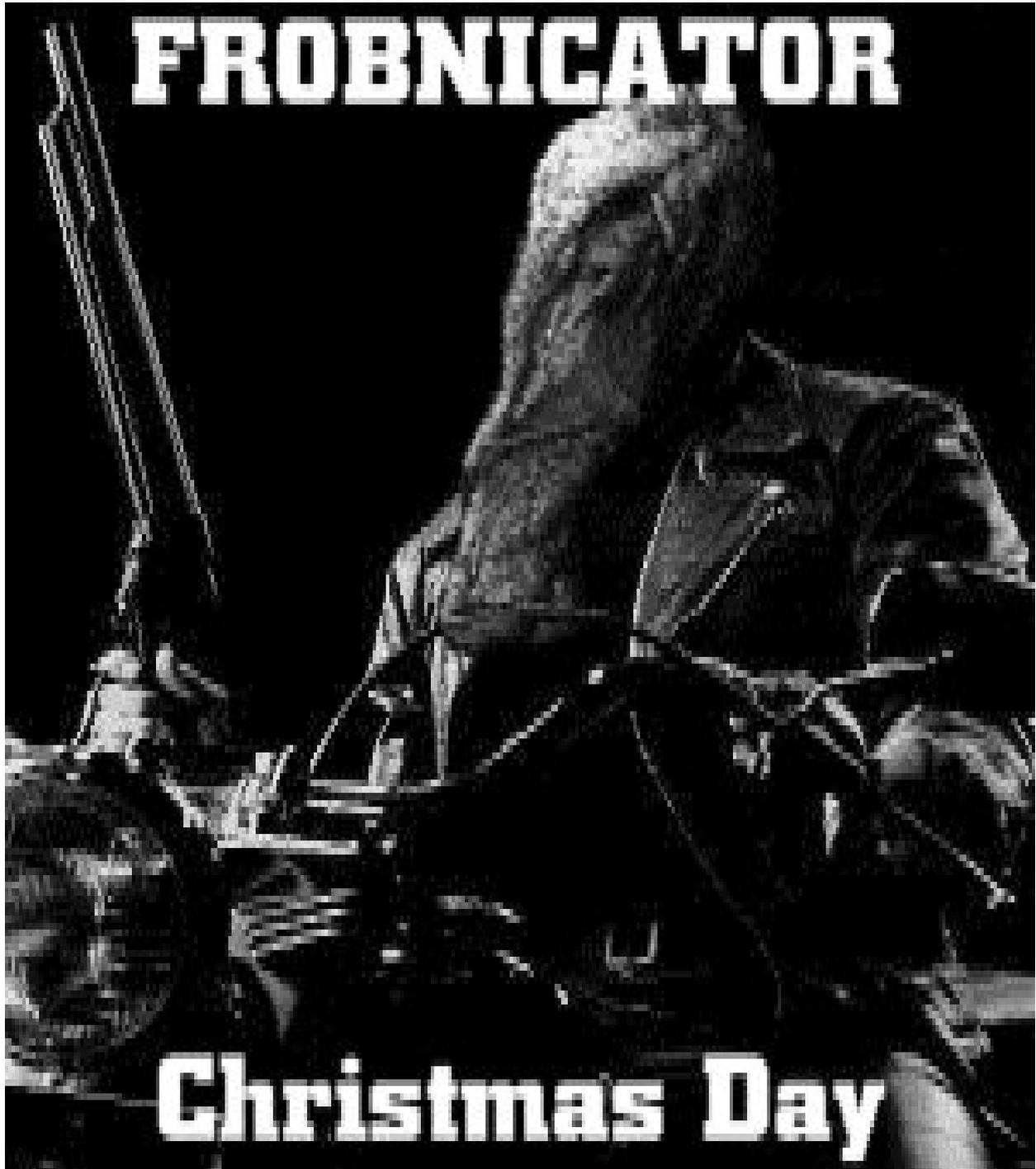


# FROBNICATE

Mmmmmmm..... Acorn? Chocolate? Acorn? Choc-o-late? ACORN!



- **Two reviews:**
  - SIMTEC dual IDE interface & LjDuplex
- **All the regulars!**



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Or visit our web site (as seen in Acorn User)...  
**<http://www.argonet.co.uk/users/rmurray/froblicate/>**

# EDITORS PAGE

As is typical for Frobnicate, there are a few in-jokes buried within this issue.

For example, issue 16 being released on the 16th of December... Well, could be something to do with it being my 24th birthday (*aaaaaaaargh!*).

And the front cover... That's a nod in the direction of various rumours about "Terminator 3 – Armageddon".

I'm sure you'll spot more.

In this issue we review an item of hardware and an item of software. If you have something you'd like reviewed, don't hesitate to drop us an email!

As this is Frobnicate's *third* Christmas, we present you with another Christmas card (on the last page). This is the first without a tree in it somewhere. I'm going for something a little more unusual. So meet the crew: Rick, Lister, Cat... ahem!

This issue sees the start of the Dictionary of Computing. Just, um, don't take it too seriously okay?

And we hear from the hacker, from Digiwidget and all the regulars.

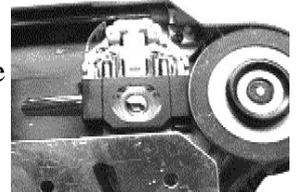
That's about it really. Best stop reading this and turn the page for some *real* substance. :-)

Richard Murray, Editor.  
frobnicate@argonet.co.uk



Meet me on page 10!

See inside a CD-ROM drive on page 11.



Read all about the SIMTEC dual IDE card on page 13.

Find out if these are for real on page 22.




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to: **frobnicate@argonet.co.uk**

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If you do not have Ovation, plain ASCII and sprite/JPEG preferred.

† - for any size under half a page (A5 or less).

# NetScrap

News to everybody waiting for the Acorn browser, or those waiting to see how Acorn would create their `<spit>frames</spit>` browser or those waiting for RealAudio or Java etc...

[fx: “Poltergeist” atmospherics]

*They’re heeeeeeeeeee-ere!*

Yup. The Acorn browser has been released on the Clan betatest CD-ROM. The Argo version (looks like the same thing with altered templates/icons) has been placed on an ftp area (password protected). It is this that we shall be looking at...

First impressions: It draws the screen quickly and will display HTML *as received* so no more waiting for things to be fetched. Provided width and height attributes are given for images, the page needs only to be formatted once. There is support for the little used PNG format, animated GIFs and JPEGs. The whole lot is drawn in an ‘as received’ form, so interlaced GIFs sort of “blur in”.

There are some slightly annoying quirks and some majorly annoying quirks (like it has no cache! Well, it *is* beta-test and a cache is promised). The browser leaps multi-storey frames and tables in a single bound.

Apart from over-enthusiastic line spacing and a differing interpretation of heading tags, my WWW site looks dead sexy in the new browser. It isn’t perfect, but it is coming along well. Apparently Stewart Brodie is on the team, so hey – what have we got to worry about?

Stewart Brodie’s ArcWeb was, to my knowledge, the first widely-used browser to offer support for frames. I’m not sure exactly how he did it, but it must have involved a fair bit of hackery. Fresco, the

ANT browser also offered frames support. Then rumours came about a new browser Acorn were working on, and it would support frames. Of course, Acorn aren’t going to resort to strange hacks in order to create frames. Everybody waited patiently to see how they would handle it...

...a new WindowManager. 3.91 which was a bit ‘iffy’, 3.94 which was a little less ‘iffy’ and 3.96 which seems reasonably stable.

Now this isn’t necessarily the tragedy that it seems. Okay, you *do* have to load more stuff into RMA at boot time – but you can get rid of NewLook, NewerLook or FinalLook. The new WindowManager supports fonts and tiled backgrounds. As it is the WIMP itself and not a hack onto the WIMP, it won’t clog your data transfers.

The main feature of the new WindowManager is “nested” windows which seems to be a highly advanced version of the ‘panes’ idea. We at Frobnicate hope to bring you more information on this in the near future.

