**the newsletter of apple-q
the Brisbane Users Group**

February - March
1986

In this issue:

About the Macintosh Plus

Technical Notes

Robert's Corner

Will an Apple //e fit inside a Mac ?

CREDITS

Editorial

Peter J. Pegg

This issue of *apple-bug* has been set using *PageMaker*, a very sophisticated type-setting program from Aldus. The program has the advantage of allowing text and picture files to be incorporated in a publication quickly and easily. To avoid some of the disruptions which have recently occurred in the production of *apple-bug*, additional copies of the *PageMaker* templates have been prepared and located strategically.

Now all we need is some input from you, the members!

What's when
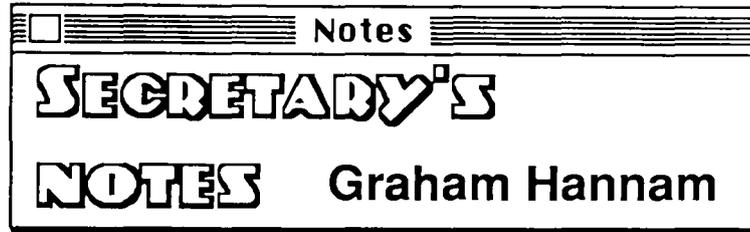Sunday 16 March 1986
Open day at the Hooper Centre

Monday 17 March 1986
Committee meeting

Sunday 20 April 1986
Open day at the Hooper Centre

Monday 21 April 1986
Committee meeting

Notes

SECRETARY'S
NOTES Graham Hannam

As David Bourne has gone overseas to America for 6 months on a sabatical I will be your acting Secretary until he returns.

It is pleasing to see that the membership is increasing, we are now posting out approximately 200 issues per month with copies going to every Apple retailer in Queensland and the Northern Territory.

Despite the increase in membership however we are not getting sufficient original articles or publication in the Newsletter. With the exception of a few very good articles towards the end of last year most of the contributions come from Committee members. I am sure that there must be many members doing amazing things with their Apples, so come on .. amaze us !

It may also be worth mentioning to new members and reminding old (...oops I mean established) members that the Newsletter can be a very effective way of selling old equipment or books. There are many users who work on a tight budget and are always looking for a bargin.

Since our last publication several books and magazines have arrived in our mail box along with some interesting advertising material relating to new Apple products. Some note on these items will be published as quickly as possible and they will be available for perusal at the next Open Day.

MacStuff

A quick look at the differences between the 'original' Macintosh and the **new** Macintosh Plus. Externally, as the illustration below shoes, there is not a great deal of difference - from 10 paces confusion is likely to reign. The legend Macintosh Plus and the extended keyboard incorporating a numeric keypad and cursor direction keys are the major differences.
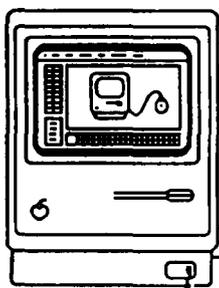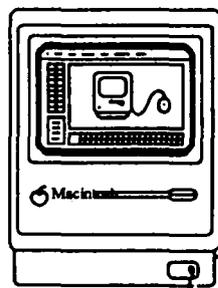
Macintosh   Macintosh Plus

Internally we find

    1 megabyte of memory
    800k double sided disk drive
    128k of ROM routines
    an SCSI "scuzzy" port for hard disks etc, and
    new printer/modem connectors.

Much has been written about how good these new features are, but what about problems associated with these 'advances'. So far the folowing are some which have been identified

    Thunderscan does not work
    MacVision does not work
    JAZZ is not happy
    OverVUE gets dates wrong with the 'Australian' system
    MacBase wil not perform a merge. [more next issue!]

