Okay, okay, so no one could think of a better heading for it, we tried 'Hardware Lidd-ons', 'Liddon's Link Up', even 'ZZAP!TECH' (ouch), but there it is. What's it all about? Read on (oh, by the way, it's by ZZAP! TEA 'N TECHNOSPERT GARY LIDDON, as if you hadn't realised).

Although ZZAP! 64 is really a games magazine, there have been letters from readers asking for technical advice about the 64 in the past, and others asking for details on various utilities and hardware, so as I am merely an humble techno-pawn in the great game of ZZAP! Towers chess, I thought I would start an irregular column on the subject (that's because I am an irregular person). Here goes . . .

STOPPING TIME

Freeze Frame is likely to be a name you've heard, probably accompanied by some sort of controversy. For those of to whom the words Freeze Frame have no meaning at all I will explain:

This handy little widget allows almost any one-load game to be backed up on either disk or cassette at the mere push of a button. The way it works is really rather clever. Contained within a cartridge that, quite logically, sits within the cartridge port, Freeze Frame boasts a little red button that is connected to the machine's RESET line. Once this is pressed it sends a pulse into the machine that it can't ignore. When a RESET happens the program currently being processed is interrupted and a special reset routine is run instead. Without Freeze Frame in you would just be returned to the familiar Commodore 64 **38911 bytes free** message but Freeze Frame replaces the routines that happen when RESET occurs. Instead of turning the screen blue and printing a silly start up message, Freeze Frame dumps the whole of Mr 64's memory onto disk or tape. It also dumps a little loader program as well that reloads all the memory dumped back into the computer and sets it up exactly as it was when the button was pressed. Boot up the loader program and after a bit of a wait your Commodore is in exactly the same state as it was when

"FREEZE FRAME"

you originally plonked your sweaty finger on the red button, whether you've got the cartridge in or not.

For those of you a bit less than technical, this means that a full back up of any one-load game is but a mere red button push away.

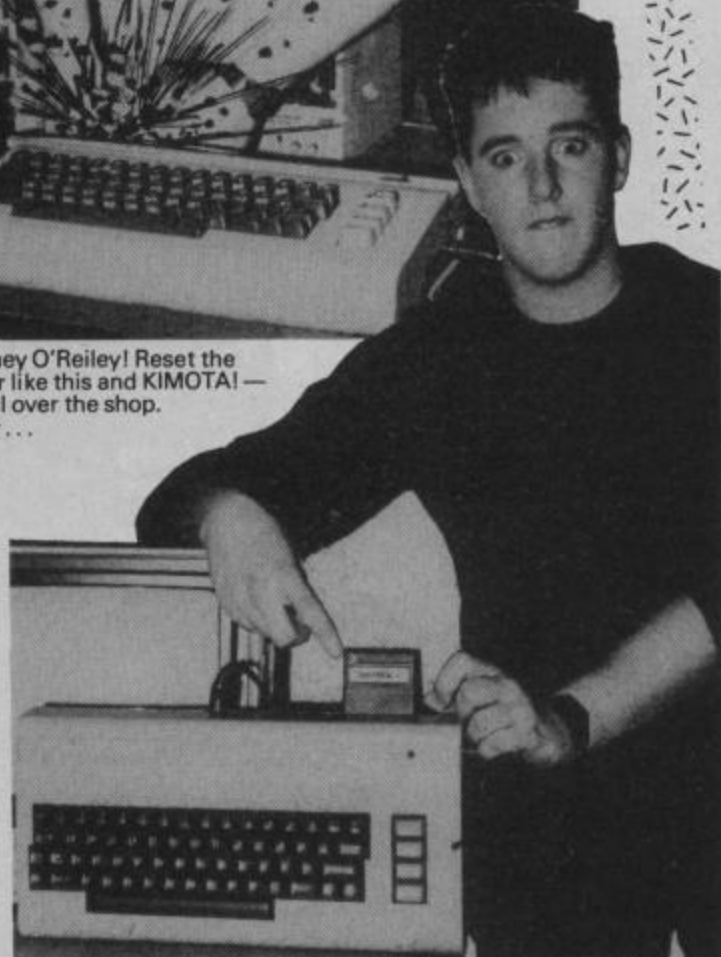Using FF is a sinch, power up your 64 with the cartridge in and an instruction screen

Well blimey O'Reiley! Reset the computer like this and KIMOTA! — carbon all over the shop. However . . .