---

## *PathFinder*

We at Frobnicate take our virtual hats off to the NASA PathFinder mission. Helping to uncover the secrets of the *red planet*, PathFinder performed way above expectations and sent back some impressive data.

Let’s hope this inspires those with the money to fund further missions of this sort.

To everybody involved in the project – nice going!!!

# Diary of a hacker

Okay. I have a bone to pick. I wish to categorically state that I do not support sleazy sexual activities. Certain unnamed people decided the boring idea of reading a few choice words from my last scribblings (notably “paedophile” and “innocent”) and stringing them together in a context that allowed them to rant and rave.

Now, maybe just maybe if you unnamed people sit down and read *every single* word (in order), then you might realise that what I was saying was not what you were accusing me of saying.

Do that again and I’ll send your email address to a spambot. <wicked grin>

Okay, onto more serious matters. Sopowitz. Is restricting the college internet access. He doesn’t seem to get the idea that students are *supposed* to download pictures of Jennifer Aniston and Mars and the Teletubbies. Neither does he understand who or what any of them are – with the possible exception of his home planet.

The internet isn’t a place where everybody lamely wanders from college server to college server. I mean, if the point is to access the server in the basement, why is our data sent to Docklands and back? God knows the network is slow enough without that.

NO! We pop over to “Yahoo!” and enter choice phrases to see what pops up. I’d estimate that 80% of net time is spent on irrelevant things. You go looking for the latest on AppleSeed, and get sidetracked by an expose on Masamune Shirow which leads to something else and something else and eventually ten windows are open and either you or your PC suffer a General Protection Failure...

Talking of General Protection Failures, the maths teacher has engaged the chemistry teacher. Oh boy, can you imagine being at the wedding?

C: “Jane dear, to show my undying love I have specially created this rendition of the Debye equation by etching a silver plate with acids.”

$$P: \quad \mathcal{P} = \frac{\epsilon - 1}{\epsilon + 2} \frac{M}{\rho} = \frac{4}{3} \Pi n \left( \alpha + \frac{\mu^2}{2kT} \right)$$

M: “Honey dear, it’s  $3kT$ , not  $2...$ ”

Of course, they’ll get married and have kids. They’ll hate each other and divorce, the kids will hate them, they’ll sue each other for everything and twenty years down the line they’ll (separately) attempt to sell their stories to the gutter press and with the proceeds they’ll stock up on whiskey. Not to mention that in their life stories, they will be innocent and sweet and the partner will be living hell.

Hmmm... Me? Cynical? Nah.

I’m just annoyed at this restriction on the network. Time for some serious grief-causing. Let’s see, we could always fire Sopowitz again. Or promote Sanawuse to *really* rub it in.

Instead I settle for the old hacker favourite. I call up every pizza parlour in the book and get them to send three pizzas cash-on-delivery. Good old Sopowitz must, by now, have about twenty eight cheese and pepperoni pizzas with *heavy* garlic. He could have had more, but some delivery kids chickened out. I bought one pizza off a guy who refused to knock down the price. I got a full three for next to nothing from a girl that was sobbing over something Sopowitz had said. Hint – don’t deliver the 17th, 18th and 19th unwanted pizzas to your Principal!

Needless to say I skipped the next day. It wouldn’t do to turn up smelling of garlic. Being a tad paranoid I figured Sopowitz would try to hunt me down.

But hey – not attending is as bad as saying “I did it”. So I had to figure out a way to get everybody else to cut.

Friend with the model helicopter – remember him? Well, we hadn’t spoken for a while and when I called he suggested a bomb scare. I was unsure about how to play that so I passed it up.

Next day my hack–buddy picks the front door lock, comes into my bedroom and drags me out of bed. We sneak down to college (after I had got dressed of course) and I see a large lump of modelling clay with wires sticking out of it. Sitting on that in two large glass bottles is some kind of liquid.

I pretend interest and put on my “college newspaper” guise. A friendly cop informs me that, to the best of his knowledge, he is looking at several kilos of C4 plastic explosive with two bottles of home–brew nitro–glycerine sitting on top. Beside it is a roadsign with the letters arranged to read “THIS IS A BOMB, STUPID!”.

I leave the scene quickly and laugh until it hurts. Oh yeah, *that’s the way to do it*. And all because I didn’t want to get caught for pizza–overload. Or maybe my good friend has his own seriously seriously like totally *serious* grievance?

Question? What do a hundred students do when they can’t go to college?

Answer: Get ratted. Students are notorious for three things:

1. Being poor.
2. Being anarchic.
3. Being able to consume large quantities of booze.
4. Thinking they are good at karaoke.

Oh, that’s four. So sue me. Anyhow, the town centre is soon full of students holding hands and screaming:

*I’m a barbie doll in my barbie woooooorld!*

over and over... And when that’s done they frighten the grannies with something loud and temperamental:

*I get knocked down, but I get up again.*

*Nothing’s gonna keep me down!*

*I get knocked down...*

Those still with enough wits/soberness to keep up with the song line up a whiskey drink, a vodka drink, a lager drink and a cider drink. When the right parts of the song comes they drink. Usually they get stuck trying to down a pint in a matter of seconds...

So with several brandies and burgers under my belt, I roll off home. The cold winter nights are causing me grief, but hey – I wouldn’t have missed today for the world!

-----  
Disclaimer for the seriously cheesy:

This article is not meant to represent typical student behaviour or smart things to do to your college and/or principal. Neither does this article reflect the typical life of a student – including the students it is based upon.

This article is not intended to reflect any actual occurrences (including those it is based upon) and any similarity is coincidental. If you have a good lawyer we’ll plead accidental. Either way, too damn bad.

Free William Stickers. Free the Indy 500. **Free Louise!**

Reading this disclaimer means you accept it and are happy to be bound to it.  
Nerr-nerr-ner-ner-nerrrrr!!!!

-----  
If you don’t know who Sopowitz or Sanawuse or any other characters are, I pity you... Check out the back issues at:

<http://www.argonet.co.uk/users/rmurray/hacker/>

#### INTERNET – PLACES TO GO

<http://prompt.essex.ac.uk/users/gerph>  
Justin Fletcher (Gerph)

<http://www.idg.c.uk/acornuser/>  
The competition. Hehehe... It’s Acorn User!

<http://physics.mmu.ac.uk/Physics/Acorn/>  
If you’ve ever wanted to fiddle with your computer’s insides, then Mike Cook’s page is a place worth visiting.

<http://www.meto.govt.uk/>  
Okay, maybe the weather is a bit boring and anorackish, but why not try downloading a few noon satellite images and stringing them together in an animated GIF...?

<http://www.clairedanes.com/>  
Don’t tell me you weren’t expecting that!?!?

And for more.....

<http://www.argonet.co.uk/users/rmurray/generic/links.html>

# Dictionary of Computing – A

## Abacus

Addy–uppy thing using a bunch of round things mounted on pegs. Some seriously old dudes can operate this faster than an average student can operate a calculator.

## Acorn

Seriously nice computer with efficient OS, efficient processor and a proper idea of what a GUI should do. Ignored by many because it shows up the things their systems are unable to do.

## Active low

When something is “on” which it is off (and consequently “off” when it is on).

## Address

A location pointer, be it a bunch of numbers pointing to a place in memory or an email address (which resolves to another bunch of numbers) or some other form of address. Indeed, the only form of address that doesn’t involve numbers is how you address somebody is a document... Unless you open your letters with “01! y0u!”.

## Alt

On a 103–style keyboard, the Alt keys should be either side of the space bar. These keys, ALTERNate, allow access to certain extended character things not directly available on the keyboard such as the © copyright symbol or ß beta or µ micro. Used in combination with the numeric keypad, you can type any available character using its ASCII number. On RiscOS machines and PCs with international character sets, you can use certain Alt keypresses as macros for accented characters. For example Alt-[ followed by ‘e’ gives ‘é’. On PCs one is marked “Alt Gr” and this does things a little differently – just to confuse (and fundamentally break) a perfectly good idea.

