9/1999
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# G64! commodore WORLD

## HARDWARE

INSIDE: MAKING A PRINTED CIRCUIT BOARD

## TIPS

(NON) MASKABLE INTERRUPT

TRICKS WITH THE SUPERCPU-DIRECT-PAGE

## GEOS

ALSO ON THIS COVER DISK: FINDER FOR WHEELS

## TOOL

THE REX-SHELL REU TOOL

## AUDIO CD's

A C64 INSPIRATION SOURCE:

SYNTHIE TRAX, BACK IN TIME AND CHRIS HÜLSBECK

SCENE: NORTH PARTY 4
GAMES: HINTS & CHEATS
PLUS: ZYNAX II ON DISK

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## LANGUAGES & COMPILERS

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| GEOS 64 v2.0 | $44.00 |
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| International FONTPACK | $25.00 |
| Perfect Print LQ for GEOS (Laser-like output) | $49.95 |
| RUN GEOS Companion | $20.00 |
| RUN GEOS Power Pak I or II (Specify) | $20.00 |
| Wheels 64 (GEOS Upgrade, req. GEOS 64 v2.0) | $36.00 |

## MIDI & SOUND

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## EDUCATIONAL

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|---|---|
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| SuperCPU 64 w/SuperRAM (8 MB) | $278.00 |
| SuperCPU 64 w/SuperRAM (16 MB) | $316.00 |
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## PRODUCTIVITY

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| SwiftCalc 64 (Timeworks) | $16.00 |
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| TWS 128 w/Speller (Busy Bee) | $39.00 |
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| Commodore 1670 Modem (1200 baud) | $19.95 |
| Modem (9-25) or Null-Modem Cable (9-9 or 9-25) | $9.95 |
| Novaterm 9.6 (specify 3.5" or 5.25") | $29.95 |
| Turbo232 Cartridge (Up to 115Kbps) | $39.95 |
| USR Sportster 33.6Kbps FaxModem | $169.00 |
| USR Sportster Faxmodem w/Turbo232 & Cable | $199.00 |

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| Total Eclipse | $10.00 |
| Walkerz | $19.00 |
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| Wings of Circe | $19.00 |

## BOOKS

| | |
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| Anatomy of the 1541 | $8.00 |
| C-64 Science & Engineering | $8.00 |
| C128 Computer Aided Design | $8.00 |
| C128 BASIC Training Guide | $8.00 |
| Commodore 64 Tricks and Tips | $8.00 |
| Compiler Design & Implementation for the C64 | $8.00 |
| GEOS Programmers Reference Guide | $28.00 |
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| Hitchhikers Guide to GEOS | $28.00 |
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Picture: Volker Rust

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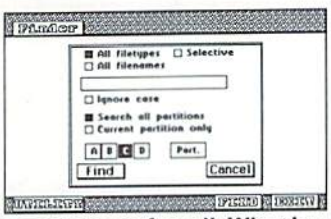
**AudioCD's**

There is nothing more characteristic about the C64 than the sound of the SID. There are numerous CD's full of interpretations that have already become legend. We have listened to them and are reporting starting on page 6!

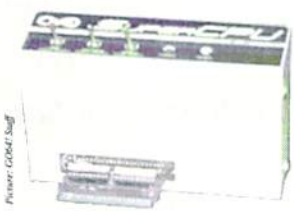



**16**
**Finder for Wheels**

Good news for all Wheels users. There is a new utility by Maurice Randall which helps you to find everything, provided that you start looking for it. And this is really fun with the Finder for Wheels. You can find out more about on page 16 or on our cover disk!

**26**
**REX-Shell - for the REU**

An ideal development tool for all REU owners is the cover disk's highlight this time. REX- Shell allows for the comfortable management of programs in the REU. More on that on page 26!



Picture: GO64! Staff

**30**
**SuperCPU - Corner**

Not only does the 65816 processor in the SuperCPU turn the zero- page into a directpage, but many other things are possible in an indirect way. More about "Trickery with the Directpage" can be found starting at page 30!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BASIC-Project
NP4-Stuff

B

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Assembler-Tutorial Table
Zynax II (Game)

## "Fun of Computing"

was the name of a computer show which was held on our campus some time ago. Nothing too large, but who cares... Although it was mainly intended for fans of the Amiga, other systems apart from the PC mass market were welcome too. And given the above motto, no organizer should be surprised if a totally excited C64 enthusiast suddenly knocks at his door.

So, I set up my complete breadox system, including the SuperCPU and a CMD HD. Thanks to the generous support I got from a friend (in the form of a high end audio set-up with about 300 Watts) I was able to make sure even the most blindfolded PC user couldn't ignore my stand! After putting up some sign-posts and the latest issues of GO64!, the show could begin. During the two days of the fair, I got the typical reactions shown by people who are suddenly confronted with a C64 - on one side, there's the unbelieving surprise in view of the new, powerful hard- and software for the 64 and the enthusiasm expressed towards such an "outdated" system. Some self-appointed wiseacres had to make fun of it, but became quiet as soon as they were shown how much we get out of relatively little on this system, as it seems such efficiency can't be reached on todays modern systems. MHzMania and MemoryMania do have their down sides...

But there weren't many of this kind. Most people were openly interested and just came by to have a look. Now and then, they gave wistful looks, remembering the "good old time, when things still worked as you wanted them to", as a visitor told me. In some people's eyes, I could see a fire blazing up, and they bombed me with questions, a thirst for knowledge I could hardly satisfy, about what's been happening, how many were still active on the machine, whether I knew the one or an other program... Finally, one guy wanted to get his C64 out again, when he remembered he could perfectly use it to fill in a certain kind of form with a printer, which he couldn't do satisfactorily on the Amiga. Who knows - maybe some of these people will return to our breadbox, if only as a second machine.

But they at least will understand what I wanted to show the visitors: that our system, the C64, fits best to the motto of the show: Fun of Computing!

We wish you lots of fun reading the new GO64!

Wolfram Sang

(Wolfram Sang)

# News Flash

### Gravenreuth goes stalking again

As the German newsmagazine "Focus" reports in issue No. 30, the lawyer Guenter Freiherr von Gravenreuth, known as hunter of copy-pirates, has found a new occupation: one of his clients had registered his rights to the name "Webspace" and then took proceedings against at least 30 German internet providers with reminders and bills in which he claimed more than 1000 DM because they had used this word on their pages. As a consequence of this so-called proprietary-offence 40 internet companies have founded an initiative and public prosecutors are already investigating. E-mail-contact: **team@online-recht.de** Before "Guenni" Gravenreuth was known as hunter of C64-pirate-copies. With dubious con-swindle he had tried to get on at them.

### Cameron Kaiser gives away comp.binaries.cbm

Because of too much work in his private life Cameron Kaiser has announced that it is impossible for him to moderate the newsgroup comp.binaries.cbm permanently. The experienced moderator Markus Mehring is going to take his place, but Cameron promised to support him from the background..

### New patch to Geowrite 128 now available

The Geowrite 128 version 2.2 Patch is now available. The upgrade contains, among other things, the following innovations: complete support of four disk drives, booting from any drive from A-D if you click a file on it and an improved loading sequence. The program is available for US$6, if you are interested please contact directly Todd Elliott, 2906 Kathleen St., Riverside, CA 92506, USA. You must also give your storage medium (1541, 1581 or FD2000).

### Interview with Rob Hubbard

At the end of August the legendary C64-musician Rob Hubbard gave a phone-interview live on the radio in the 6581 SID Show. He was interviewed by moderator Hard Hat Mack.

### Improved Star Command Homepage

Joe "STA" Forster has armed his "Star Commander" homepage. He has made the main changes at the item "The X1541 Shop," which contains many more programs for a helpful conversion of data between the Floppy 1541 and a PC. You can find his homepage with all further information directly under **http://sta.c64.org** .

### New CBM special edition

Lately Iwin Corporation has announced the C64 x32 Computer! This means a special machine with a limited edition of 10.000 pieces. The C64 x32 will look very similar to the Commodore 65. 64 MB Ram, a 3D graphic card, an isD soundcard, a 3,5" disc drive, a TV - and VGA- attachment, serial attachments as well as a modem- or ISDN-card are only some of first highlights. Up to now more details about the "wondermachine" are secret, but you can retrieve more information from the Internet at

**http://www.iwin-corp.com/news/cbm_news/cbm_future_products_and_plans/cbm_future_products_and_plans.htm**

### Jerry Roth (DrJ5, QLink) has died

SID composer Jerry Roth died in July. To honour him, his works have been made available in the newsgroup comp.binaries.cbm as a set of seven self-extracting archives (jroth1.sfx thru jroth7.sfx).