4
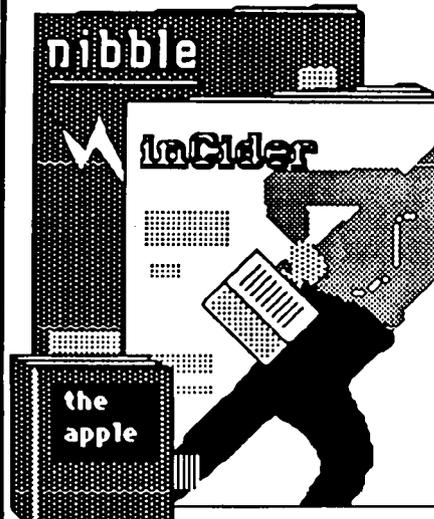
Library notes

Pat Bridge

Dear members,

The following books have been outstanding from the library since 1984. They are both hard to come by and therefore we are not able to replace them. I hesitate to name people and remind them that these books are still outstanding. The offending titles are:

Book no. 86 *Applesoft manual* published by Apple Computer Inc.
Book no. 90 *Applesoft language* by Brian Blackwood.
Other long outstanding titles are:
Book no. 91 *Apple interfacing* by Jonathon S. Titus
Book no. 15 *Understanding computers* by Paul M. Chirlian
Book no. 17 *Home computers* by Rich Didday
Book no. 8 *Fortran fundamentals* by Jack Steingraber
Book no. 100 *Computer Studies* by Anderson & Camiller

There are many magazines which have been out longer than 6 months. Could you all please check your unused computer goodies and make sure that items belonging to the club have been returned, especially if you are no longer coming to club meetings on a regular basis.

Robert's Corner
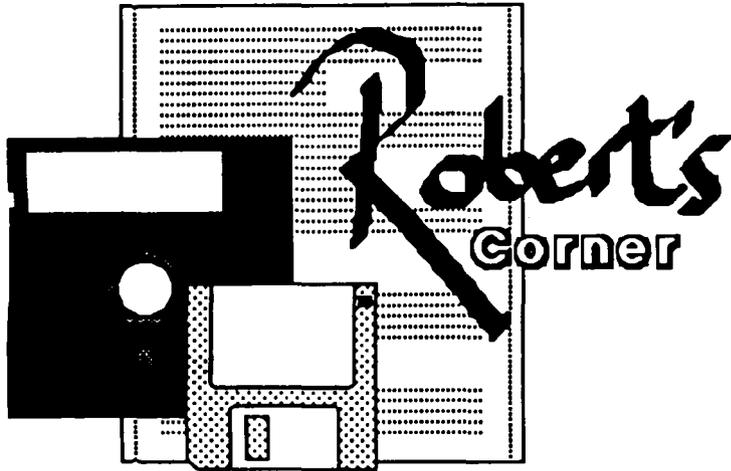
I have received 20 double-sided Softdisk Magazette disks. These have all been catalogued but no reviews of the programs contained therein as yet.

There are a total of 2313 programs on these disks ..... those members familiar with the SoftDisk will know that each disk contains the SoftDisk system programs .... so naturally the programs you may find useful will total a little less than this.

For those who wish to be selective I have produced a catalog of each pair of disks, e.g.

Disk 39 (two disks) comprises

> Disk 1 (39) both sides, and
> Disk 2 (39) both sides.

The catalog format is

Disk 39	Disk 1	Side A	Catalog 039
Disk 39	Disk 1	Side B	Catalog 139
Disk 39	Disk 2	Side A	Catalog 239
Disk 39	Disk 2	Side B	Catalog 339

For those members who would like a hardcopy catalogue, I am prepared to provide these for a nominal fee of 20 cents per catalog set (039 --339 through 048 -- 348 incl).

This offer applies only to current financial members who attend monthly club meetings. Country members should send a foolscap stamped addressed envelope to take advantage of the same offer.