## American

A group of egotistical people with severe social problems (watched Ricki Lake Late

recently?) who always have to do things bigger, bolder but not necessarily better than everybody else.

## Amiga

A toy computer famous for B52’s titles and general incompatibility with everything. Let us not forget the *Guru Meditation* errors. Actually, this one started out as a mid–range business machine but quickly got swamped by spotty adolescents with daft pseudos. If you meet anybody on–line who can’t spell, has a sticky Shift key, has a daft username, thinks they are a wannabe hacker and is generally obnoxious – chances are they were raised on Amiga. The worst thing about Amiga owners is that they are fiercely protective of their computer system *despite* that fact that they stopped being produced years ago. Okay Amiga fans, where’s this 500MHz RISC Amiga then?

## Analogue

Nice, simple waveforms of natural data (such as sound) the way it is meant to be. The specific point of analogue is the waveform can, at any moment, have any possible value. Unfortunately computers get a bit stressed trying to deal with this so analogue information is converted into digital form (see *Digital*).

## AND

The peculiar ability to be able to stick two things together to lose the stuff you are not interested in. Often associated with phrases like “AND mask” (which is somewhat like a Halloween mask, only with numbers).

## Animation

The process of throwing stuff onto the screen so that it looks like it is moving. Computers have been doing stuff like that for years so the media renamed it all “multimedia” so people think they have something new. For proper animation, watch Wallace & Gromit.

**Anorak**

A type of coat associated with nerds. The anorak is usually applied to “train spotters”, but the phrase can be used in malice towards anybody who spends their life collecting serial numbers from RiscPCs in the hope of finding the big one (board #1). Most slightly lighter computer nerds prefer to be called a “geek” – it’s cool to be a geek. Of course, if you are a well paid anorak you are a “consultant”. And if you are an anorak with power you are a “manager”. Finally, if you are an anorak with an attitude problem, you are the “BOFH”.

**Append**

Fancy term used to describe the action of tacking something onto the end of something else.

**Appendage**

Something added, usually denotes the good old BBC–micro style (ie, whatever is uncased and hanging off the machine connected using several metres of cable). Proper appendages usually offer hand–soldered patches and theoretical impossibilities such as:

- ten metres of IDE cable wrapped around several mains leads
- a metre long serial connector built using bare uninsulated copper conductors side by side, crossing a PSU, and still achieving a reliable 128kbps DTE rate

**Apple**

Green/red crunchy fruit with pips inside. Also a computer company who was first on the GUI scene (yes, I *do* know Xerox devised the GUI first). The Apple is known for it’s classiness against the PC (a combination of higher price, higher functionality and PC incompatibility). It’s like the US version of Acorn. The operating system is known for not using confusing words like “error” and “syntax”. Instead up pop messages like “*Woah, that was grody! Hey most bodacious dude, whack that RESET button a few times for me!*”. Also notorious for featuring floppy drives with no eject button.

**April**

What happens between March and May. Also a good time for babies because – oh look, it is nine months after August and those hot summer nights!

**Archimedes**

Dead Greek guy who invented the Archimedes Screw and reputedly jumped out of his bath and started yelling “Eureka!”. A bit randy for his time, was our Archie.

**Archive**

The process of collecting many files and storing them in one place, in one ‘lump’, usually compressed in some way or another. Two popular archive methods are to “Spark” or “Zip” everything and dump the compressed files onto disc. The other method is to dump everything to a tape streamer.

**’arddisc**

Mass storage for illiterates.

**ARM**

Means either “Acorn RISC Machines” – a branch of Acorn/ART; or “Acorn RISC Microprocessor” – which is why the ARM processor is called the...uh...ARM processor. Technically you are saying “processor” twice, but if you didn’t people might think you mean some part of your anatomy.

**Arthur**

Least said, soonest mended. Just make sure you wear your shades!

**Assembler**

One step lower than using a computer language, one step higher than programming by shifting numbers into memory. You write your software using an *assembler* which takes mnemonics you write with and converts them into the numbers for you. The fastest most low–level code is written in assembler, but it is a daunting task.

**Atom**

One of Acorn’s first computer systems. One can be found in the London Science Museum. At least *they* know a good machine when they see it.

---

“B” in the next issue.

Suggestions to [frobnicate@argonet.co.uk](mailto:frobnicate@argonet.co.uk)

# Mystic Mag

Apparently, Billy Boy is creating his own technology (for a change). From what I recall it is something aimed at those who'd go out of their way to not use a computer. A voice prompting system to guide them through the operation of the machine.

A laudable attempt, but will it work? Personally, I think not. After all, how often have you heard the answering machine click because the person at the other end won't talk to it? Or empty voicemail? There is something inherently weird about talking to machinery. The techoboffs can explain it as modulated waveforms coming out of the speaker – it is just a bunch of numbers passing through the processor. The non-technical still regard talking machines as highly suspect, and sometimes a pain in the butt (“Door ajar! Door ajar!”).

I, personally, am of the opinion that it should be a two-phase enhancement.

## ONE

Most importantly, crash protection. The “First Aid” software for Windows/W95 goes part-way to fixing this problem by having a little widget that will try to rescue your program so you can save your data and shut down sensibly.

RiscOS 3.5+ took the *other* method, hide the techie stuff behind a “Describe” button. And if a task crashes, a quick Alt-Break will soon sort it out. What we *really* need is something to trap a crash and deal with it... Either by unwinding the stack and working it out, or by an exclusive entry point into the program that will allow the current data to be saved before the program is restarted transparently. Either way, a user isn't going to care about “General Protection Failure”s and “Abort on instruction fetch”es.

## TWO

The second part of our design is speech recognition. This will take a little getting used to (re: the bit about answering machines and voicemail) but for the majority of us the keyboard is a slow and annoying piece of hardware.

It is pretty consistent on ever computer, but often it is poked by one or two fingers at a time. Also to get the keyboard in a nice position, you end up hunched over the computer. RSI, backache, eye strain. You name it.

So wouldn't it be better to sit back in your chair and dictate what you want written?

Early systems don't need a lot of intelligence. For example you could whistle before saying “bold”.

As it progresses it would be better to have the computer understand stuff like “quality procedure manual, with the first letters of that lot in caps” and output “Quality Procedure Manual” for you.

That, I believe, should be the future.

We spend a long time speculating on new concepts such as a virtual reality replacement for the Desktop operating in three dimensions.

As I see it, the display mechanism does not need a change, even though it is over ten years old.

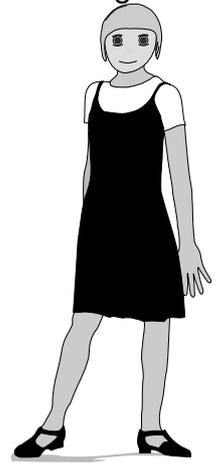
What needs a change is the way that information gets into the machine in the first place.

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Please don't send attachments over  
15K without first contacting us!

# DIGIWIDGET



Letter in the post this morning. It was Sam'n'Ella's café down the walkway offering me a better salary for less hours. They want to know if I can play the piano. Hmmm!

So I spend today in Deunan Sector. Another little black box comes in for testing. So much for secrecy, this thing had instructions. It's a piece of spy kit, or hacker kit – depending on who is using it. You hook one end to a phone line and the other end to a mains socket. Into it you attach a phone, modem or fax. This thing will then start cloaking your signal by bouncing it off as many telecommunications satellites in as many countries as it can. It also sends some kind of data to scramble systems like last number redial and some logging equipment. Microprocessor controlled, waterproof, microwavable and about the size of a pack of cigarettes. Works off any mains voltage and any telecommunications system anywhere in the world. I jump on it and, as is usual for these 'little black boxes', I come off worse. As mentioned, I microwave it, and the floor crew sledgehammer it. So, reluctantly, I have to let it pass. But, as they cannot sell test items and we can't keep them either, the floor crew and I take a certain amount of delight driving the forklift over it. Seventh time, with myself and the crew all riding the forklift, we hear a tiny pop and the thing lays flattened and broken. I don't know what they do down in the lab, but their stuff keeps getting stronger. One of these days they'll make a missile so strong it just bounces off it's target - 137mph straight down solid rock.