## C64 mailing lists

The net offers a lot of mailing lists concerned with the C64, and the net itself also offers you an overview, under...

**http://cbm.oc.dynip.com/ftp/text/cbm-mailing-lists-list.txt.**

This list of C64-related lists is updated monthly, even more frequently at times. A mirror of the list is available under...

**ftp://videocam.net.au/cbm/info-txt/cbm-mailing-lists-list.txt.**

You might also like take a look at http://www.onelist.com - this server allows non-commercial users to create their own lists, and a lot of them are c64-related. (source: TIFCU mailing list)

## File utility available for free download

Right now, the newsgroup comp.binaries.cbm contains a self-extracting archive called "duo.sda" (posted by Jeffrey L. Jones of Loadstar Magazine). Duo is a mouse-controlled file utility meant to simplify navigation on CMD-Harddisks and RAMLinks. The contents on comp.binaries.cbm are changing quickly; however, outdated material can always be found on
**http://videocam.net.au.**

## GeoWrite upgrade

American c64 programmer Todd Elliott is working on a patch for GeoWrite128 that upgrades it to version 2.2. His further plans are to make GW memory resident, and make it possible to use more than seven fonts in one document. In the current state, the serial number check has been removed, and GW128 has been extended to support four drives. The patch runs on GEOS 2.0 and Wheels 128. Contact Todd at
**eyethian@juno.com**
to get further information.

## Mailing list for GEOS programmers

A new mailing list for all subjects related to programming on GEOS, Wheels and MP3 has been created under the name "geoProgramming: The Millenium". The list is moderated by Todd Elliott. To subscribe, send an email to
**gtm-request@videocam.net.au**
containing the word "subscribe" in the subject field AND in the message body.

## Emulate a Spectrum with your 64

The 64 is not the only computer worth to be emulated - at the moment, comp.binaries.cbm contains an emulator for ZX Spectrum BASIC that runs on the C64, posted by Jesper B. Nielsen **<jez@post9.tele.dk>**. It's freeware and it runs most BASIC programs written for the spectrum without any changes. (Press F7 for help)

## HTML support for GeoWrite?

MegaPatch3 co-authour Wolfgang Grimm is thinking about writing a GeoWrite that displays HTML documents, as he announced in the Brotkasten Corner in BTX.

## SoftMMU, an expanded memory management API

Whith this 6502-based API (Application Programming Interface), David Holz <whiteflameParrot@geocities.KillTheParrot.com> wants to define and build a library of routines to handle memory expansions of any kind. Look to...

**http://www.geocities.com/ResearchTriangle/Lab/1767/scratch/softmmu.html**

...where he offers reference code on how to move memory pages on a standard c64 and a 64 expanded with GeoRam. His code checks for damages to the memory structure as well as segmentation faults. The system can be extended to any other memory expansion. David's looking forward for your constructive criticism, and maybe even your cooperation for the project.
**http://fly.to/theflame**

## Successor of LUnix?

Daniel Dallmann **(e-mail: dallmann@heilbronn.netsurf.de)** has written a completely new version of LUnix which is called LNG. It has the same range of functions as the old version, has TCP/IP support (SLIP-based), and has a working FTP-client that now is able to work with the commands DIR, CD, PWD, MORE and GET. Further information on LNG can be found on this web-page --
**http://www.heilbronn.netsurf.de/dallmann/lunix/lng.html .**

## Wheels-update to V4.2

There are 30 Wheels users who still have not sent in their registration cards; therefore, it was not possible to send them the free upgrade. Maurice Randall is asking users to send in their registration cards. Numbers still missing: Wheels 128 numbers (WH-xxxxB) 1072, 1075, 1076, and 1079 as well as Wheels 64 numbers (WH-xxxxA) 1022, 1025, 1026, 1097, 1103, 1104, 1106, 1108, 1109, 1110, 1114, 1115, 1116, 1118, 1119, 1120, 1158, 1163, 1181, 1192, 1196, 1202, 1204, 1211, 1219, 1220. Maurice states that any future applications for Wheels will not work with versions lower than 4.2. After having sent in your registration card, you will receive the disk with the new version as soon as possible.

## Commodore Faction ceases publication

The British magazine, Commodore Faction, has stopped publication due to a lack of money.

## GO64!/Commodore World participates in Fair

It's time again! From Oct 29 to Nov 1, Hobby&Elektronik 1999 will be held in Stuttgart. Again, the CSW publishing house is going to take part in the second largest consumer fair, presenting, among others, all products from CMD, the Commodore 64 Web.it and the IDE controller, on a total area of 34 (!) square meters. On the software side, Wheels, MegaPatch 3 and the brand new and hot operating systems for the SuperCPU, namely CLiPS and JOS, will be shown. We'll even have our own Internet access system set up. You'll find us in hall 11, where our booth with the large Commodore flag can be spotted from a distance. An exact description of the route to the fair grounds can be found on the net under
**http://www.messe-stuttgart.de/**
- we hope to welcome a large number of visitors as we did in the last two years!

## CCL on Hobby&Elektronik 1999

Like the year before, the Commodore Connection Line (CCL) is taking place with an own booth in the hall of computer clubs. The CCL, maintained by Oliver Biasin, is Germany's most comprising address list for C64- and 128 users. Also at the CCL booth: KOMA and his C128 Super-Cube - "Tower" is not a worthy name for this Commodore monster, a wonder machine which really contains all and everything you can imagine. And, fresh from the press - the newest issue of KOMAdat, the list of C64 retailers' addresses . Another topic is going to be video processing with the C64. We'll show a low-cost method for subtitling your videos. MySoft is going to show the current updates of the most comfortable applications for the C128..

E-Mail:
**Connection-Line@gmx.de**

# Check it out, Baby!

A few weeks after his appearance at the Out-of-Order Party, musician Taxim is publishing his first music CD, "Synthie Trax 64 - Volume III". This will be the first volume on a digital medium; the first two were produced only on tape.

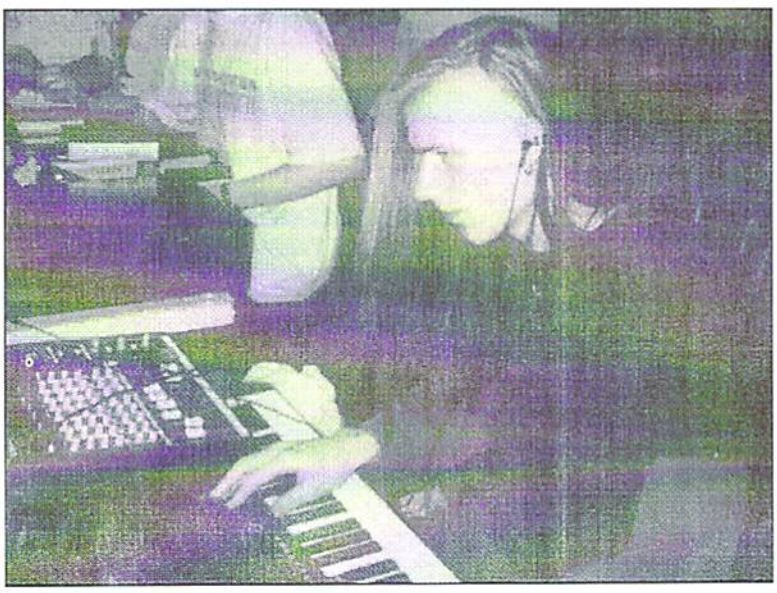
*by Volker Rust*

Taxim proves his passion for C64 history in the intro of his CD, because he lets a SAM-synthesized voice speak the words in the introduction. Until now, the Synthie Trax volumes had been produced containing synthesized conversions of well-known SID compositions written by other composers. However in this volume, Taxim's original hit, "Living Black", is included, which won him acclaim at the Symposium Mekka Party. The synthesizer adaptation drives the creative theme of the winning tune, and the drum effects create a sense of pressure and feeling.

## Raving Giana

"Legends" expands on the music created by the group of the same name. The new version is very impressive with its hypnotic character and is reminiscent of Chris Hülsbeck at his best. The "Giana Sisters" intro track is used by Taxim in the next piece; the theme from the well-known "Jump & Run" is reworked into a techno-hit.