. . . with Evesham's Quickdisc installed you can reset until the cows come home. Never again will you have to dig shards of plastic out of your eye because you miswielded your paperclip. THIS is the safe way of entering Mr Penn's POKEs unless, of course, they're POKEs for Little Computer People (tee hee).

G.L

NOW THAT'S NOT FUNNY, GARY!

comes into view detailing the easy steps of backing up a program. Press return and the blue on blue power returns, from here just load up the software to be transfrered in the normal way. When at suitable point in the game, ie the title screen, bash the button and the screen goes into 'eppy' mode. Do not adjust your set as this is perfectly normal.

There are two things that you could do here:) Press D and have everything dumped to disk, or 2) Press T and have it all stream off to the datacassette. The handy thing about *Freeze Frame* is that when everything is reloaded it whizzes into the Commodore at turbo speed so even though all the machine's memory has been dumped it doesn't take that long to get back in.

However, when using a disk drive it's not as easy as the inlay suggests. Quite a few of the fast loading

systems used on commercial software are a bit tetchy about timing. Quite understandable considering how fast the data is being forced down the cassette wire. The sort of thing that has them failing to load all over the place is leaving the disk drive on as it can sometimes slow down the 64 a little bit. I found that the best thing to do when transferring a game to disk was to leave the drive turned off until you actually pressed the button. Some games even protest at having the disk drive turned on when they are running, so taking power away from the drive in the game's title screen is sometimes necessary.

I tested *Freeze Frame* with quite a few games and failed to find one that wouldn't work. There were some rumours that *Bounder* from Gremlin Graphics is immune but the office copy was nowhere to be found. In theory there are ways to protect against *FF* but it would involve a lot of meddling around with the CIA's unreadable TOD alarm clock registers.

TURBO DRIVING

Another product kindly lent to us by Evesham was their *Quickdisc* cartridge which they claim speeds up the operation of the incredibly sluggish 1541 disk drive. Not only that but a comprehensive range of disk related utilities to make life just that little bit easier. The extra commands are provided in the form of the Dos 5.1 extensions on the test/demo diskette free with every 1541. Using the **at** ( ) sign as a prefix, all the usual scratch, format and rename commands are easily accessed without all the hassle of OPENing and CLOSEing files. Getting a directory onto screen is very easy with *Quickdisc* onboard as simply typing the dollar (¼) sign and pressing RETURN draws it up. SPACE pauses the directory and RUN/STOP stops it.

The turbo itself likes to let you know it's there by sporadically flashing the screen whenever it's performing a turbo type feat. The advert claims that *Quickdisc* will speed up disk operations by up to a factor of five. This isn't true though

the speed improvement is still quite impressive. The table below shows how long in seconds it took to load and save out a 16K block of memory with, and without, the turbo.

Other handy extras found within the 8K ROM are a fast file copier, a disk back—up routine and a fast formatter. The copier is a simple affair that allows different files to be copied from disk to disk with only one drive. More than one file can be copied at a time and all the usually time hungry loading/saving is performed at turbo speed. Disk back up copies a whole disk in several passes taking a total of three minutes to do the job. Fast format claims to format from new a whole 5 and a quarter in ten seconds. These must be Evesham seconds as in real time it

Table showing time in seconds for various disk operations.		
	Normal	Turbo
16K Load	43	10
16K Save	55	27

takes slightly longer than that, only a little bit longer though. Definitely an improvement on the couple of minutes that you're supposed to wait.

Because of the complex cartridge switching techniques (which the inlay informs were developed on the Isle of Wight) *Quickdisc* is supposed to use absolutely no memory at all. Don't believe it, after a bit of experimentation I soon found that it was prone to messing about with some of zero page. Still as long as you are aware of the problem it shouldn't prove to be one. With commercial software there weren't many problems to be found at all, the *Quickdisc* performing admirably throughout.

A handy addition *Quickdisc* offers the 64 is a reset switch. No more fiddly messing with paper clips around the user port. What's more, programs normally protected against resetting are rendered helpless when *QD*'s reset is hit. This makes the implementations of Mr Penn's pokes very easy indeed.

For £19.95 *Quickdisc* is just the sort of thing that any habitual 1541 user should have. It quickly proves to be an invaluable aid and you soon start wondering how you ever did without it. Whoever at Evesham designed this little wonder had a good idea of exactly what is wrong with Commodore disk drives and has quite satisfactorily put it right with *Quickdisc*.

Freeze Frame is available for £39.95, and *Quickdisc* for £19.95 from **Evesham Micro Centre, Bridge Street, Evesham, Worcester WR11 4RY**