I head over to Chantal's place. She's decided she doesn't want to be called Chantal anymore. So she calls herself "Jzzoolia" after Julia Roberts. Previously it was Sandra Bollock, and Nastassia Kinski; neither of which she could pronounce. By next week I reckon either Bridget Fonda or Samantha Mathis. That satellite movie thing she had fitted last week has rather gone to her head. However I'll reserve my worry for when she wants

to name herself Marilyn or Judy...

By the time I reach my second job, there is a rather nasty looking guy standing at the till and screaming.

His gripe, apparently, is something about wanting a cup of bajoran coffee and not the home ground stuff we normally offer. Chant....Julia defuses the situation with a cup of the exclusive chicory coffee. What is bajoran? I don't know. Ch...Julia doesn't know either. I rather suspect that guy wouldn't know a bajoran coffee bean if it hit him in the face twice and then gave him flatulence for the rest of the week.

It quietens down around twelve. It is late, cold and raining. A nice winter night – all the more reason why I should blow some of my savings on a trip to the other side of the planet... Or at least the other side of the continent. I help Cha....Julia fix up the christmas lights around the window, a tree in the corner and some scented candles. More decor will come closer to the day.

One o'clock. Ch...Julia has gone upstairs to sleep. She offered me the sofa if I didn't want to walk home, but I had some reports to do for my other job. Something infinitely boring about why earth testing requires a low voltage and high current, not vice versa.

By the time I reach the front door, I'm shaking so hard it takes both hands to get the key in the lock. Sorry guys, but I'm calling in sick tomorrow. Right now I'm going to run a warm bath and lie in it for several hours; keeping it warm, then hot. Then, off to a pre-warmed bed and to hell with tomorrow.

Taps off. Céline Dion in the CD player. Cherry brandy in the glass and myself in the tub.

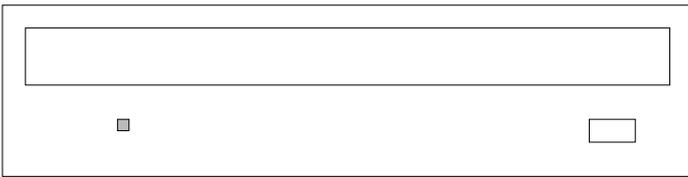
Night-night everybody!

# INSIDE THE... CD-ROM DRIVE

Rumour has it that the Windows98™ software is supplied on over a hundred floppy discs...

It is madness like that, that has led to CD-ROMs being the default specification for PC compatibles (as well as gigabyte harddiscs, quarter gigabyte memories etc etc...).

So in this article we shall look at a CD-ROM drive and show you how it works.



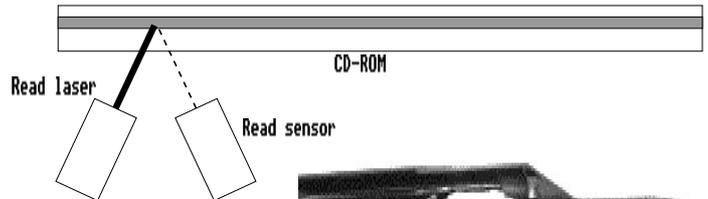
CD-ROM units are noted for their relatively consistent appearance. The drawing above is pretty much like all standard IDE units (the alternative is a platter drive with a little cartridge that slots in).

In reality, that looks like...

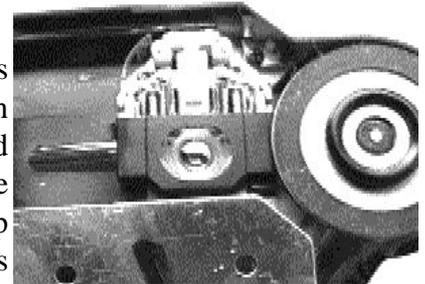


CD-ROM, front view.

The CD-ROM itself is a plastic disc with a layer of metal embedded into it. This metal layer consists of a concentric 'track' similar to that found on a record. This track is encoded in binary using sequences of pits (burnt out holes) and non-pits.



The reading is performed by an accurately tracked LASER. The diagram at the top shows how this is typically achieved.



Read lens and disc motor.

The image to the right shows an actual CD-ROM read head. The circular object to the right is the CD-ROM mount. The shiny circle in the middle is the lens; which should *never* be touched except by proper cleaning equipment. Notice the slot to the left of the head. This is where the head tracks to and fro. The head can also track up and down, until the CD-ROM is in proper focus.

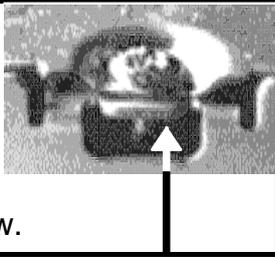
We shall now look inside the unit. It is recommended that you examine the images instead of looking inside your own CD-ROM drive. Firstly, it is actually rather boring inside. Secondly where a music CD does not require totally accurate data (a few incorrect bits would probably not be noticed), computer data is a very different matter – it *has* to be correct otherwise it is fundamentally useless. So, resist the urge! :-)

This CD-ROM unit is an IBM branded double-speed device. Taking it apart was not easy as the screws were quite firmly attached.

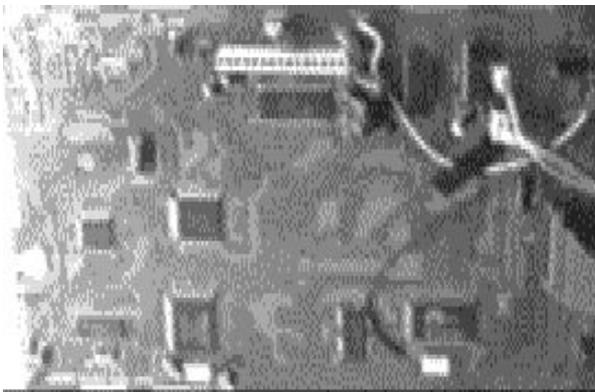


Identification label.

**TIP:** If your screws are difficult to undo, simply insert a small screwdriver under the fixing (as shown) and bend it ever so gently. This should loosen the screw.

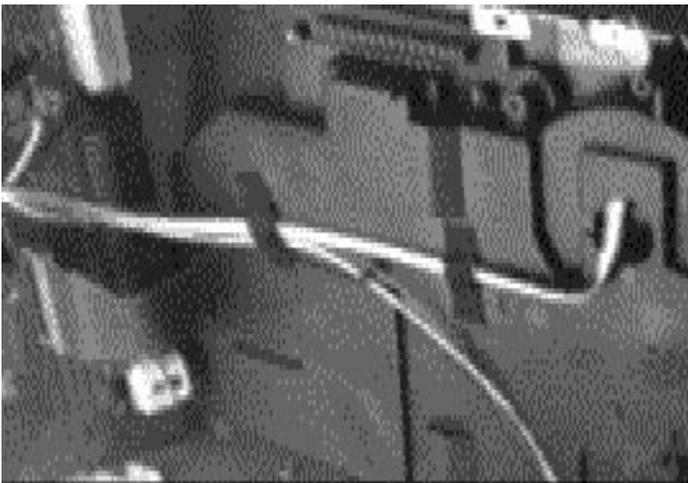


Upon opening the device, I was met with a bare looking circuit board. That was easy to unscrew but not so easy to remove. It was connected to the mechanics by an IDC connector (such as on the back of disc drives) and an assortment of wires. One of these wires had a plug/socket arrangement that gave the impression of being a MENSA challenge.