Unfortunately, the original interim piece is not included, but its flair is preserved at 155 BPM (beats per minute) promoted by deep, powerful, long-duration sounds. The title music of a 1986 space shoot-'em up game is the father to the composition, "Erebus". "Erebus" sounds like something from the middle ages but uses space sounds to create an interesting contrast. If you'd like to hear the music from the first two of the "Last Ninja" games, you're in luck. Taxim has included three pieces from the games, "Wilderness" (Last Ninja I) and "The Office" and "Basement" (Last Ninja II). All three are convincing because of their true-to-the-game melodies, and they create a unique sound environment for the listener.



Taxim live

Picture: Volker Rust

## Hits

The "C64 Hitmix" is a mix which is sure to please dance music fans. At 140 BPM, music pieces from Katakis - Hard'n'Heavy, Outrun and Delta - are reworked by Taxim. This mixture doesn't sound like it would go together well, but the pieces really fit in nicely and sound great. To many peoples' liking, the title music from "Hollywood Poker" is included. Originally from Holger Gehrmann, this tune has been long-awaited in the music scene. Unfortunately, the piece only lasts two minutes.

## Classics and Scene Music

Nostalgic feelings are awakened with Taxim's interpretation of the "City Cobra" theme. This reworking stays true to the original not only in melody but also in tempo, an important factor with this slow piece. "Hades Nebula" is the title music from the game of the same name. A bonus track includes conversions of the music from two demos, "Dawnfall" and "Unsound Minds". These are also included on the other volumes of Synthie Trax. He reworks these compositions once again for the new CD. Both pieces are reworked 1 to 1 from the material in the demos.

## So To Conclude...

Unfortunately, many of the pieces have a short playing time, the longest being about three minutes. The conversions are all well done and are top-of-the-charts worthy to some extent. The instrument use and execution reflect back on the original compositions, expanding and enhancing them. Some of the pieces could stand a little more change and variation. However, none of the pieces are boring, because Taxim knows how to vary and alter the themes well. His love of detail shows us that the C64 compositions really are converted well and with care.

| | |
|---|---|
| **Product Description** | Synthie Trax 64 Volume III, Music CD |
| **Artist** | Taxim |
| **Release Date** | July1999 |
| **Ordering Address** | Taxim, c/o A. Ney, Berzeliusstr. 11, D-45144 Essen, Germany |
| **Bank** | Dresdner Bank AG Essen, Bank code 36080080, Account number: 0543365401 |
| **Price** | 24 DM (Foreign: 29 DM) |
| **Playing Time** | 45Minutes |

# Back in Time

Mostly arranged and produced by Chris Abbott, this CD contains remixes of some well-known game tunes on the C64, like Delta 97, Rambo, Sanxion, Giana (Gianna?) Sisters, Arkanoid, Wizball, To Be On Top, and Crazy Comets; some of them are even done by the original composers, for instance, Chris Hülsbeck, Martin Galway, or Rob Hubbard. The latter one even contributes some exclusive, never-released remixes.

Well, what about the music? As you can guess, the sounds are a lot softer than we're used to from the C64. Alas, the crystal-clear synthesizer sounds aren't always an improvement; the most negative example of this is the music to Crazy Comets. This remix would definitely sound better with an exciting beat and hard guitar sounds rather than with the relatively smooth, bouncing synthetic bass in the background. Compared to the original, this remix sounds like music from Sesame Street rather than from a shoot'em up game.

Things are different with Chris Hülsbeck's remix of the theme, "To Be On Top", because it sounds a lot fuller and juicier than the original - even without the guitars. Same for the Wizball theme and its spherical sounds; the sound of a professional synthesizer fits this one well, giving it a whole new quality. On the other hand, some folks are going to dislike the new version of the legendary Ocean Loader theme, because it sounds like the title theme to an old-fashioned, science-fiction TV show.

"Monty 97" probably could have used a richer bass and less of the C64 sounds, because the rock-style bass line itself is driving the piece. Maybe, distorted guitars would fit in. The way it is, it sounds a bit powerless, just like many of the pieces on the CD. One remarkable piece on the disc is the reworked version of Fred Gray's classic from the game, "Mutants", which could have been done by Jan Hammer (who wrote the music to the "Miami Vice" TV series). This one's well worth listening to, once you've gotten used to the style. In my opinion, one real masterpiece is the "Parallax" title music; it's wonderful how they manage to keep the character of the C64 original.

All in all, this CD seems a bit playful to me, which I dislike a little. However, I don't think the CD is intended to be successful in the charts, so we shouldn't blame Chris Abbott and the other composers. I regard it as an interesting project, but it's not the kind of music I'd listen to in the car or at home. However, C64 fans who're interested in how to reinterpret game classics on a synth will be happy with the CD. It's just a matter of personal taste.

One thing I found particularly interesting is the music and game commentary given by Chris Abbott, Warren Pilkington, Fred Gray, and Patrick Phelan (creative director at Gremlin Interactive) on the inside of the cover. In there, we also find a short interview with Rob Hubbard, including a statement about the music for "Sam Fox Strip Poker" ("Well.. er... er... yes, under a different name... I thought it was too cheesy, but I needed the cash!"). Well... that's the way...

*Back In Time CD, (c) 1997 High Technology Publishing, Ltd., PO Box 260, Bromley, BR2 OZG, Great Britain. http://www.c64audio.com*

# The Hülsbeck Legacy

*by Helmut "Katakis" Bieg*

On his debut CD called "Shades", Hülsbeck doesn't care a lot for his memories of the C64. The silver disc from 1991 does not contain any C64-related tunes except his first one, the one that was published by the 64'er magazine in 1986. "Shades" is almost identical to the C64 version, only slightly modified. The piece still sounds good, although he should have gotten more out of a synthesizer. You can play this version beside a C64 playing the original version and not notice any significant differences. The CD also contains a medley of Turrican tunes, which is probably not very interesting to fans of the C64, since it's based on the Amiga versions of Turrican I and II.

The second Hülsbeck CD, the soundtrack to the Amiga game "Apidya", ignores the C64-only community altogether. Besides the in-game tunes, the disc also includes some rather strange rap/hip-hop tunes, certainly not his best ones.

Things are different with the third CD by Chris, "To Be On Top", whose title tells you what to expect - very beautiful, new versions of the title tune as well as the theme from "To Be On Top". By exploiting the capabilities of his synthesizers, Hülsbeck manages to really pep up his tunes from the 80s instead of merely copying them. This goes especially for the title tune, which sounds absolutely fantastic. Fans of the game, "Gem'x", get their share of the new version of the Gem'x title tune Chris made for the CD. This one is similar to the pieces from "To Be On Top" - new yet old stuff.

The fourth Hülsbeck CD is another disappointment to C64 enthusiasts, although it's the Turrican soundtrack. From an objective point of view, it might well be his best record, but all pieces on it originate from the Amiga. Maybe, it's still worth listening

to, since it's the only one that features Chris as we know him - just Turrican, just Hülsbeck.

"Rainbows", similar to "To Be On Top", is enriched with two classic C64 tunes, namely the title tune and in-game music to "Giana Sisters", which are both beautifully converted, although they also lack digi charm. However, contrary to "Shades", you clearly hear that you're not sitting in front of a C64, with clear synthi sounds coming from the speakers. The tune to "Jinks" is another pearl, though after one and a half minutes, it doesn't resemble the original very much, since at that point it changes from a slightly reworked version of the original tune to a techno version of the old theme. Everyone's entitled to his own opinion on how this sounds, but we can say Chris the magician wasn't lazy.

"Sound Factory" is a disc of its own - no doubt about it. The "Jukebox" contained in the data track is interesting to all Hülsbeck fans, even though Chris only included his old Amiga tunes, ignoring his works on the C64. However, the music pieces clearly show Hülsbeck's fascination for mainstream techno. As always, there are some remakes, "Jim Power" for instance. The rest is a matter of taste. There's also a remake of "Shades" on this CD, which has been reworked and brought up-to-date. This one really sounds great and can be considered the only real classic on "Sound Factory".

