subtract from 100.

e.g. You need to subtract 01,

$$\begin{array}{r} \text{so} \quad 100 - \\ \quad \quad 01 \\ \hline = \quad \quad FF \end{array}$$

COPY THE VALUE OF Y INTO X (8XY0)

This instruction takes the value of Y, and stores it in X. The value stored in Y is not altered in the process.

We start with Y = KK

we apply X = Y

we now have X = KK, and Y = KK

e.g. If we want B = D

we have 8XY0

we use 8BD0

now, B = D.

ADD Y TO X, AND STORE IN X. (8XY4)

If we want to add one variable to another, we use 8XY4. This instruction, (8XY4) adds the value of Y to the value of X. If the addition results in Y being greater than FF, (i.e., a carry condition), F (Flag) is set to 01, otherwise F is set to 00. The result is then stored in X.

e.g. We want to add A to B, and increase C by 01 only if A + B results in a carry.

We want B = B + A

We have 8XY4

we use 8BA4

then, we want to add F to C

we have 8XY4

we use 8CF4

all together, starting with A, B & C set to various values,

8BA4

8CF4

say A = 02, B = FF, C = 00

we apply 8BA4

8CF4

we now have A = 02, B = 01, C = 01.

If we apply this again with these values, we get A = 02, B = 03, C = 01. (No carry) See December issue for use of 8XX4. (Doubling)

SUBTRACT Y FROM X, AND STORE IN X. (8XY5)

This instruction takes the value stored in the variable specified by X, and the value stored in Y, then subtracts the value of Y from X and returns the result to X. (Y is unchanged.)

If the result would have been negative, F will be set to 00. If the result was zero or positive, F is set to 01.

So, if you want to decrease C say by 01, 02 or 03, which is stored in D, and B to also decrease by 01 ONLY when C has gone through 00.

	- Result	0 or + Result
8CD5	<u>F</u> = 00	<u>F</u> = 01
7FFF	<u>F</u> = FF	<u>F</u> = 00
8BF4		

If C - D is -, B is decreased by 01.

If C - D is 0 or +, B is not changed.

Note that F will be reset by the 8BF4 instruction. (Think why?)

Another useful application of 8XY5 is to test if variable X is less than variable Y. (Unfortunately, X is lost in the process.) Can you see how it is done? If you subtract Y from X and X was less than Y, the result will be negative, so F is set to 00. If X - Y is equal to, or greater than 00, then F is set to 01.

This can be easily tested, and a skip instruction used, to separate less than, and greater than or equal to.

To avoid the loss of X, you can use a copy instruction, 8XY0.

Thus, we want to see if A is less than B, but we want to keep A & B.

We use 8FA0

8FB5

Now, if A is equal to or greater than B, then F = 01

and, if A is less than B, then F = 00.

Graeme V. Samways.

ALPHA DISPLAY ERROR ERASE

P. KOWALD,

I ran the Alpha Display by M.J. Bauer, (great stuff), the only problem I found was if you make a mistake, 1) it takes 4 bytes of memory just to erase the mistake, and 2) in the run mode, this bit of wasted memory shows up as jitters and flicks.

One alternative is to go along in the memory, find the mistake, and replace the offending sequence with no-ops (80) or (AA) which is a pain, and does not save space. Unfortunately my DREAM packed up, (Fred's got it now), so in my lonely misery I wrote the following bit of software for this problem.

If you key in a mistake, for the next instruction, key in AA. This will insert a no-op (80) in the previous location, then it will reset and start the program in the run mode, until the AA command is encountered, then it will stop the program and reset to the record mode, at the location where the mistake occurred, displaying the entire page, less the mistake. You then just carry on as if nothing had happened.

NOTE: You can also key in AA (Error erase)

A0 (User written function)

I use this to stop the program if you do not want it to be repeated over and over. (i.e., BB.), or it can be used as a no-op, for those with more memory, A0, A1, A2 etc. can be made to do anything.

CHANGE 027A to 12E8,

<u>THEN ADD</u>	02E8	40A0	
	02EA	12EA	Stop. As no-op change to 1208
	02EC	7CFC	
	02EE	4900	
	02F0	12FC	
	02F2	6080	
	02F4	A300	
	02F6	FC1E	
	02F8	F055	
	02FA	12E0	
	02FC	6901	
	02FE	1208	

The above routine is extremely useful in error correction in Alpha Display. If you want to erase a whole series just keep hitting AA and the display dissolves character by character! Keying A0 freezes everything, so you have to hit RST to restart.

This is a 'user written function', for all those who wrote and asked what one was.

Alpha Display is limited to the 0300 - 0400 area, however, 'Dreamtext' is not. See the review on the 'Dreamsoft' EPROM.