*The barren circuit board, looked exactly like this only green!*

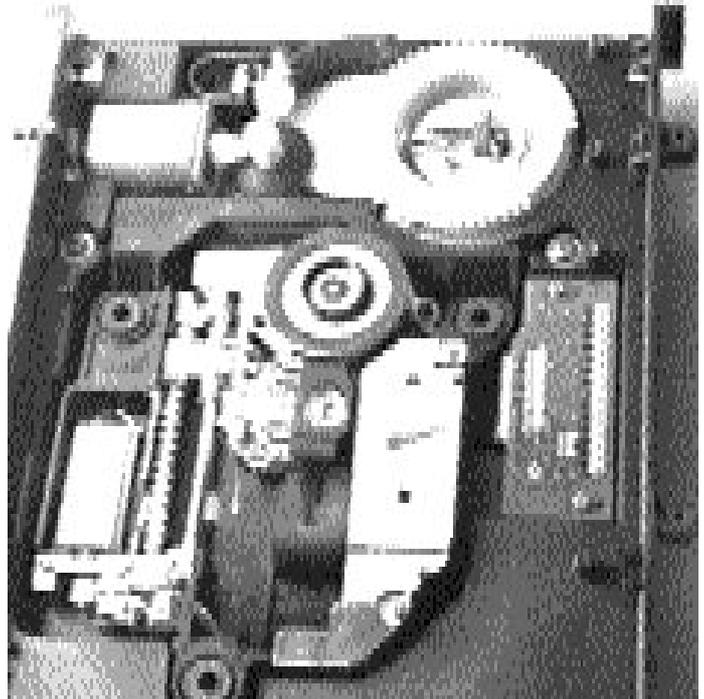
The mechanics were fixed to the top of the drive unit. Getting that lot undone took a lot of patience and reminded me of the A3000's casing.



*The underside of the mechanics unit. Boring or what?*

Once the mechanics were free, you could see how the CD-ROM unit operates. It is incredibly simple to look at. The emergency eject, for example, is just a little cone. When you insert a small screwdriver and turn it, the cone is pushed back onto a flywheel.

The rotation of the screwdriver turns the cone which turns the flywheel which in turn (pun intended) opens the drive door.



*CD-ROM mechanics. Now this is more impressive...*

Top left, toothed wheel opens and closes the disc tray (which has been removed).

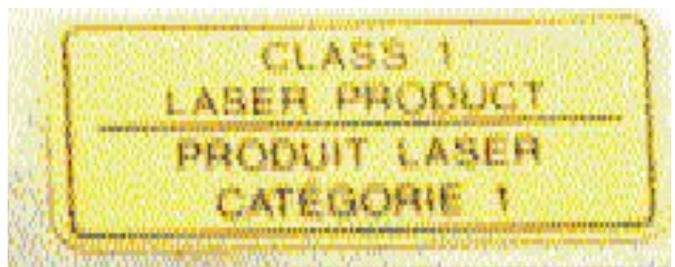
Top right, the rectangular thing is the eject motor.

Middle, the disc motor and read lens. A close-up of this is on the previous page.

Bottom left, motor to drive the worm gear which moves the read head back and forth. The wibbly bar beside the motor is the worm gear. The straight bar is a guide for the read head.

Middle-right. A little interface circuit.

I could talk to you about ATAPI protocols and CD-R and different coloured books... But not today. This is a look *inside* the CD-ROM drive. And now...you know...what is inside one!



**SIMTEC**  
Multiport IDE Adaptor

# Dual IDE interface

When it comes to upgrades, I'm pretty fussy. For example, I'm still using my trusty A5000 for DTP and Internet and coding. New windowmanager, fonts in the desktop, tiles. The works. So when my disc started to get excessively full (under 1Mb free) I remembered that I had two 40Mb IDE drives. I also appropriated a double-speed CD-ROM drive which may or may not work (probably the latter; after spilling it's guts on the previous two pages).

I remembered an advert from a company called SIMTEC, so I telephoned them. The spec was two IDE ports, a nice intelligent filing system and a FlashROM so you could throw your own modules in there too if you wished. At a price of £69, it sounded reasonable.

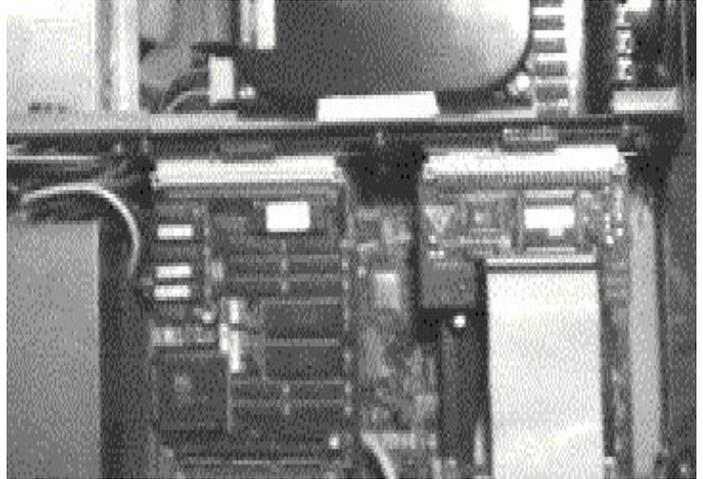


*The Simtec multiport IDE card.*

Upon opening the package, I was greeted with a printed copy of the ReadMe file, an installation guide, a registration card and lots of bubblewrap. Carefully undoing the bubblewrap revealed an IDE cable, a blanking plate, some screws and a little piece of metal to join two card's back plates, a special back plate with a Centronics-like socket and the card itself. A disc was inside the instructions.

The card was inside a black static resistant back with static warning on it. Today's hardware is more resilient to this silent computer killer, but it is nice

to see somebody that cares about this sort of thing and doesn't just pop the thing into a Jiffy bag.



*The IDE card installed in my A5000.*

Installation was depressingly easy. Open up the computer. Plug the bits in, close the computer, power up and make sure it is recognised. First time, flawless. This version of the card was the "16bit for computers with backplanes". With a little twiddling (by Simtec, not you!), the card can be used in an A310 even *without* a backplane fitted.

The next part was the harddisc installation. This, sadly, took some time. The Conner didn't like to slave off the Seagate and the Seagate didn't like to slave period. I was getting annoyed with hit'n'miss with the harddisc links so I tried calling Simtec. The phone answered in two rings and the person there was very helpful and interested. He was not able to tell me the links for the Seagate so he pointed me to their WWW site. It was sorted out shortly afterwards.

An interesting thing to note was the driver software did not lock up upon configuration clashes. I deliberately set both devices to master. On a PC or the internal IDE bus, this would cause the machine to hang when it looks for the disc drives. The Simtec interface just reported the drives failed to initialise, and carried on.

I had always been led to believe that it was impossible to low-level format an IDE device. You could set up a map, you could high-level format it and you could erase it... But low-level formats (similar to formatting a floppy) would destroy the device. So I was a little amazed to see it as an option on the disc configuration and partition utility.



*Format options.*

The process of setting up the discs was a little Windows-esque. As you can see from the image about, there were “Previous”, “Next” and “Close” icons. This made the software easy to use by being consistent.

There are no configuration commands for the IDE interface. Discs/partitions are automatically mounted, with option to prevent this. It will refuse to mount partitions greater than 512Mb on the old FileCore, but once the new FileCore is installed they can be accessed. My Connor CP3044 reported itself as “multi-sector” capable. It lied. Accessing files over 8K gave a disc error. No worries, just load up the management software and configure this drive as not being capable of multi-sector transfers. Problem solved. You can set a “long cable” mode for externally mounted drives, as well as two other options for increased compatibility.

The partition manager can create RiscOS and non-RiscOS (for Unix etc) partitions. If something went wrong, you can get the program to look for lost partitions beyond the recorded end of the disc. Any defects found can be automatically mapped out. As a safety measure, before destroying your disc you have to type “yes” into an icon. Even then it asks you if you are *really* sure you want to do this.