Alas, we have to say that Chris Hülsbeck doesn't care too much for his fans on the C64. Maybe that's due to the passage of time, but there's no doubt his CDs would be even better if he had used some more pieces from the "old times", since this way the techno overkill in his latter works would be more bearable. The way it is, there remain six CDs whose worth to 64 fans is questionable. Classics, like "Katakis", "Bad Cat" or "Danger Freak", are missing altogether. However, those who also have an Amiga definitely won't be disappointed. From this point of view, "Sound Factory" is the most promising disc - despite the rather poor CD tracks - because the "Jukebox" contains all the Amiga sounds done by Hülsbeck and Rudolf Stember.

All in all, it's a pity that even Chris couldn't bring more of his roots into the age of techno, since his new sounds don't have much of the fascination of the old tunes. When in doubt, there's just one thing to be done. Open your CD case, find the Katakis disk, load, lean back, and enjoy. Hülsbeck has never been better than here.

| | |
|---|---|
| **Name of product** | "Shades", "To be on Top", "Rainbows", "Sound Factory", Soundtracks: "Apidya", "Turrican" |
| **Artist** | ChrisHülsbeck |
| **Product class** | MusicCD |
| **available from** | SynSONIC Records, C/o E-Trade GmbH, Wilhelm-Leuschner-Platz 8, 63225 Langen, Germany Tel.: +49-6103-20103-0, Fax: +49-6103-20103-99 E-Mail:order@synsonic.com |
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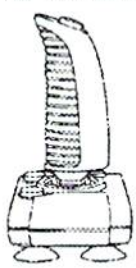

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Almost as in Japan: C64 Sceners at sumo wrestling

# News from the East

*by Wolfram Sang*

In former times the intent to visit such a party often failed because the invitations were only written in Polish. But this time the organizers worked hard to bring out an english version as well. They promised a party for C64 only, with lots of "not always serious" competitions and a wonderful familiar atmosphere. Well, in such a case you don't have to beg me for long! Quickly we found some people and a car and went off to Bartoszyce (pronounced "Bartoshetsa"). This town lies in the northeast region of Poland, quite a long way for Germans and other West-Europeans. But shortly after our arrival it was doubtlessly clear that the journey had been worth it. We were welcomed very friendly and people helped us with changing money and buying food for the following days.

A short time later we had the first fun-compo: Sumo-Wrestling. The aim is to push your opponent out of the ring. In fact, this entire proceedure was borrowed from the Japanese. It's absolutely funny! Afterwards we went on meeting people. Unfortunately only 5 non-polish people had made it to the party, so the interest in us was quite big. You could feel how glad there were about everybody that had been willing to come such a long way. After all, this meeting was meant to be something special. Although about 100 people came and the party was well visited, it still held my full attention.

Men at work

### Kurwa Vodka

It's no secret that on such occasions there's a huge taking of alcohol. And if you are so close to the Russian border (20 km) Vodka even starts getting more attractive than beer. The price for Vodka was really incredibly low, but I can say that about everything you might need for a party. No matter if buy Cola or pizza, you really didn't have to spend much money. The admission (15DM) that people from far away didn't have to pay wouldn't have been a problem either. The whole thing took place in the local cultural center. We had enough room and there would have been space for a few guests more, so we had the possibility to retire somewhere in a spare room, to chat or simply sleep. A big disadvantage was the hygienic situation: we only had a few toilets and they grew dirty quickly. To take a shower was not possible at all, and especially after the football match we would have been thankful to have a good shower available.

On the other hand the technical equipment was fine, the music equipment had a great

sound and you would certainly be satisfied with the bigscreen. The live-acts, on which some of the sceners showed that they were also able to handle a music instrument, were good as well, especially the improvised playing of keyboard and bass guitar, both of which were impressive. And while some of us started dancing to the music, others were still working on their demos, graphics or music, as the deadline was moving closer. As an alternative you could sit in the garden and relax, as the weather stayed fantastic all the time.

Not just couch potatoes: Football is also great fun

### C64-freaks always understand each other

The communication on both sides worked out well. Although you could often hear something like "My German/English is not very good" from the Polish side, this was just modesty in my eyes. Of course, talking about uncommon topics we had to use hands and feet, but on the whole this made it only more exciting. Usually we could talk to each other without complications, and what we were talking about was more than just our beloved breadbox. You could also find some openly expressed opinions concerning the change in Eastern Europe and get an idea of Germany's reputation in a foreign country. Both sides gained a lot from this exchange. During all the time the atmosphere was simply fantastic. It was just as open, easy-going and familiar as you would imagine a C64-only party. To give you an example I want to talk about the already mentioned football match. On occasions like this I often made a bad experience with too high ambitions. Of course here the teams wanted to win, too, but the match was extremely fair and the most important thing of all was to simply have fun. That's how it should be!

### That extra something

The main event of each party is, of course, the compo. Undoubtedly, people spent a lot of work on them. For example they had new disciplines like Stereo SIDs or Reflex-Tracker. Although here hardly anybody handed in anything, it was a good idea. Maybe the interest will be higher as soon as more people hear about it. And we might have a SCPU-demo-compo on our next party, who knows?

The way of voting was also new for me, but both easy and brilliant. Instead of choosing 3 favorites you could give points from 0 (bad) to 10 (very good) for each contribution. The advantage is that you don't have to make a decision between a number of applicants if you think they're all the same level. Besides there used to be the problem that you had forgotten music No. 1 while listening to music No.17, so it was actually difficult to tell which you thought was better. It was hardly possible to compare. Here you could simply give marks according to your spontaneous impression and afterwards be completely concentrated on the next contribution. This made the voting more fair . Of course it was important as well that we had no PC-people without a sense for C64-effects spoiling the results.

I also want to remark that the organizers did everything possible to present every contribution at its best, every wish concerning old or new SID for the music was taken into account. On the other hand they weren't very strict with the rules. Even

Dancing away with Live-Techno, later on, C64 tunes were also played

**Some placid chatting with no computers at all, and immediately, some girls showed up**

after the deadline, it was possible to hand in contributions, one of the shown demos was started from a machine-code monitor, and 4K-intros could be a bit over the 4096-byte limit. In general I don't think laying too much importance on rules, especially the deadline, is necessary, but a few rules are helpful to make sure everybody can work under the same conditions. Well, maybe we could talk about that again, a thing that worked very well on the North Party. The chief-organizer, Black Light, listened to all suggestions and made as much possible as he could. New ideas and help were always welcomed.

### The releases

Of course everyone was quite excited about the contributions. All bigger polish groups had announced a demo, and because all people who have a name in Poland where there, you could be sure the competition would be thrilling in each class. You didn't have to be there yourself to hand in anything, so right at the beginning of the music-compo there was the first nice surprise: 35 Tunes had competed, the whole elite was there. Mostly the quality was good and there was something for each taste. Here another advantage of the voting-style showed: You could compare easily and discuss the points. I can say that I don't want to miss that again.

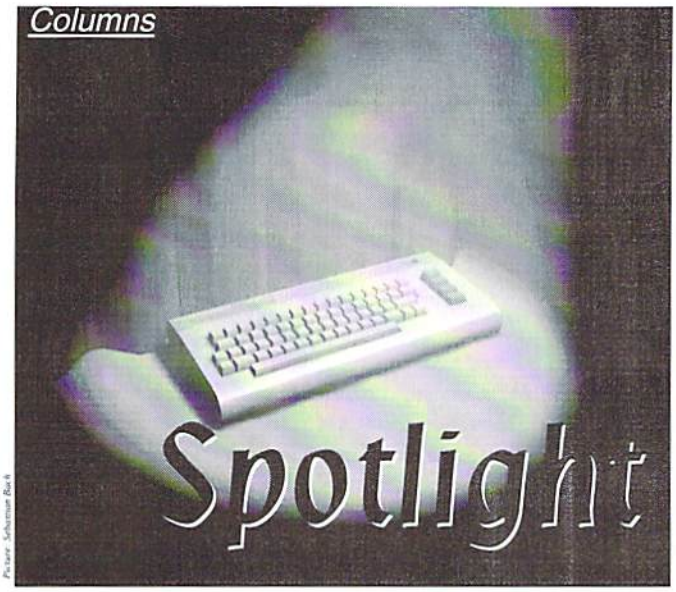
The graphic-compo was not that extensive, but everything that was shown was fine so far. Like in the other disciplines, there were no fake-entries, here everybody had really tried to give his best. For the 4K-compo some people could certainly have tried harder, the Symmek '99 showed how much you can do with 4 Kilobytes. Nevertheless the king's discipline is still the demo-compo. Especially here there were problems on the last parties, their level was fairly low. But the North-Party was pleasantly different, the quality was great. The winning demo from Arise was full of delighting effects and seemed well planned. Unfortunately it was, like 2 other demos, not 100% finished, so they weren't published during the party. It is sad that there's a certain tendency of some people not to finish a demo if they've already competed with it. To counteract this behavior the organizers warned to distribute the versions that will not be finished within one month. In my opinion this is a good idea, who likes beta-versions anyway? So when this issue of GO64! is brought out, even the last contribution should be finished.