Graeme.

REVIEW OF THE "DREAMSOFT" EPROM

GRAEME V. SAMWAYS.

The DREAMSOFT advertisements in our December and January issues have generated a lot of interest, and a lot of people are saying things like, "Who and what is Dreamsoft?", "What does their EPROM do?", "Can I use it?", "Does it really work?", "Is it worth the money?", "Do I really need it?", so when DREAMSOFT offered us their software package for review, we jumped at it.

DREAMSOFT is a business started by two DREAM enthusiasts, Graham Leadbeater, of Ringwood, Vic., and Graeme Hollis, of North Bayswater, Vic. (All us Graeme's must be good with computers.- G.V.S.) They developed most of the software for their own use, but when they saw an empty EPROM socket on the J.R.Components Expansion board, they decided to make it available to other DREAMers at a reasonable cost.

The software package consists of a programmed 2716 EPROM and over 30 sheets of data and instructions. While not being the highest quality printing, the information is clear, and easily read and understood.

After an introduction, there is extensive instructions on installing the EPROM on the J.R. Board, including step by step instructions, P.C.B. overlays, and circuit diagrams.

When the EPROM is installed there is a test procedure on how to check each function of the EPROM and to familiarise yourself with it.

DREAMTEXT is then explained at some length, followed by the Subroutine information. (Nearly 20 major ones.)

Next is the section on DREAM - TELETYPE interfacing, and finally a full listing of the EPROM, which is nearly all fully commented, with Subroutine labels, and Jump and Branch addresses calculated and given also, which makes for easy hunting.

After installing your EPROM, (which should give you no trouble provided you follow the instructions given,) and you switch on, all you do is key 1C00, FN, 3.

* DREAMSOFT *

COPYRIGHT 1980 comes up, then the program asks KEY ?

This means, please enter a key. The key functions are:-

0 - RUN CHIP-8 PROGRAM This eliminates keying C000, FN, 3, at the start. (You must have a Chip-8 program in the DREAM, or it may go crazy.)

1 - TAPE LOAD. "Tape Load" comes up on the screen then it asks "Start Data?" You reply with a four digit start address. It then asks, "End Data?" You enter a four digit end address. It tells you to "Start Tape", (on the leader tone), and to "Hit any key" to start the load. The screen blanks, and returns after the dump and asks "Key?", again.

2 - TAPE DUMP. "Tape Dump" comes up on the screen, then you follow the same procedure as for tape load.

3 - TAPE VERIFY. This is used to compare a tape to memory. i.e., it checks tape alignment and quality of a dump, or checks a load. After the check it returns with either "OK", or "Error at **** ", then "Key ?".

4 - BLOCK MOVE. Asks for start and finish addresses, then start destination. After you reply with four digit addresses for each, it flicks out, and returns with "OK", "Key ?", etc. If there was an error, or you tried to move it to a spot where there was no RAM, it returns with "Error at ****", etc.

5 - BLOCK COMPARE. Similar to Block Move, but only compares the two blocks. If one is different, "Error at **** " comes up, or if they are

the same, it returns with "OK".

6 - BRANCH OFFSET CALCULATOR. The heading comes up, then, "From ?" You enter a two digit byte then it comes up with "To ?". You enter another two digit byte and it does the calculation, and returns with "Offset = ** ", then "Key ?". Forward and reverse offsets can be calculated, but no overrange indication is given.

7 - SUPERTYPE DREAM. First the heading, then "Start Data ?", you enter the start address, then "End Data ?", and you enter the end address. "Format ?" then appears, and you must choose one of four formats.

A - Address then 16 bytes, one at a time.

B - Address, then 1,2 or 3 bytes Machine Code, with Branch address calculated and displayed.

C - Chip-8. Address then 8 instructions.

D - Chip-8 Disassembler. Address and 1 instruction per line.

The machine then goes away and prints that block. (If the teletype is connected.)

The keys 8 to F are not wasted, either. If you hit 8, the computer looks at 00F0 - 1, for the start address of a Machine Code Subroutine, or a program etc. For example, you might put 0200 at 00F0, and load 'DREAM INVADERS' You then just get into this loop and hit 8, to start the program. You could store other routines, e.g., Editor, Memory Display, a real time clock, etc. Have these on tape and call them in this way.

Some of the subroutines are, Display ASCII character, Display ASCII string message, Get start data and end data, Invert screen, Scroll up 6 lines, Display Byte, Index, Wait 100 mSec - 1½ hours, plus many, many, more.

The teletype ASCII - BAUDOT conversion is automatic, and full instructions are included on how to interface the two.