The IDEFS filer allows you to mount and dismount partitions. All available partitions are listed and you can have whichever ones you require visible on the Desktop. These can be changed at any time. If you have ShareFS you can share IDEFS partitions. If you set the drive up in a protected state, you can lock and unlock it. Useful for school where partitions can be read-only unless unlocked; or for the paranoid where they can be unavailable unless unlocked.

The software will even allow you to give the partition full access when unlocked, and unavailable when locked. Hehehe...

The verification window is multi-tasking and it too features automatic defect mapping.

The command line offers powerful commands such as “\*Attach”. This is unlikely to be needed 99% of the time, but is one of those commands that comes in truly useful. It allows you to manage the partition linking to devices. Is :4 the CP3044 or the... It also allows you to map in non-RiscOS partitions if you require (something the Desktop filer won't do).



*The back of my A5000.*

The backplate supplied has a short IDE cable connecting to a Centronics-like socket. It is larger than a printer socket, and will be familiar to those who have SCSI-1 interfaces. The socket is provided for ease of use. You plug a cable in, it minimises flying leads. If you have a SCSI interface, such as I do, don't mix them up!

The interface has a FlashROM capability. You can put practically anything you like in here. The default ROM size is 128K but larger sizes are available. By default you get the latest VProtect, the IDEFS, the filer and a support module. To that I added SJSprites, TaskKiller, HotBlanker and some other useful little bits.

If the FlashROM process all goes badly wrong (maybe if somebody tried to copy UtilityModule...) then there is a link on the interface to prevent the ROM from being 'seen', whilst still allowing you the ability to re-program it.

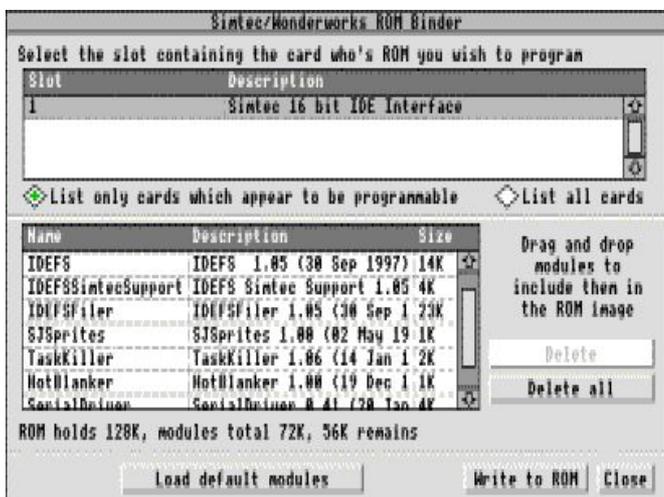
I think a good use for this facility could be something like my !Protector program converted to a module task. When you switch on the computer it details the owner and challenges you for a password. Remove the harddiscs and floppy and it'll still do it.

With C or assembler knowledge and a little imagination, this could have many uses. Maybe a smart module to kick in !Printers if you have a printer connected? Or... Or...



Unfortunately, at time of writing, the CDFS modules were not available (but these will be sent out to registered users and can be flashed in). When they arrive, I'll let you know if the CD-ROM still works, and how the system works.

This upgrade is quite "smart" and very well produced. Indeed the only thing that wasn't glossy was the instructions. They simply got straight to the point. In my opinion it is a well made interface constructed by competent people. I was pleasantly blown away by its capabilities (up to four drives, many partitions, intelligent firmware).



Reprogramming the FlashROM...

Complexity:

None at all for setting up the interface.

Getting older drives to talk to each other is a different matter!

'Niceness':

Very nice...very...

Customer support:

Answered the phone quickly, always helpful.

Value for money:

I'm impressed...

Price:

£68 (including VAT) They accept SWITCH.

From:

SIMTEC Electronics  
 Avondale Drive  
 Tarleton  
 Lancs  
 PR4 6AX England  
 Tel: +44 1772 812863  
 Fax: +44 1772 816426

Would I recommend it?

Yes. I would. For those who already have two IDE devices, this opens up the possibility of an extra four devices. That could be a handful of old 40Mb drives or it could be three 4Gb drives and a CD-ROM. Whatever takes your fancy. And the additional configuration for annoying devices (such as my CP3044 which lied about its capabilities) mean that an even greater range of hardware will work.

It also supports removable media (Syquest).



How NOT to add additional harddiscs. These two (Seagate ST351A/X & Conner CP3044) are tucked between my monitor and satellite receiver. Lots of wires and you don't even want to know where I got the power feed from!!!



# LjDuplex

For those that are serious about DTP, there is a nice type of LASER printer known as a “duplex printer”. This device will accept two pages worth of output and then print it for you on both sides of the paper. No fiddling around shuffling the papers, no jams during the second pass through the machine and no crying when you discover that the pages were collated in the wrong order. I know from experience, printing Frobnicate and a few other things double sided. Now try an A5 magazine made up of four sides on folded A4 paper with a print run of, say, 500...

Of course, in order to use a printer such as that, you'll have to work on a PC or Mac platform won't you?

Well... That isn't *exactly* true.

Introducing **LjDuplex** by Mijas Software. This little program will accept printout from the printer drivers and alter it into a format suitable for a duplex printer.

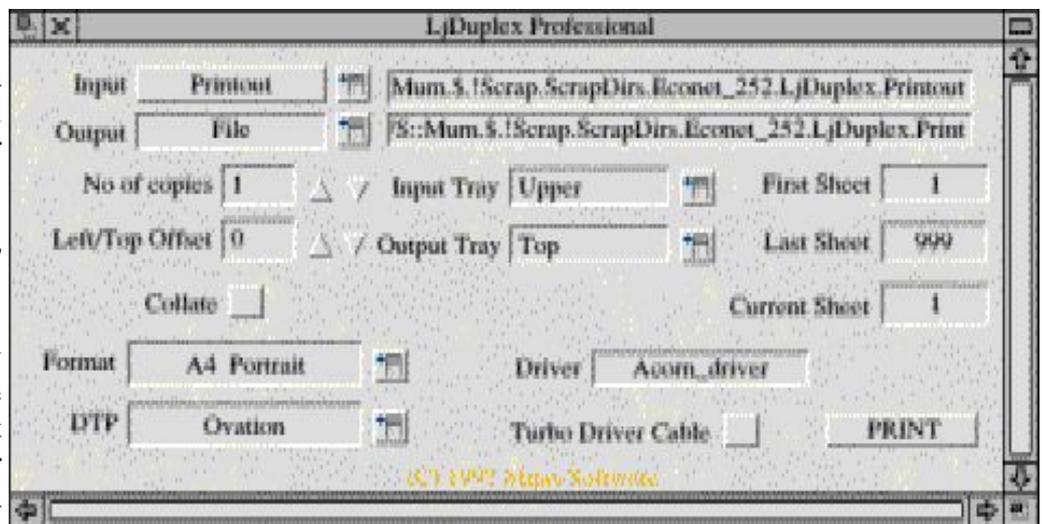
I wish to point out that I could not fully review this product due to not owning a duplex printer, however I have had a look at the software, the manual, the concepts and I would suggest that if you can get hold of a duplex printer (such as the Hewlett Packard IIISi Duplex) then it would make life very much easier.

John Evans, of Mijas Software, included a copy of “The Dever”, which describes itself as “The Journal of the United Benefice of Micheldever Stratton and Woodmancote”. It consists of 36 pages of desktop published magazine. A5 format. I, personally, would not attempt more than about ten of those using my hardware (Ovation linked to an Epson GQ-5000) however with LjDuplex I can imagine it'd be a breeze.

Now, the software itself. LjDuplex is a small application that fits in between the printer driver and the printer. You should print in the normal way

from TechWriter, Ovation or Impression (other formats are easy to add, those above can be customised); only you print to file. Once that is complete, you hand the output to LjDuplex to build up a printout either to file, direct to printer or in the background. Turbo Drivers are supported.