### The finals

Now that the competitions were over the atmosphere was at its highest. Everybody discussed, talked shop, congratulated each other and sometimes celebrated by themselves. Everybody invited everybody to drink and laughed until stomachs ached. This cheerful party was only interrupted by the presentation ceremony. Next to cash prizes they also had small plates as souvenirs. A nice idea, C64-parties are more about fame than filthy lucre anyway. After that it was slowly time to exchange addresses, unfortunately the first of us had to leave. But still there were some who stayed until dawn. We had planned to leave at noon, so that we still had time to go shopping (in Poland this is possible on Sundays, too) and make a small after-party with the chief-organizer Black Light. Of course we talked about the past few days: How we liked everything, what we thought about Poland in general and if we would come again. Now we didn't mind promising to come again at all. It was definitely our opinion that this party had been the best of all. Even the famous X'98 that had been really fine could not keep up with the North-party No.4. And especially considering that the X'99 is cancelled anyway, I can only tell everybody to go to the next North-party. It's far more than just an alternative.

### North-Party No.5

We already have a few facts about the next event. It is quite sure that it will take place at the same time as the "The Party 9", e.g. at the end of December. The organizers are very brave to compete with this commercial event. There is hope that the C64-sceners prefer quality to quantity, although you have to drive a bit further for that. But you can easily get to Bartoszyce with the entrance fee you would have to pay in Denmark. And as we all know the date is much earlier this time. It should also be much easier to organize some cars or even a bus. In any case you should contact the organizers first because they help you where they can and might arrange an accommodations or a lift. And if the journey to Poland is a bit exhausting, you will finally be rewarded more than enough at the party. And in spite of all prophecy of doom: As long as there are such meetings I'm not worried about the C64-scene. The new millenium may come!




# PARTY ZEITGEIST

**Parties are a crucial element of the C64 scene. 'Party' in this case does not mean the usual 'drink more beer than me' contests but real computer parties where the inner circle of C64 users as well as the less-addicted fans meet. A party is a good place to meet new people and make new friends. There are different variants of parties in the C64 scene ranging from small-scale meetings hosted by an individual user or meetings in rented community centers with around thirty guests to big cult status parties, meetings with hundreds or even thousands of C64 fans.**

*by Sven Tewes*

Small-scale parties are hotter than ever but nowadays many people in the scene enjoy smaller meetings that are more cozy and at the same time less expensive. Good examples are the 'Computer's Hell' party in Berlin in may '99 with about twenty people not only from Berlin, or the 'Out of Order' party given by the game label of the same name in June. The bigger parties on the other hand doubtlessly lose popularity, no matter if it's the annual big old 'TP' party in Denmark - in Aars or in Fredericia - or 'Mekka Symposium', a yearly party in Fallingbostel, Germany. The reasons for this loss of popularity are obvious: first of all, a rising percentage of kids who prefer to have their eyes take on quadrangular shape during hour-long sessions in front of their Playstations or wonder over PCs tuned to 587 megahertz. But in general there is one main factor that robs the parties of their 'spirit': an unstoppable wave of commercialization all around.

Some of the parties were quite enjoyable because of their personal atmosphere a few years ago but now the time for true masters of the art has gone by. In those times people were feverishly copying discs while now CD recordables are written in the appropriate CD writers. Graphic arts specialists once had to pay attention to every single pixel, coders worked on demo productions that fit on two discs and composers pushed the SID to the limit. Nowadays wannabe PC freaks only use their machines to send zombies back to nirvana. Nobody seems to have any artistic skill anymore - graphics are scanned or ray-traced, samples are mixed together in the fast tracker to mindless 'Mod' music without any hint of imagination or devotion. At the same time publicity campaigns at computer parties reach alarming dimensions. At booths which seem to have been beamed over from the nearest computer trade show, hardware is sold, advertising trailers fill the screens in between competitions and the walls of the party locations are decorated with ad posters.

## Commercialization as a free gift

As a result of the above, entrance fees are rising in many cases. In brief: there's a strong emphasis on commercialism and new financial sources many party-goers are fed up with anyway are explored. Nobody really seems to know where the surplus profit ends up and the only hope is that it is used for paying the rent of the party locations or improving the organization. Surely it is not used to lower the entrance fees which continue rising - whatever the reason.

Sadly enough, this year's biggest C64-only party fell flat. By 1997, the 'X' in the Netherlands was a party for users of various systems but in 1998 it became solely dedicated to C64s and C128s and it impressed through its in-scene charm, accommodations and real party atmosphere. Unfortunately there won't be another 'X' this year. Explanations range from 'lack of motivation' to 'listlessness', all in all related states of mind. Admittedly those are honest replies which deserve respect but nevertheless it's sad that the only opportunities left now are driving to Poland or to the 'TP' in Denmark. Whether it's the distance or commercialization, members of the German C64 scene inevitably will have something to complain about concerning the computer parties still to come in the last months of 1999.

Of course we're not going to give up on partying - no matter if the parties suffer from anachronistic nostalgia or sterile futuristic fantasies.

**Mekka-Sympo-sium 99**

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Disks je 10.-
Arkanoid 2,Pascal 64,Assembler/Monitor 64, Logo,First Word,Oink,Fifth Quadrant,Vera Cruz,Saboteur 2,C128 Musik Maker,Exile, Ace,Moonshadow,Volley Ball Simulator, Security Alert,Batman,Last Mission, After Burner, Action Fighter,Stunt Car Racer, Ballistix,Blasteroids,Kokotoni Wilf,Mission Elevator ,Snap Dragon,Scorpion

Tapes je 1.00 DM :

Vera Cruz,Lifeforce,Traxxion,ISS,Bangkok Knights,Der Fall Sydney,Inner Space, Mercenary Kompendium (deutsch !!)

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**Hardware : Computer & Floppies & Zubehör**

**C64-I ("Brotkasten") : 50 DM**
**C64-C (neuer SID 8580,neue CPU) : 50 DM**
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**C128 : 50 DM**
**Floppy 1541-I oder II, weiß o. grau : 50 DM**
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**Floppy 1581 : a.A.**
**Oceanic u.a. Fremdlaufwerke : a.A.**
**C128D Blechgehäuse : ab 120 DM**
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**Monitore 1702,1802 : ab 50 DM**
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C64 Klassiker & Oldies (zum Teil gebraucht) :

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Pool of Radiance , klassisches Rollenspiel : 30 DM
Buck Rogers , Science Fiction RPG : 30 DM
Curse of the Azure Bonds , Rollenspiel : 35 DM
Gateway to the Savage Frontier , Rollenspiel : 35 DM
Heroes of the Lance , Action-Rollenspiel : 25 DM

Infocom :
Plundered Hearts , Piratenabenteuer , neu : 60 DM
Zork I , Fantasy C16/Plus 4 Disk , neu : 30 DM
Zork II , Fantasy C16/Plus 4 Disk , neu : 30 DM
Zork III , Fantasy C16/Plus 4 Disk , neu : 30 DM
Suspended , Science Fiction C16/Plus 4 Disk , neu : 30 DM
Starcross , Science Fiction C16/Plus 4 Disk , neu : 30 DM
Stationfall , Science Fiction : 30 DM
Wishbringer , Fantasy (Goodies fehlen) : 20 DM

Electronic Arts (US Versionen) :
Strike Fleet , Flottensimulator : 30 DM
PHM Pegasus , Simulation : 30 DM
Patton vs Rommel (neu) : 50 DM
Hacker , Adventure : 30 DM
Arcticfox , Simulation : 25 DM
Chuck Yeager´s AFT , Simulation : 30 DM
One on One , Basketball : 25 DM
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Dan Dare , Action : 20 DM
Axis Assassin , Action : 20 DM
Bard´s Tale 1-3 : a.A.
Music Construction Set , Anwender : 20 DM

Andere Hersteller :
Rommel battles for North Africa , (SSG) (neu) : 50 DM
Star Fleet 1 ,Strategie (Interstel) : 35 DM
Sorcerer Lord , Fantasy-Strategie (PSS) : 25 DM
War in Middle Earth , Fantasy Strategie : 30 DM
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Deathbringer , Rollenspiel (Spotlight) : 25 DM
Pirates , Simulation (Microprose) : 35 DM
Infiltrator 1 oder 2 (Mindscape) : je 20 DM
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Pegasus Bridge , Strategie (PSS) : 30 DM
Countdown to Shutdown (Activision) : 30 DM
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**Hardware Restposten/Schrott :**

**ICs (ungeprüft) je 1.- :**
**318005-04,6510,901227-03,906114-01,901225-01**
**Defekte C64/C64C/128/1541/1541-2 Platinen je 10.-**
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*Hardware*

I would like to tell about my experiences with making boards myself at home. One thing right at the beginning: Anybody who wants to make a board himself just like these should read this article very carefully. Otherwise it can turn out as a quite expensive experience.