Then of course, there is DREAM TEXT. Everyone will be asking "What is so good about DREAMTEXT ? It sounds just like Alpha Display!" DREAMTEXT was in fact based on Alpha Display, but some improvements have been added. Here is a comparison.

DREAMTEXT

ALPHA DISPLAY

Resident in EPROM	Needs to be loaded into RAM
Buffer length up to 5½K with your J.R. board. (0200 - 17FF)	256 Bytes (½K) (From 0300 - 0400)
Control of 2 external devices	None
Scrolling 1 to 16 lines	None
Wait for any key	None
Delays from 100 mSec to 1½ hours	Up to 5 seconds
16 User defined characters	None
16 User written subroutines	User written functions possible
63 characters (plus user defined)	48 characters
ASCII code	Non-standard code
Programmable bleeps	None
None	Bleep when near end of buffer
Review function	Cannot get back to record mode after fixing a mistake
Re-positions cursor on Erase	Leaves cursor where it was.

CONCLUSIONS:

We feel that the DREAMSOFT Software package is a very worthwhile addition to your DREAM, and will help you utilise the extra capabilities of your J.R. Expansion board. There are a lot of useful subroutines which will make your life a lot easier. Even if your interest in the DREAM begins and ends with playing games, the Tape Load, Tape Dump, and Tape Verify routines

REVIEW OF THE "DREAMSOFT" EPROM (Cont)

will be of real benefit to you.

We also felt that the price of \$30-00 is quite reasonable, as the EPROM takes the place of the last 2K RAM on the expansion board, so you do not need to buy those four 2114 chips, which would cost you the best part of \$30-00 anyway.

For further information, or to order the Software Package, write to, DREAMSOFT, P.O. Box 139, MITCHAM, Vic. 3132.

COMPETITION

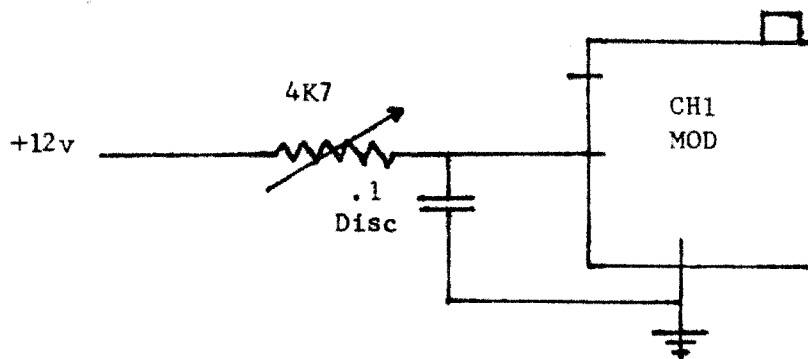
Don't forget our competition, which closes on the 15th February, 1981. The best games program we receive for publication which uses the Joystick controller described in the November, 1980 issue, will win a six issue subscription, valued at \$15-00.

The rules are simple. The program must be original, your own work, and be controlled by the Joystick, so go to it, the winner will be announced in the March issue.

SOLUTIONS TO PROBLEMS

There is a problem with the newer type Dick Smith CH1 modulator, (White label). I have sampled a good number, and most will not perform on 5v, they need at least 7-8 volts before they work correctly. On low voltage the output frequency drops, or the modulator stops entirely.

I suggest that people who are having problems run the modulator from the +12v supply. A 4K7 trim pot can be placed in series as 12v may be a bit high, and also you can adjust the frequency and quality of the video with the voltage.



Fred Lever (Snr)