LjDuplex comes complete with a concise user guide, and software on an E-format disc.



*LjDuplex main window.*

#### Complexity:

Seems fairly straightforward, a detailed user guide.

#### Price:

£25 (plus VAT). Members of recognised user groups may purchase it for £25 inclusive.

#### From:

MIJAS SOFTWARE  
Winchester Road, Micheldever  
Winchester, Hants SO21 3DG  
Tel/fax: +44 1962 774352  
Email: mijassw@argonet.co.uk

#### Would I recommend it?

I have not seen it in operation, but if I had a duplex printer I'm sure this would be my next purchase after an OvationPro upgrade...

# Hack *Hack Hack*

As this is Christmas, I thought I'd give you the low-down on hacking BASIC code from a tightly encrypted (or so they like to think) shell.

You see, people often place their BASIC through programs like "MakeApp" and so forth for two reasons:

1. If it looks like an "App", it looks less hackable.
2. It may be run through !Squeeze to compress the application further.

With relation to the above, there are two tricks commonly in use:

1. Change the "BASIC -quit" to be a "%BASIC -quit". This prevents you from simply aliasing BASIC to something else.
2. Remove the "rcc 5.04" bits from the end of a squeezed program. This prevents the Unsqueeze module being able to unsqueeze the software!

So now a few pointers.

1. If your program is not squeezed and you can see the "%BASIC -quit" line, simply drop the application into !Edit and change "-quit" to "-load". When you run the program, a shell window will appear. Save it, done.

2. Your program is squeezed, you can see "rcc" and a number like "5.04" or "4.00" at the *end* of the file. Find the Unsqueeze module. It should be in the !Patch application on the RiscOS 3 support disc. When it is loaded, from the command line, enter "Unsqueeze <file>" (where '<file>' is the filename). You will then have to refer to part 1 or part 3.

3. Your program is or is not compressed. You are such it is BASIC (because of errors referring to line numbers or libraries or somesuch). You don't really know but you want to try extracting it...

Okay. Two methods come to mind.

a. Load the program and quit it again. This sets up the system variables required. Then try to run the program in a TaskWindow. It is likely to abort with a "Wimp already active" error. You may then be

able to get into BASIC and list the program (or type "OLD" then "LIST"). Don't try this after pressing F12 to enter the shell. It is easy to detect this using Wimp\$State. It is harder to spot running in a TaskWindow.

b. Run the application and then grab the application workspace using !Zap. Look through that until you see the tokenised BASIC code.

Please remember, a lot of people compress their BASIC nowadays. It *does* offer advantages of speed and size. Thus, whilst the source may be accessible, it doesn't mean that it'll necessarily make sense. Remember also that !Edit's BASIC tokeniser has trouble with long lines which could seriously mess up a program!

## Anatomy of a BASIC program:

A line of BASIC can be divided into two parts. The header, which is always four bytes long, and the command.

The header always starts with a Return character (&0D, ASCII 13). Note that the terminating Return at the end of a line is *actually* the first byte of the header of the next line.

The next two bytes are the line number, low byte first (so &0014 = line 20). Line numbers are signed, so valid line numbers cannot have the top bit set. This explains the maximum line number being 32767 (&7FFF). The exception is the end marker of the program (see below).

The final byte of the header is the line length. As only one byte is used, lines may not exceed 256 characters in length.

The end of a program is denoted by a two byte header, the Return character and the byte &FF. As you will recall, valid line number cannot have the top bit set. So this, top bit set, marks the end of the program.

# Assembler programming

In the last issue I said, “So we shall, in the next issue, propose a new format that will make the compression even more efficient.”

So, then, how can we make the compression more efficient? Remember that our compression was good on solid areas of colour but a bit rubbish when it came down to dithered or complicated images. Consider:

```

HEADER (26 bytes)      -   “BudgieScrn (compressed 2)”<cr>
MODE (1 byte)         -   Screen mode.
PALETTE (16 * 6 bytes) -   Bytes giving R, G & B components of first flash colour.
                       -   Bytes giving R, G, & B components of second flash colour.

```

## IMAGE DATA:

If byte = 255, then loop data follows. Next byte is the colour. Third byte is a count (0 - 254) of how many pixels of this colour to fill in.

If byte <> 255, then byte is regular screen memory. Just stick it straight to the screen...

Immediately, two things should be noticed:

1. If the legitimate pair is colour 15, then the byte will be 255 causing a loop. Thus, in a sequence of aligned doubles of colour 15 with something in between, it could begin to get wasteful. However such a sequence seems unlikely. If the colour 15 double extends for further pixels, a loop would be required.
2. This will better cope with dithered images, as two pixels will therefore take one byte instead of four (previously, loop count and colour for each pixel).

It sounds horribly complex doesn't it? However in reality all we need is a look-ahead and something to fiddle occurrences of colour 15 doubles. For a change, we shall present the save code in BASIC because it is easier to follow (and additionally I have not coded an assembler version yet! Any takers? :-). As usual, the loader is more or less a reverse of the saver, and that is in assembler.

The program is commented, so shouldn't need any further explanation.

```

REM >BASICcompr
REM Compress sprites using BudgieSoft compression algorithm (type 2).
REM For Frobnicate issue 16 (Winter 1997).
:
ON ERROR PRINT REPORT$+" at "+STR$(ERL/10) : END
:
REM Open output file (put your own path here, or read from command line).
x%=OPENOUT("ADFS::Stephanie.$DTP.Frobnicate.Issue 16.software.ASSEMBLER.comp_piccy")

```

```

REM Write out the identification header...
BPUT#x%, "BudgieScrn (compressed 2)"
:
REM ...and the current screenmode.
BPUT#x%, MODE
:
REM Build up palette entries, and write out.
FOR loop% = 0 TO 15
  SYS "OS_ReadPalette", loop%, 16 TO ,,f%, s%
  r1% = (f% >> 8) AND 255      : REM First flash colour red component
  g1% = (f% >> 16) AND 255     : REM First flash colour green component
  b1% = (f% >> 24) AND 255     : REM First flash colour blue component
  r2% = (s% >> 8) AND 255      : REM Second flash colour red component
  g2% = (s% >> 16) AND 255     : REM Second flash colour green component
  b2% = (s% >> 24) AND 255     : REM Second flash colour blue component
  BPUT#x%, r1% : BPUT#x%, g1% : BPUT#x%, b1%
  BPUT#x%, r2% : BPUT#x%, g2% : BPUT#x%, b2%
NEXT
:
REM Get our screen sizes. This is not written to file. The loader will have to
REM figure out it's own screen dimensions. Then switch off the cursor.
DIM b% 19
b%!0=149 : b%!4=7 : b%!8=-1
SYS "OS_ReadVduVariables", b%, b%+12
base%=b%!12 : length%=b%!16 :end%=base%+length%
SYS "XOS_RemoveCursors"
:
:
REM Now read from base% to end% (via posn%) calculating the data,
REM writing it out to file as necessary.
:
posn% = base%
REPEAT
  REM Read four pixels (two bytes) at a time.
  REM If they match, begin a loop.
  col1% = posn%?0
  col2% = posn%?1
  IF col1% = col2% THEN
    REM They match, so...
    BPUT#x%, 255
    BPUT#x%, col1%
    counter% = 0
    REPEAT
      col1% = posn%?0
      IF col1% = col2% THEN
        counter%+=1
        posn%+=1
      ENDIF
    UNTIL counter% = 255 OR (col1% <> col2%)
    BPUT#x%, counter%
  
```

```

ELSE
  REM Otherwise write out pixels.
  BPUT#x%, coll%
  IF coll% = 255 THEN
    REM A little hack for colour 15 double (byte = 255).
    BPUT#x%, coll%
    BPUT#x%, 0
  ENDIF
  posn% += 1
ENDIF
REM Until end.
UNTIL posn% >=end%
:
REM Close file and exit.
CLOSE#x%
END

```

Apart from a few little changes in the loader routine, it is very similar to the existing loader. The differences, mainly, are:

```

.main_loop
  Read a byte.
  Is it '255'?
  If so, branch with link to read_loop.
  Write byte (pixel pair) to screen.
  Look to see if we are at the end of screen.
  If not, branch to main_loop.