*by Wolfgang Rielicke*

Everybody should keep in mind that there are certain difficulties, which I will to describe in the following. Making boards has been my hobby for 30 years now and I have collected some material, tools but also a lot of (sometimes expensive) experience, because my first tries all failed completely! You should first start with (small) one- sided boards, and with growing /increasing experience you will be able to make two-sided boards.

### Makings /material:

Next to a good board-layout (e.g. a well-covering photocopy, if possible do not use originals) we need blueprint spray,

an ultraviolet exposure lamp, developing and etching chemicals, plastic (not metal!) tweezers or grabbers to transfer the board(s) in and out of the chemicals, bottles for storing the chemicals (e.g. chemical bottles for the dark room, never use drinking or plastic bottles like you would use in the house), a plastic bowl for the developing and another, if possible heat-resistant, one for the etching, copper clad board material (single sided), a small drill press (or a hand drill and a suitable drill press kit) and a few 1/64" drill bits. If you want to clear-coat the board, you will also need some plastic spray other appropriate chemicals.

If you want to make more or two-sided boards you need a special film for the board-layout. It is difficult to produce two-sided boards using normal photo or printer copies, and this should only tried with enough experience. It requires precise and well-covering board layout images! Photo copies will not be sufficient here!

Now another warning: As you can see, at the beginning your new hobby is far from being cheap! At first the chemicals and tools cost a lot of money. Just for a small drill press you may spend up to 50 Euro . Together with the other stuff you can easily exceed 150 Euro, depending on what you already have. But I must say that during all these years I have not only made boards for myself but also in small numbers for other users.

### Warnings:

ATTENTION! Concerning the chemicals: You must store these chemicals out of reach for children! The result would be a catastropy, because the chemicals are either corrosives (lik the etchant) or highly toxic (everything else)! If your skin comes in contact with them, you should wash them off with water immediately. If you splash ANYTHING into your eyes, you have to go and see a doctor right away.

While working with the chemicals you should wear rubber gloves. Please inform yourself about the chemicals' clean-up proceedures before you go to work, because most such chemicals have to be treated as toxic waste, as they are a danger for the environment. For many chemicals, it is forbidden by law to simply pour them down your drain at home, because just a small quantity of them endangers the drinking water.

Every chemical sold today has an MSDS, or Material Safety Data Sheet available, which will contain cleanup and emergency proceedures. Most chemicals have this information printed on the label as well. You should read all such labels and MSDS' very carefully before so much as opening any chemicals!

### Other utensils and arrangements:

I have built a special table to expose models or boards. It is made out of a white coated particle board with a flat piece of steel screwed to it, to which I have affixed an isolated lampholder (without shade because of the heat) in the middle about 50 cm above the table surface. An Ultraviolet (UV) exposure lamp is put into the lampholder. Then you need a 5-6 mm thick perfectly flat glass sheet, which you will use to press the layout against the board. Personally I use a Crystal glass sheet because it has the best flatness qualities. Careful! Remove the sharp edges of the sheet so you won't hurt yourself. If you are interested I wouldn't mind giving you advice how to build such a table. It is quite expensive to buy one.

Tried and tested as an exposure source is a 500W NITRAPHOT lamp that has the UV-radiation necessary to expose the photo coating of boards. Because of its strong light can also be used to expose other models (e.g. contact films or photo-sensitive coated metal foils for making front scales). Warning! Never look directly into the light while it is on! UV-light damages the eyes! Also you should protect yourself with sunscreen (SPF 30 or higher), as too much exposure to UV light will also give you what amounts to a sunburn!

## Copying and developing a board:

First you should prepare the photographic developer and the etching chemicals according to the instuctions of the producer and get a bowl ready in which you will develop the board. It's best to fill your sink part way with water, and put the bowl in it, to guard against accidental spills, which will easily stain! You shouls aways use the same bowls for the same chemicals - Never re-use a bowl for another chemical.

To find out the right exposure time you should only carry out the following steps with subdued light, at laest one meter away from any direct light source. Indirect light , e.g. daylight, doesn't cause any damage as long as it is not too strong. Cut out a narrow strip of board (without taking off the copper material) and clean up the edges with a file or sandpaper (work from the middle to the edges). Now scribe marks along one edge of the board, to divide it into ten equal sections.

Now, pull off the protective plastic cover from the board, to expose the blue photo-sensative layer. Be careful and avoid touching this layer with your fingers, as traces of skin oil could cause trouble later when you want to develop and etch. Now put the board under the (still switched off) lamp, with the blue photo-sensative layer facing up. Place one of your layout images on top of the board, with the image side down. Leave a little empty space along one edge (just a millimeter or two), so that the scribed marks are still visible.

With the board and image paper laying flat on the table, Spray the top with Blueprint Spray to make the paper translucent. Be careful not to use too much. Use a disposable paper towel to blot up any excess spray, but don't rub, as this will blur or displace the image. Blueprint spray dissolves printing ink and toner.

Now, using something opaque (such as a playing card or a wasted 5 1/4" floppy disk), cover the board up to the first mark, and place the glass on top. Carefully press the middle, to work out any air bubbles, but avoid moving the glass, paper or board, otherwise your image mey be distorted. Turn on the UV lamp, to expose the board. The first exposure step should be one minute long and each following attempt should be one minute longer.

After exposing, cover the exposed section of the board, and expose the second piece of the board for 2 minutes. Repeat for the third section of the board, exposing it for 3 minutes. Continue in this pattern until you have exposed for 10 minutes.. Attention! Switch off the lamp in between exposures, to let it cool down. Don't move or nudge it too much because the filament can break easily and a new one is quite expensive.

At the end you get a scale with one minute as the shortest exposure time and 10 minutes as the longest. The correct time will usually be at about 8-9 min depending on the glass sheet, the strength of the lamp, and it's height above the table. All of your work will become visible on the scale after the development. The optimal time will have a clear board and a clean copper surface as result . Some stages will be missing on your scale and others will contain remains of the photoelectric layer (veil formation because of too short exposure). In my case the best time is 8 min with a glass sheet of 6mm.

After the exsposing we are now going to develop. Place ypour board in a bath of developer. Gently rock the bowl to agitate the chemical, until a clear figure appears on the board. The exposed areas show blank copper and the traces can be well seen. Only develop until the figure is clear, then immediately rinse thoroughly with cold water! After that dry the board by blotting with a paper towel (don't rub because the photo layer could be scratched which would lead to breaks in your traces later on.

Please test this carefully. The etching won't work if the developing hasn't been done properly (because of film remains) or-if the board has been exposed too long, or the model has not been covered correctly- the whole board will be etched. But if everything worked out until now, you can now start making boards.

## Etching boards

I use sodium persulfate for the etching, because we get a whaterwhite solution that changes ist colour into light blue after you have used it a few times and you can watch the etching easily. I etch inside a heat resistant glass bowl ( on a heat source,e.g. the cook top of an electric range with low heat). The optimal heat for the etching bath is no more than 40 degrees Centigrade, lower or higher temperature wouldn't be good because the etching effect could retrograde or the whole bath would vaporize! During the etching the board should be moved continously so that the process is advanced. Make sure you have adequate ventilation, as the vapors produced when etching can be harmful.

It is also possible to etch with Ferri-III-chlorine, but here we get an opaque soloution. You have to take the board out of the solution from time to time to watch the etching.

No matter which solution you take, only etch until the surplus copper that has been set free while developing is vanished. If you leave it in the solution too long, fine strip conductions could be damaged or even destroyed. After the etching rinse thoroughly with cold water and dry.