K. SEMRAD

Imagine twelve small holes and two large holes in the ground. The small holes contain five marbles each. Player A has the black holes, player B the white ones. By pressing key 1,2,3,4,5, or 6 the player takes all the marbles out of his respective hole and places one by one into the next hole, going anti-clockwise, leaving the opponents large hole out. If the player's last marble lands in his large hole, he has another turn. The player with the most marbles in his large hole - when one player has no more marbles left - is the winner.

```
0200 6800 6A03 A37E DAB1 7A0A 3A3F 1206 7B08
0210 3B10 1202 6B16 6A03 DAB1 7A0A 3A3F 1218
0220 7B01 3B1F 1216 6A02 6B01 8CA0 8DB0 7D16
0230 7C08 A37F DAB7 DCB7 DAD7 DCD7 7A0A 3A3E
0240 1228 6A00 6B0C DAB7 6A0A DAB7 6A34 DAB7
0250 7A01 3A40 124E 6A01 6B08 6C13 DAB1 DAC1
0260 7A01 3A0A 125C 6A35 DAB1 DAC1 7A01 3A3F
0270 1268 6005 6100 A386 F11E F055 7101 310D
0280 1276 6000 A38C F055 A393 F055 22F4 6B0D
0290 CC01 3C00 129A 2366 129C 237A 8400 22F4
02A0 6000 A385 F81E F055 7801 3C00 12E2 480E
02B0 12C6 A385 F81E F065 7001 A385 F81E F055
02C0 74FF 7801 480F 6801 3400 12AA 3C00 12DC
02D0 4808 12EC 3C00 6CFF 7C01 12E8 4801 12EC
02E0 12D4 3807 12B2 12C2 2344 234E 22F4 2368
02F0 8400 129E 6E00 6A35 6B02 2318 7AF6 3E06
```

```
0300 12FA 6A02 6800 2318 6A03 6B18 2318 7A0A
0310 3E0D 130C 6A36 6800 A386 FE1E F065 4000
0320 133A A394 F033 F265 89A0 3100 133E 7903
0330 3E06 4E0D 7901 F229 D9B5 7E01 00EE F129
0340 D9B5 132E 6A10 6E0A FE29 DAB5 00EE 6A2E
0350 6E08 1348 6D07 F80A 4800 1356 88D5 3F00
0360 1356 88D4 00EE 2344 2354 3C00 7807 A385
0370 F81E F065 4000 1368 00EE 234E 1368 FE80
0380 8000 8000 8000 0000 0000 0007 1100 0000
0390 0000 0024 0003 0600 0000 0000 0000 0000
03A0 0000 0000 0000 0000 0000 0000 0000 0000
03B0 0000 0000 0000 0000 0000 0000 0000 0000
03C0 0000 0000 0000 0000 0000 0000 0000 0000
03D0 0000 0000 0000 0000 0000 0000 0000 0000
03E0 0000 0000 0000 0000 0000 0000 0000 0000
03F0 0000 0000 0000 0000 0000 0000 0000 0000
```

NOTE: You only need to key in the program up to 0390. The rest is workspace, which we printed in error. - Garry.

BRUCE MITCHELL,

This game was designed to introduce primary aged children to the techniques of defining an area by the length of two sides. Players take turns to remove patches of dots by keying in two hex digits, the first defining the length of the horizontal side and the second the vertical side of a rectangle which has the flashing cursor at its top left hand corner. The rectangle will be erased dot by dot after its 'area' is displayed briefly. If overlap occurs because a rectangle is wrongly defined a low beep sounds and the next player gets two turns.

Zero entries are not allowed, but can be used to cancel a wrong first digit if needed. The player who removes the last dot is the winner.

First time users of the game should have the contents of 0202 replaced with A0FA. This eliminates the random holes in the pattern.

```
0080 0000 0000 0000 0000 0000 0000 0000 6D00
0090 6B04 CA07 SCA0 8CB5 3F00 1092 6C00 6B00
00A0 4A00 10AA 7C28 7AFF 10A0 A300 FC1E F765
00B0 A170 FD1E F755 7C08 7D08 7B01 3B05 10AA
00C0 20D0 CE03 4E00 1200 00E0 108E F018 124C
00D0 60A0 F015 F007 3000 10D4 00EE D898 7802
00E0 3840 121E 6800 7908 3920 121E 108E 0000
00F0 0000 8000 8000 8000 8000 AA00 AA00 0201
```

```
0200 00E0 23CA 6800 6900 D893 7808 3840 1208
0210 6800 7904 3920 1208 6800 6900 A0F2 D898
0220 3F01 10DC D898 6800 D891 3F00 123C D891
0230 7802 3840 1228 6800 7902 1228 6018 6101
0240 D891 F118 D891 70FF 3000 1242 FA0A 13F0
0250 6200 6300 6400 6500 A100 F21E F165 A080
0260 F31E F155 A034 8EB0 F165 A100 F21E F155
0270 7208 7302 330A 1258 6C03 6D00 0000 0000
0280 0000 0000 83A0 7BFF 4B00 1290 83A4 1286
0290 A0FD F333 F265 6463 8435 3F00 12A4 F029
02A0 DCD5 7C04 6409 8435 3F00 12B2 F129 DCD5
02B0 7C04 F229 DCD5 20D0 6200 6300 A080 F31E
02C0 F165 A100 F21E F155 7208 7302 330A 12BC
02D0 A0F2 88E0 8C80 8DA0 DC91 7C02 23DC 6101
02E0 F118 6802 20D2 3D00 12D8 7BFF 7902 3B00
02F0 12D4 1218 0000 0000 0000 0000 0000 0000
```

```
0300 EEEE EEEA 8EEE EE64 8AA8 AA4A 8A44 AA84
0310 8AAA EE4A 8E44 AA44 8AAA CA4A 8A44 AA20
0320 EERE AA4E EA4E EAC4 E880 EACC EC0E AE00
0330 A880 AAAA 8A0A A400 E880 EARE EA0A A400
0340 A880 CAAA 8A0A A400 AEE0 AECC EC0E E480
0350 AERE 1D0D D5DC 1DC0 AAA8 1554 9514 1140
0360 EERE 1D54 9DDC 1540 AAA8 1554 9518 1540
0370 AA4E 155C 95D4 1DC0 AA80 E880 EEEE 4540 1550
0380 5500 A880 8AA8 0AA0 AA80 E880 AA8E 1550
0390 5500 A880 AAA8 0AA0 AA80 AEE0 EERE 1550
03A0 EEEE B857 50E8 EARE AA8A 9055 5088 8A8A
03B0 EEEA 1075 5088 EARE AC8A 1025 5088 8A8C
03C0 AA8A 1027 70EE E4EA 0000 A0FA 6A00 C83E
03D0 C91E D891 7A01 3A10 13CE 00EE 7DFF 3F00
03E0 00EE 03E6 00EE C640 8620 9721 7EC2 E500
03F0 FB0A 4A00 13FC 4B00 13FC 1250 03E6 124C
```