```

Close and exit etc etc.

```

.read_loop
  Read colour byte.
  Read length byte.
.loop2
  Subtract 1 from length.
  Write colour byte to screen.
  Length is zero?
  If not, branch to loop2.
  End of screen?
  If not, branch to main_loop.
  Otherwise exit.

```

I'll leave you to compare the above flow with the program itself. It is commented so you shouldn't have too many problems.

In the next issue we shall look at a "Smart Loader" then can automatically tell if the input is type 0, type 1 or type 2 and decode appropriately.

# STATISTICS

Download log for Frobnicate issue #15, 30th October 1997:

Released: 18th October 1997

Duration: 12 days

Issues downloaded: 148  
 successful 36,583,676 bytes  
 partial 1,853,838 bytes

Breakdown by domain:

'au' (Australia)	4
'com' (general companies etc)	36
pipex.com	31
'de' (Germany)	10
'net' (ISPs)	20
'demon.net'	10
'enterprise.net'	4
'nl' (Netherlands)	7
'nz' (New Zealand)	6
'uk' (United Kingdom)	49
'ac.uk'	16
'co.uk'	32
'demon.co.uk'	23
'gov.uk' (oo-er!)	1
Other domains	11
Total domains count	143

Data extracted from NCSA format server logs by a program custom written by John Surcombe. This information was extracted from the HTML originals and simplified to fit in one column.

FROBNICATE is available for download from these locations:

DIAL-UP:

Arctic BBS +44 181 903 1308  
 +44 181 903 1309

Arcade BBS +44 181 654 2212  
 +44 181 655 4412

INTERNET:

Frobnicate resources and info:

<http://www.argonet.co.uk/users/rmurray/frobnicate/>

Frobnicate downloads (first URL requires tables):

<http://www.surcombe.demon.co.uk/frobnicate/>

<http://www.surcombe.demon.co.uk/notables/frobnicate/>

NEW! Download issues in POSTSCRIPT format:

<http://members.tripod.com/~Frobnicate>

Email addresses:

General information, articles, adverts etc etc:

[frobnicate@argonet.co.uk](mailto:frobnicate@argonet.co.uk)

Anything to do with downloading issues:

[john@surcombe.demon.co.uk](mailto:john@surcombe.demon.co.uk)

Unsolicited Commercial Email:

[postmaster@localhost](mailto:postmaster@localhost)

If you would like to submit an article for a future edition of Frobnicate, we can accept a wide variety of Acorn and PC formats – please email for further information.

All issues of Frobnicate are Copyright © Richard Murray (Hissing Spinach).

# On the Internet...

## Frobnicate WWW:

First up; three things about Frobnicate and the WWW:

1. The Frobnicate WWW site is converting to use PNG images. Most things are PNG at time of release, and this will become exclusive soon. Why? Well, PNGs are much better than GIFs. Look on my site info page (from the main index) for more details.
2. It is anticipated to change the Frobnicate menu into a CGI program for accurate counting and other effects. So if it whizzes you off to a CGI or if the index provides you with a simple link, then this is why. I am looking to redesign the Frobnicate section soon.
3. Frobnicate is now available in PostScript™ format from <http://members.tripod.com/~Frobnicate> so you can now access Frobnicate on Unix, Linux, Macs, PCs, Acorns and any other system capable of converting PostScript™.

## Bunnypeople™:

You know those weird dancing technicians that accompany the Intel™ advertisements? Well you might not have seen <http://www.intel.com/intel/intelis/shop/fun.htm> which contains stuff like:



A bar of dark chocolate designed to look like a Pentium® processor cartridge. Yours for \$3.00!



Thought you'd seen it all? Well, I bet you hadn't reckoned on bendy-wendy BunnyPeople™ with Pentium®©™ (<grin>) logo on their chest. Standing a massive 13 inches tall (that's about 32 centimetres to the metrically enhanced), this can be yours for just \$12.00. A choice of "metallic/iridescent colors".



This is an "Infant Onesy" which is a bit like a bodysuit for babies. Available in sizes for 6, 12, 18 and 24 months. 100% cotton, and yours for \$14.00. Features Pentium® and "Intel Inside"™ logos on the front, guaranteed to send your child into therapy for the duration of his adult life† (though oddly enough the description page didn't say that!).

† - This is an opinion, not fact.

## And finally...

HTML is like a horse with four legs.  
Some people want to cut off two of those legs just because they think a horse with two legs is cool.

– Andrew McCormick

# CastAVote

For those that don't know, CastAVote is a voting system available for Acorn BBSs. With fidonet, the CastAVotes can be linked to share data and options voted for – although each version of CastAVote is fully autonomous.

<aside> If you are interested in how it works, or would like a copy – email me! </aside>

Looking in the votes data is always a fun experience. Here is a selection of live votes (from Digital Databank, 10/12/1997). Silly options have been snipped to save space.

Question: **Who's going to miss their T-bone steak?**

Options	Vote	%age	0	25	50	75	100
<i>Me - I lurve steak.</i>	4	40%	••••••••				
Not I - meat is murder!	2	20%	••••				
I'd prefer rump.	2	20%	••••				
Beans on toast does me fine.	1	10%	••				
Hunh?	1	10%	••				

[I'm depressed about the "Beef Crisis". I like a good bit of beef every now and then]

Question: **Most likely drug related Childrens TV programme**

Options	Vote	%age	0	25	50	75	100
<i>The magic roundabou</i>	7	63%	••••••••				
Teletubbies	2	18%	••••				
Scooby Doo	0	0%					
Superted	1	9%	••				
The wombles	1	9%	••				

<three entries snipped>

Question: **What's cooler?**

Options	Vote	%age	0	25	50	75	100
<i>Long hair</i>	7	46%	••••••••				
Short hair	5	33%	••••••				
Being bald	3	20%	••••				

[Well, that makes me feel better. I must be cool then. ;^)]

Question: **To settle an argument. Who has the bigger nose ?**

Options	Vote	%age	0	25	50	75	100
Celine Dion	3	12%	••				
<i>Barbra Streisand</i>	21	87%	••••••••••••••••••••				

Question: **What is your favourite type of Cheese?**

Options	Vote	%age	0	25	50	75	100
Edam	3	10%	••				
Cheddar	13	43%	••••••••••				
Danish Blue	1	3%	•				
Brie	1	3%	•				
Gouda	1	3%	•				
Wensleydale	2	6%	••				
Camembert	5	16%	••••				
Another type of cheese	4	13%	••				

[Wensleydale is good, but Mature Cheddar wins. As any Nick Park fan will know, the moon is made of Wensleydale.]

Question: **Who is your favourite character in "Friends"?**

Options	Vote	%age	0	25	50	75	100
Chandler	5	14%	••••				
Rachel	5	14%	••••				
Ross	2	5%	•				
Phoebe	7	20%	••••••				
Joey	3	8%	••				
Monica	0	0%					
Ugly Naked Guy	2	5%	•				
<i>I don't watch Friends.</i>	11	31%	••••••••				

[Awww... Poor Monica. What would Friends be without her? My vote, obviously, went to Rachel (neither Claire Danes nor Samantha Mathis were on the list y'see).]

You too can join in with all the fun.  
If your favourite BBS does not have CastAVote,  
then ask the SysOp to email [rmurray@argonet.co.uk](mailto:rmurray@argonet.co.uk).

And before I go...  
It's 8.05am and time for Natalie Imbruglia to  
be played on Virgin radio...

# MERRY CHRISTMAS



*Here's to 1998!!!*

As you can see, I'm a little bit busy...

...but not busy enough to wish a *Merry Christmas*  
and *Happy New Year* to all Frobnicate readers!