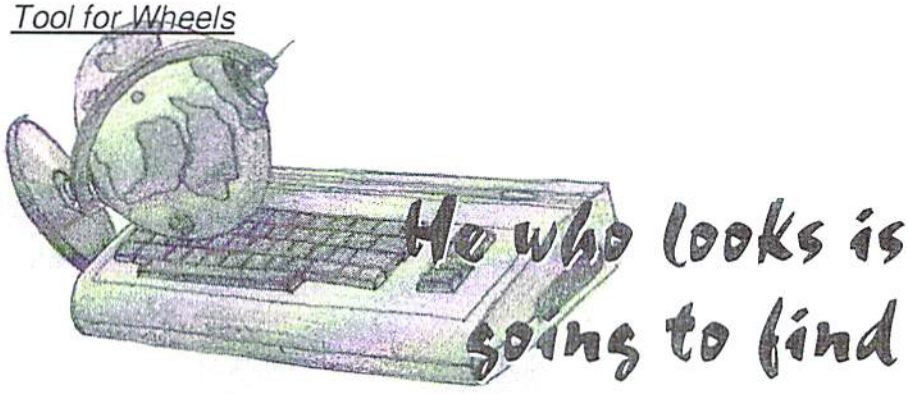
Aftertreatment The rest of the photosensitive layer on the strip conducts can be removed with mineral spirits or acetone. After removing it the board should be cleaned mechanically and at the end either be chemically tin plated (this provides the best looking surface protection together with the best solderability) or sealed with plastic spray which helps to avoid corrosion. For the cleaning you can you use a chemical called Poliblock. It cleanes quite well, removing all oils, and polishes it to a nice shine. Household cleaners, e.g. for stainless steel, are not suitable here because they contain chemical components that corrode copper.

## Refinishing and drilling

Boards made of hard paper/ resin bonded paper (e.g. "perfboard" or "breadboard") pick up a lot of water and swell. That is why they have to dry up to 24 hours after the developing and etching. When you drill, your drill bitss could become dull otherwise. Boards made of glass fiber and epoxy resin can be treated further without drying because they do not pick up so much water.If you want to make many boards it would be worth buying hardened steel drill bits. They have a long working life, and they drill nice clean holes that look as if they were stamped into the board. A good drill bit size is 1/64" for most drilling, and 1/32" for components that require larger holes. Unfortunately, such thin drill bits are very easy to break, and free-hand drilling is not recommended. Make sure that your drill bits are rated for high drilling speeds, otherwise they will quickly wear out.

I wouldn't mind helping if you have any questions (e.g. reference addresses for materials). I also make single boards if required.

*Tool for Wheels*




Good news for all Wheels users. St. Antonious, patron of those who search, has gone on holiday. There's a new utility by Maurice Randall which lets you find most anything - if you search for it.

*by Nikolaus Metz*

We all know it. You save a program or a document to some partition of your hard drive or RAMLink, and a few days later you can't remember where it is. An everyday problem, which usually ends in an unplanned search with more or less satisfying results. It can get rather confusing, even on a half-filled 500 meg hard drive, which can be considered small nowadays.

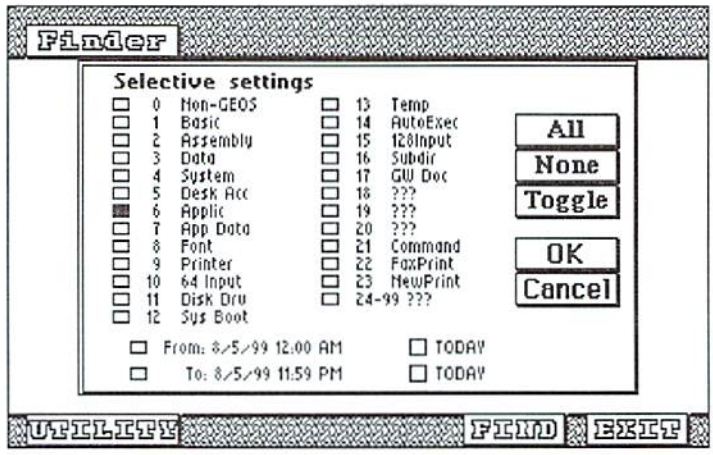
## Let a pro have at it

Searching becomes simple with the utility, Finder. You enter the filename, choose a volume (defaults to the current one), and start the search. The results are presented in a clear list, which shows at the top the name and number of the partition or disk, and even the subdirectory where the files have been found. Beside the name, size, and type of the file, the list also contains the date and time when it was last changed. Unfortunately, the dates and times are written in American notation, i.e. the date begins with the month, and the time of day is shown in 12-hour notation. Hopefully, when the announced German version of Wheels comes out, Maurice will also supply us with a German version of Finder.

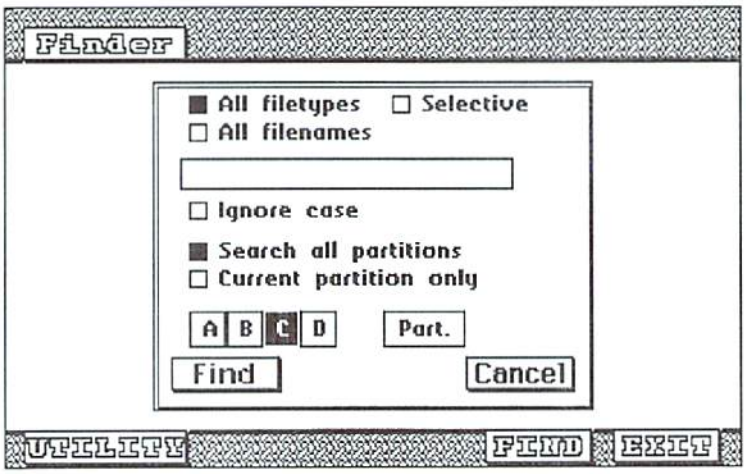
The tool allows you to use '*' and '?' as wildcards in order to find files whose exact names you've forgotten. The latter wildcard, '?', has the same function as in CBM-DOS; it replaces any character at the same position in the filename. As JiffyDos users have already experienced, the asterisk has extended functionality. While under CBM-DOS, you may only use this wildcard at the end of a file name; JiffyDos accepts it in the middle or at the end as well. This way, entering *t finds all files ending with a t, and *t* finds all file names containing a t, no matter whether it's at the start, in the middle, or at the end of the name. This feature is implemented by a new search function which interprets this wildcard as 'zero or any number of characters' (which means searching for 'GEOS*' will also find 'GEOS' itself).

The resulting list produced by the program is limited to a maximum of 1079 (!) entries, which can be matching filenames as well as partition or path information. In order not to exceed this limit - which doesn't happen unless you search all partitions of a hard drive without confining the search - you have to limit the search by providing additional criteria. The input window has several options; instead of searching all partitions, you may specify one of them. Instead of 'all', you may also select which filetypes to allow in the particular search, for example, documents or miscellaneous files. We already know this dialog box from the Wheels Dashboard.

Selective Settings



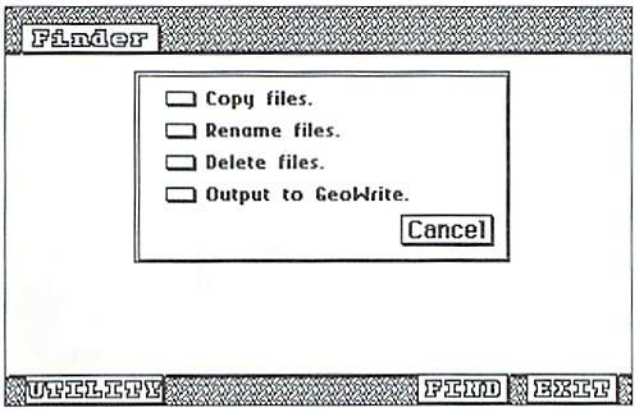

Find it!