F. LEVER (JNR)

The object of this game is to parachute down to the bottom of the screen without being blown up by a randomly moving mine or drowning in two patches of living quicksand.

The keys used are : KEY C - to steer your 'chute LEFT
KEY D - to steer your 'chute RIGHT
KEY F - to JUMP from the platform

Sometimes the quicksand doesn't spot you and you can pass right through it. If you lose, any key restarts the program. If you win it restarts by itself.

To change the key functions, enter the key you wish to use at the following locations. Move LEFT, change 027D from 0C to 0(your key), move RIGHT, change 0283 from 0D to 0(your key), JUMP, change 0261 from 0F to 0(key) You can also use your 'Invader Control', described in the January issue to play this game.

0200	A346	6019	6100	D017	A34D	6218	6307	D231
0210	A34E	641D	6510	D453	A351	C6FF	6718	D671
0220	A351	38FF	6917	D891	CA02	CB02	A34E	D453
0230	84A4	85B4	D453	CA02	CB02	A34E	D453	84A5
0240	85B5	13D4	CC0A	A351	D671	86C4	D671	CD0A
0250	A351	D891	88D5	128C	4200	1266	4201	1274
0260	6E0F	EE9E	129C	6200	A346	D017	7001	D017
0270	3020	129C	6201	A346	D017	7101	6E0C	EEA1
0280	70FF	6E0D	EEA1	7001	D017	1298	D891	3F01
0290	1258	12D6	0000	0000	4119	13EC	6E0C	FE15
02A0	FE07	3E00	12A0	1228	7502	4509	7502	4516
02B0	75FE	4517	75FE	1228	6E20	FE18	00E0	6000
02C0	6A0A	6B0E	0352	DAB5	7A04	7001	3A36	12C4
02D0	FF0A	00E0	1200	6E20	FE18	00E0	6000	6A0C
02E0	6B05	0352	DAB5	7A04	7001	3A34	12E2	6A0E
02F0	6B15	0352	DAB5	7A04	7001	3A32	12F2	12D0
0300	6E20	DAB4	00E0	601E	6A12	6B08	0352	DAB5
0310	7A04	7001	3A2E	130C	6A06	6B10	0352	DAB5
0320	7A04	7001	3A3A	131C	6A0C	6E18	0352	DAB5
0330	7A04	7001	3A34	132C	6E70	FE15	FE07	3E00
0340	133C	00E0	1200	40E0	A040	E040	A0F8	88F8
0350	88FA	9630	CE03	5A7E	C198	3901	B7DA	E92E
0360	492E	0000	D7DC	4BDA	0000	B6FE	E92E	B6DE
0370	F3CE	D6DC	BBDE	F6DE	FEDA	B6DE	F3CE	D6DC
0380	0000	E92E	B6DE	3EDE	F6DA	E92E	F24E	B75A
0390	E7CE	B7DE	B6DE	D6DC	B6FE	E92E	E7CE	E7CE
03A0	E92E	F6DE	B6DE	B7DE	F24E	F24E	F6DE	B6FE
03B0	93DE	F248	E92E	E7CE	B7DA	F3CE	D6DC	8248
03C0	93DE	F248	B7DE	4BDA	0000	B7DE	F64E	B7DE
03D0	E92E	B6DE	450A	7502	4509	7502	4515	75FE
03E0	4516	75FE	D453	3F01	1244	12B8	6E30	FE18
03F0	1300	BBBB	BBBB	BBBB	BBBB	BBBB	BBBB	BBBB

MORSE CODE PRACTICE ROUTINE (0200 - 0340)

ALAN WARD

ZL2TWI (N.Z.)