5

6

FROM THE TECH NOTES

Interrupts

This note describes the interrupt handling routines in the Apple II. It must be assumed that the user is familiar with the 6502 interrupt requirements as defined in the Synertek Programming and Hardware manuals (A2L0003 and A2L0002). This note applies to the interrupt request (IRQ). The use of the non-maskable interrupt (NMI) in a disk system is not recommended. The data and programs may be destroyed if an NMI occurs while the Apple is writing data to the disk may be destroyed if an NMI occurs while the Apple is writing data to the disk. The DOS disables IRQ during critical code making it relatively safe to use.

Hardware

The Apple peripheral slots have three pins defined for interrupts.

    IRQ, Interrupt ReQuest   pin 30
    INT IN, daisy chain in   pin 28
    INT OUT, daisy chain out pin 23

The daisy chain structure allows an interface card to disable the next higher number card from requesting an interrupt. Slot 0 has the highest priority and slot 7 has the lowest.

The system was desigbed so that if INT IN for a slot is low then that slot may not generate an interrupt. Each slot should pull INT OUT low when it is requesting an interrupt to disable lower priority slots. Cards that don't use IRQ should wire INT IN and INT OUT together so that any higher priority slots can still disable cards in lower priority slots. This priority system fails if there is an empty slot between any two interrupting cards.

The hardware logic required to generate INT OUT is INT IN anded with the active low interrupt signal from the peripheral device. IRQ is INT IN anded with the active high interrupt signal from the peripheral device.

Software

There are two ways to cause the 6502 to follow the IRQ vector, a logical zero on the IRQ pin of the 6502 while the IRQ flag of the processor is cleared or executing a BREAK instruction in a program. The first thing that the Apple monitor does is determine whether a BREAK or an IRQ has occurred. In the Auto start ROM this routine is at $FA40. This routine stores the 6502 accumulator at location $45 and retrieves the processor status

flags. A BREAK will drop into the monitor with the address of the BREAK operation code + 2 and a dump of the 6502 registers. The Auto Start ROM has the option of jumping to a user's routine after a break. The monitor ROM will jump to the address contained in memory at $3FE and $3FF after an IRQ.

Interrupt Request

The user must have the address of his interrupt handler stored in $3FE and $3FF before the first interrupt is generated.

The accumulator does not contain valid data when it is vectored to $3FE and $3FF.

The accumulator must be restored from location $45 before executing the return from interrupt instruction, (RTI). The user must also be careful to leave the other registers as they were when the interrupt occurred.

Interrupts and BASIC

If the user is careful to restore all the 6502 registers and not disturb BASIC's memory locations in the interrupt handling routine, the interrupt will be transparent to BASIC. Be very careful of page 0 locations. Save and restore any information on the stack when you're not sure.

Applesoft and Integer BASIC both use the 6502 stack extensively to keep track of GOSUBs and FOR-NEXT loops. This makes it difficult to have an interrupt modify BASIC program execution. The easiest way to affect the BASIC program is to have the interrupt set a flag byte when an event occurs and have the BASIC program PEEK that address and respond if anything happened.

The Applesoft ONERR GOTO statement may be used to modify the execution of an Applesoft program when the interrupt occurs. The following machine language routine causes an 'error' condition in Applesoft:

```
10 POKE 800,162: POKE 801,100: POKE 802,104: POKE 803, 104
20 POKE 804,104: POKE 805,76 : POKE 806,233: POKE 807, 242
30 POKE 1022,0: POKE 1023,8
40 ONERR GOTO 1000
50 PRINT "NO INTERRUPT"
60 GOTO 50
1000 IF PEEK (222) <> 100 THEN END
1010 PRINT "INTERRUPT!!!"
1020 RESUME
```

The POKEs set the IRQ vector to generate an error number 100 when an interrupt occurs. The Applesoft onerr routine can check decimal location 222 and if it doesn't equal 100 then you have a normal Applesoft or DOS error. Treat the IRQ generated error like any other Applesoft error. RESUME and the routine on p.82 of the Applesoft Reference Manual will work normally.

7