This routine is ideal for supplementing morse code practice for amateurs. Sixteen letters are sent out while morse symbols are displayed on the screen. After you have checked your accuracy press Key F and the next random sequence is started. The program is biased toward the hardest morse symbols. Basic twelve words per minute adjusted by altering spaces between letters at 02EC.

0200	6900	6801	C00E	B208	1248	0000	1248	1248
0210	122A	122A	121E	C002	B21A	12D8	12DC	C006
0220	B222	127C	1280	1284	1278	C002	B22E	123C
0230	C006	B234	1288	128C	1290	1294	C006	B240
0240	1298	129C	12A0	12A4	C002	B24C	1262	C00E
0250	B252	124E	0000	12CC	12D0	12D4	128C	12C0
0260	12C8	C00E	B268	1262	0000	12A8	12AC	1280
0270	12B4	12B8	12C4	0000	2302	12DC	2302	12D8
0280	2306	12DC	2306	12D8	2326	12DC	2330	12D8
0290	232C	12D8	2330	12DC	232C	12DC	2326	12D8
02A0	2336	12D8	2336	12DC	2302	1290	232C	1278
02B0	2302	12A4	2330	1278	2306	1288	2302	1298
02C0	2302	128C	2306	128C	2306	12A0	2306	129C
02D0	2302	129C	2302	12A0	6A05	12DE	6A0F	FA18
02E0	4A05	A322	4A0F	A324	D891	7902	6C0F	FC15
02F0	FC07	3C00	12F0	3920	1202	670F	F70A	00E0
0300	1200	6A05	1308	6A0F	FA18	4A05	A322	4A0F
0310	A324	D891	7804	6C05	FC15	FC07	3C00	131A
0320	00EE	4000	E000	2302	2306	00EE	2306	1328
0330	2306	2302	00EE	2302	1302	0000	0000	0000

HOW TO SUBMIT PROGRAMS

To remain in operation, we need a constant supply of new programs, and articles about the DREAM 6800. If you can write an article on modifications you have made to your DREAM, or the use you are making of it, or if you have written any games, or utility programs, we invite you to submit them to us for consideration. ALL CONTRIBUTORS OF PROGRAMS PRINTED WILL RECEIVE VOUCHERS FOR TWO FREE NEWSLETTERS. CONTRIBUTORS OF ARTICLES AND IDEAS PRINTED WILL RECEIVE FROM ONE TO THREE VOUCHERS, BASED ON THE GENERAL INTEREST CONTENT OF THE ARTICLE, AND THE AMOUNT OF WORK THAT HAS GONE INTO IT. Along with the listing for all programs submitted, we will need a tape recording, with at least twenty seconds of High and Low "leader" on it. We need a leader to align our tape heads, and tune the DREAM input port. To do this you first must record 20 Sec High tone, then 20 Sec Low tone. The High tone is normal leader, and can be recorded normally. To get the Low tone, load in the following Machine Code program.

```
0200    8640  Accumulator A = 40
0202    B78012 Store in PIA output port.
0205    20FE  Branch back 2 bytes from 0207
0207    0000
```

This will produce a continuous Low tone when run 0200, FN, 3. After 20 seconds press RESET to return to normal. Then load your program. We need the electronic copy so we can test the program and verify the listing BEFORE printing, to eliminate program errors and increase the enjoyment of other users.

We will not be able to enter into correspondence, but will print corrections or improvements where necessary. We will not be selling tapes.

Programs submitted for consideration should be typed, for clarity, and set out in the following format:-

- 1) Program name and memory location.
- 2) Your name and address. (If you do not wish to receive any correspondence from other users, omit your address.)
- 3) The program explanation. (Don't forget key functions)
- 4) The program listing, typed single space. (If in doubt, have a look at the way the programs in this issue have been typed, and copy the format)

Following the guidelines set out above lets us check out the programs submitted quickly and easily. If you do not have access to a typewriter, we will accept a handwritten listing, providing it is LEGIBLE, and accompanied by a tape. However, if we cannot read your writing, and the tape will not load, or has 'bugs' in it, there will be no way we can check the program, and it will not be considered.

That's all there is to it, so send us in your favourites, and don't forget, for each one we use, you get vouchers for two newsletters free of charge. Should you be a prolific programmer, and accumulate some surplus vouchers, or have already paid a subscription to the newsletter, we will redeem the vouchers at a rate of six vouchers for \$15-00.

PRICE STRUCTURE

The cost of this newsletter is \$3-00 per issue. An advance subscription is available at reduced cost. Please write for details of cost and length of time remaining in current subscription period.

BACK ISSUES. Copies of all newsletters from No.1, September, 1980, are available at a cost of \$4-00 each, from:-

N.S.W. 6800 USERS GROUP,
[REDACTED]

(Please add -10c to all CHEQUES sent from outside N.S.W., to cover Stamp Duty charged by N.S.W. Government. This is only required on cheques and does not apply to Money Orders etc.)

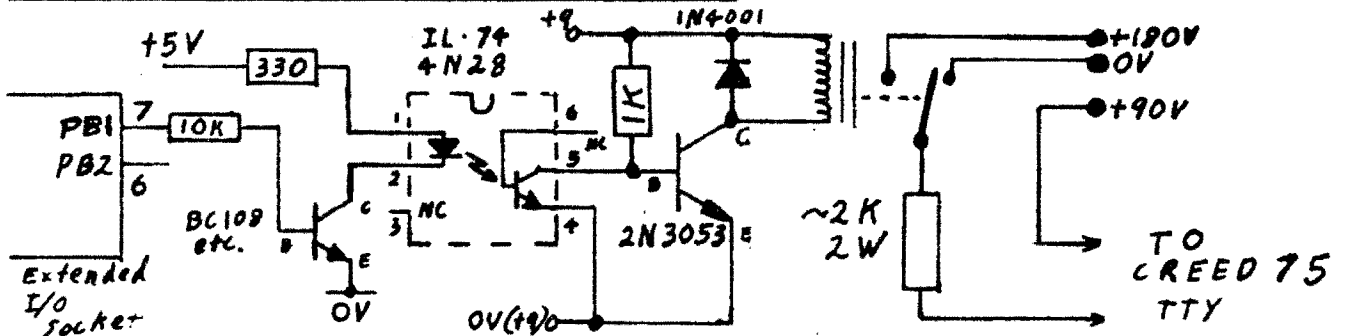
HOW TO INTERFACE A BAUDOT
TELEPRINTER TO YOUR DREAM

JAY MANN,

I use a Creed 75 teleprinter, with an ultra-cautious interface based on junk parts I had laying around. My driver is a junked fluorescent-display desk calculator with +90 and +190 volts for the display. (You can apparently use about 30 - 40 volts to drive teleprinters, which would be less terrifying, if you prefer.) My circuitry was built up with point-to-point wiring on a scrap of veroboard.

Note that the output from one single line of the PIA may not be enough to switch on an optoisolator. Instead of using a booster transistor, you can parallel several pins of the PIA.

THIS IS THE CIRCUIT DIAGRAM FOR THE INTERFACE



- NOTE: 1) Adjust 2 watt resistor to give 20-25 mA into TTY.
2) TTY sees approx. + 90 volts depending on which way the relay points.
3) To use paralleled PIA pins for more current, change instruction 0498 to 0F20.

The printer routine shown below is relocatable except for one table address. Alter location 04B0 (Address of Baudot table) if relocating the program. Load the program from 0400 through 04FF.

To print, say from 0212 through 0368, use CHIPOS to deposit "0212" at locations 00E4 and E5; then deposit "0368" at locations 00E6 and E7.

The program will adjust these to give an even range, so you will actually get 0210 through 036F printed. Many teleprinters take a few characters to get synchronized, and the CR/LF this program starts with may not be enough. If so, start printing one line ahead of what you really want to see. Start the program with 0400, FN, 3.

0400	86F8	94E5	97E5	96E7	840F	270A	7C00	E726
0410	037C	00E6	20F0	8D5C	8D32	DEE4	8D3E	9CE6
0420	26FA	8D55	398D	0086	C88D	5739	3644	4444
0430	448D	7A8D	4D32	840F	8D73	8D46	39DF	F496
0440	F4D6	F537	8DE6	328D	E38D	DA39	86D0	8D32
0450	86C4	8D2E	86F6	8D2A	7C00	F839	8DEE	DFE6
0460	8DDB	C608	A600	8DC4	A601	8DC0	8DB7	0808
0470	5A26	F139	8636	BDC2	FE86	0297	8012	397E
0480	C360	37C6	0744	8D0C	8D17	5A26	F80D	8D04
0490	8D0F	3339	3724	04C6	0620	015F	F780	1233
04A0	39DF	F2CE	0780	0901	26FC	DEF2	39DF	FOCE
04B0	04E5	4D27	0408	4A20	FAA6	0001	2B09	7D00
04C0	F827	0B8D	0C20	077D	00F8	2602	8D0D	DEF0
04D0	3936	86FE	8DAC	7F00	F832	3936	86F6	8DA2
04E0	7C00	F832	39EC	EEE6	C2D4	E0EA	CECC	F046
04F0	725C	5242	5A3F	16DC	C1FF	3101	1632	C133

MODIFIED JOYSTICK SERVICE ROUTINE (0200 - 0300)
AND TEST PROGRAM

GARY BIDGOOD,
[REDACTED]

When using the tone, with the Joystick service routine as written by Michael Bauer, I found that the maximum tone time was approximately 60 m sec. The problem occurs at address 0232 of the original service routine, the instruction being to clear PIA B, (7F 8012), which means that if the tone is being used, once the frame counter reaches the fourth frame, the tone is turned off due to PIA B being reset. To overcome this problem, I have added an extra 5 bytes, starting at 0232.

All I am doing is testing for tone. (40) If present, all bits except for tone are reset, the flipflops are thereby triggered, the PIA B data is then ORed with flipflop data, (21) and stored at PIA B. With these extra steps the data at 0202 is changed from 1264 to 1268, also the appropriate locations in the test program. To try and make it easier to follow, I have rewritten the programs.

0200	0204	1268	C63B	F780	13C6	61F7	8012	C63F
0210	F780	13CE	0219	DF00	397A	0020	7A00	217D
0220	8012	7C00	1696	1684	0327	013B	86FF	973C
0230	973D	B680	1284	40B7	8012	8A21	B780	12C6
0240	4AB6	8012	4646	2403	7C00	3C46	2403	7C00
0250	3D5A	25ED	963C	800A	2C01	4F97	3C96	3D80
0260	0A2C	014F	4797	3D3B	00E0	86C0	87D0	A29E
0270	D671	A300	F633	6A08	6B04	228E	A300	F733
0280	6A14	228E	56C0	1268	57D0	1268	1284	A300
0290	F265	F129	DAB5	7A04	F229	DAB5	00EE	8000
0300	*****							

LOAD RAM WITH "WHATEVER"

(0200 - 0210)

R. SCHMIDT,
[REDACTED]

UE,

This program is in machine code. It is used for filling an area of RAM with a particular HEX character, for example 00, 3F, FF etc. It is relocatable without modification.

It is very useful to fill RAM with 3Fs before loading an experimental machine code program. Then, if the program goes "wild", it will not "eat" everything in sight.

The program is used as follows.

Load RAM start address into	0080	0081
Load RAM end address into	0100 (msb) and 0101 (lsb)	
Load "whatever" into	0102 (msb) and 0103 (lsb)	
GO from 0200.	0082	0083
	0084	

0200	FE 0100 0080	LDX START	LOAD X WITH RAM START
0203	B6 0104 0084	LDAA "WHATEVER"	LOAD A WITH "WHATEVER"
0206	A7 00 LOOP	STAA 0,X	STORE "WHATEVER" IN CURRENT LOCATION
0208	BC 0102 0082	CPX FINISH	IS IT FINISHED ?
020B	27 03	BEQ END	YES - STOP
020D	08	INX	NO - INCREMENT X AND
020E	20 F6	BRA LOOP DO AGAIN
0210	7E C360 END	JMP C360	DONE.

CHANGE START ADDRESS

FRANK REES,

BOORT. 3537

Would you like to be able to start a Chip-8 program from wherever you like? This routine allows you to start where you wish, not at 0200 all the time.

Say you had a Chip-8 program at 0200 - 0400, and modified another to fit in 0400 - 0600. This would allow you to have two, (or more), programs in your computer at the one time, and to use both without a block move. Or, the first four instructions of a game may be used to reset the score. You could use this routine to restart without resetting the score.

```
MMMM    BD C079    Clear screen
          CE XXXX    Load Index to XXXX (Used to be 0200)
          7E C005    Go to C005
```

MMMM is the new location to run from, instead of C000. (I.E. Instead of C000, FN, 3, you now go MMMM, FN, 3.

XXXX is the new location to start the Chip-8 program from, instead of 0200.

```
Try      0080    BD C079    Erase
          0083    CE 0090    Restart from 0090
          0086    7E C005    Go to C005

          0090    CA3F        ) Original random dot display
          0092    CB1F        ) program modified to run from
          0094    A09A        ) 0090.
          0096    DAB1        )
          009A    8000        )
```

Run this 0080, FN, 3. It is as simple as that.

WANTED

Here is a selection of things that people have requested appear in the newsletter. If you would like to try your hand at writing a program, or an article, but can not think of a subject, why not try one of the following?

- A CHESS program
- DRAUGHTS
- HANGMAN
- Interfacing the DREAM to external devices.

RADIO AMATEURS

If you would like to contact other DREAMers on the air, send in your particulars in the following format, and we will print an updated list every three months. The next list will appear NEXT MONTH.

NAME	CALLSIGN	TIME AND FREQUENCY FOR CONTACT
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