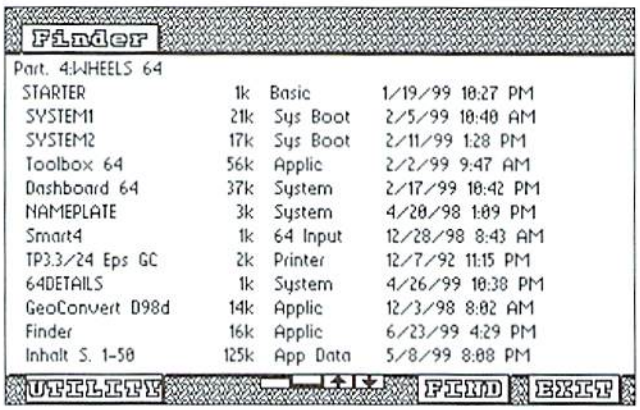



If you still hit the limit, the search ends with an error message and no result, according to the manual. However, during my tests, the search process simply ended after 20 seconds, and I got a 83-page list (the maximum size) containing 1016 file names available for further use. Another advantage which might save you a lot of time is that you can always abort a search you started accidentally by pressing the 'Run/Stop' key.

## Lust for more

Finding files isn't all the program can do. Besides erasing and renaming files which are marked in the list, they can also be copied to




another partition or drive. For this purpose, it opens a dialog box that lets you select the target drive and the partition or the subdirectory. However, I've noticed that you can't copy several files from different partitions in one go. Trying this always resulted in an incomprehensible error message; in this case, the user has to work through the partitions separately.

Another very practical feature is the option to save the list of found files as a GeoWrite document for further editing and printing. Here you can also select the drive, the partition, and the name of the file, like in Wheels. Additionally, you may specify the font; BSW, BSW128, and LW_Roma 12-points are available. Though Finder does not provide this function, at this point I'd like the option of selecting any of the fonts installed on disk, so that each user could use his personal one.

### For Wheels only

Had your bad news for today? No? Well, here it is - Finder only runs under Wheels 64/128, since it uses some particular routines which are only present in Wheels. This also means that it can only search 1581 and native partitions, since Wheels can't access 1541 and 1571 partitions. However, this disadvantage becomes a plus, because the search for missing files is executed very quickly, especially when you own an SCPU64/128.

A RAMLink divided into ten partitions (243 files on 12 Megs) can be searched through all files in about 4 seconds under Wheels128 and a SCPU. With 2 MHz it takes no more than 21 seconds. Wheels64 with a SCPU needs just a little more than 2 seconds, which makes 35 seconds under 1 MHz seem almost lame.

A parallel cable strongly accelerates access to a CMD-HD, and so, 236 files containing a 'g' are found in a little less than a minute with a SCPU128, while it takes one and a half without the cable. At 2 MHz you have to wait 1:45 minutes to get the result, two and a half without the parallel transfer. Even a brimming 1581 disk is searched quickly; after 23 seconds at 2 MHz, all 231 files are found. The SCPU128 brings it down to a mere 7 seconds.

### A real must

'Finder' distinguishes itself mainly with its speed and easy usability, which in my eyes, makes it an ideal add-on to a system. Once you've used this program, you'll never want to go without it again. You quickly get positive results, even without hardware acceleration. Since the tool is free and runs under Wheels only, there's not much point in giving it a rating. However, the well-designed concept convinced me so much that I give it an unofficial 90 points. The program is also available from Loadstar 64 disk magazine #181 and from the Commodore download library at the Delphi on-line service. Since not all of our readers have access to the Internet, the English version of the program along with the manual is included on the coverdisk.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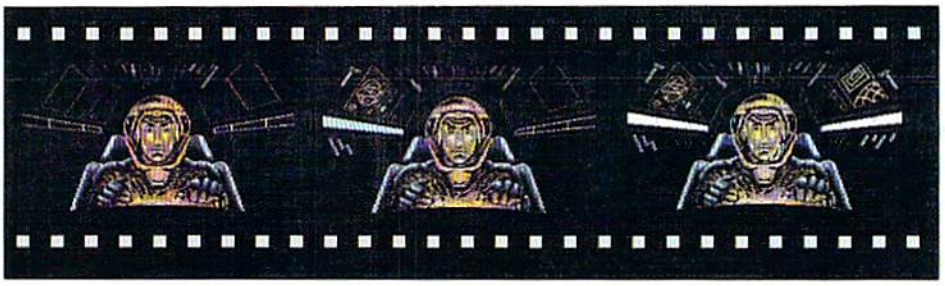
# HINTS & CHEATS



## TIPS AND TRICKS BY MISTER X

Again, here are some nice hints&tricks for cheating or just for entertainment.

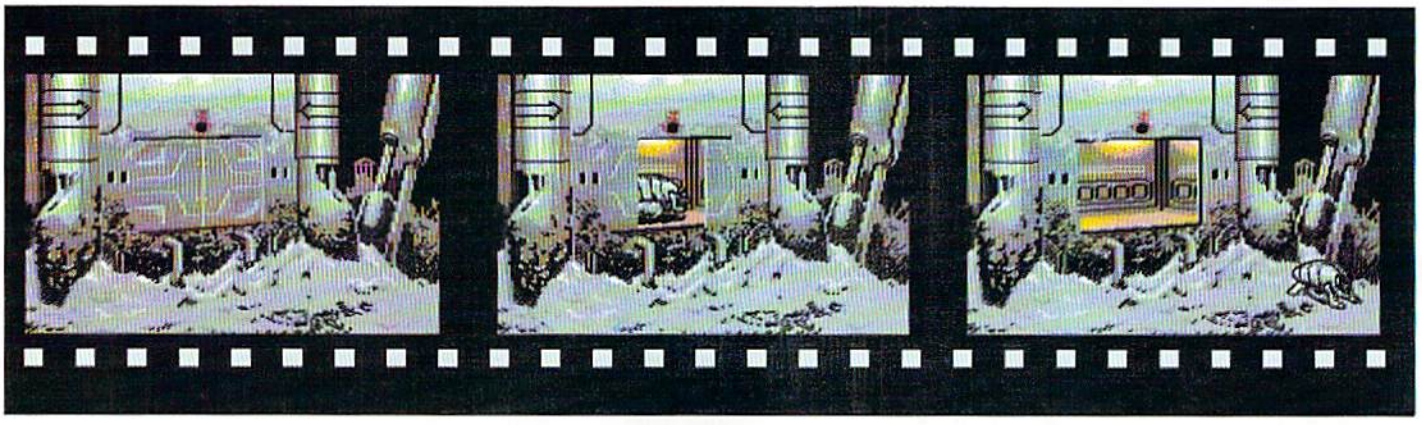
*by Helmut "Katakis" Bieg*

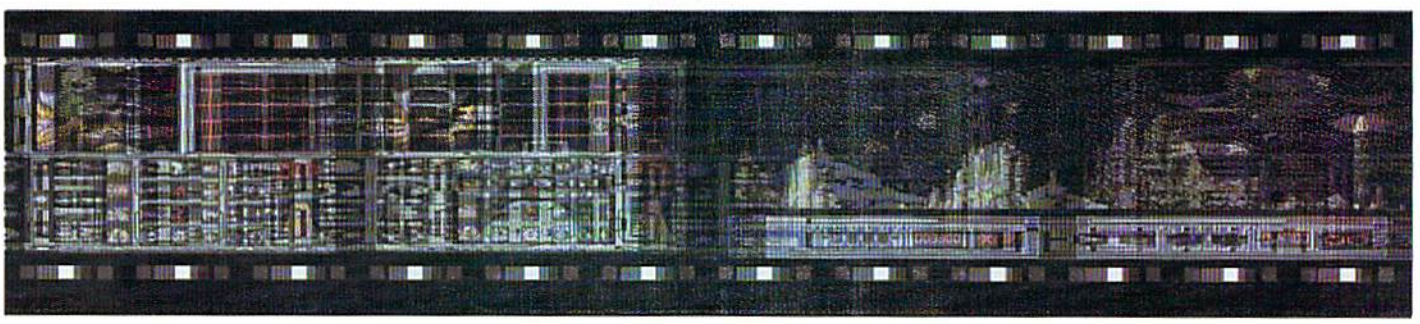
### Die dunkle Dimension (Dark Dimension)

Since a lot of players have a hard time getting started with DDD, here are some general hints to the game. The sea serpent should be avoided altogehter. Although you won't necessarily lose the fight, it won't do you any good. While you're earning your first gold, it's best to stay around the druid's house, because he'll always heal you at no charge. As soon as you've looted enough gold to afford a weapon, it's recommendable to go to one of the nearest towns and buy, say, a short sword and, if possible, a chainmail shirt. This way, you get stronger by time and add to your outfit.

### X-Out

Although some people are likely to know it already, here's the "coffee break trick": in level 2, simply blast away the final opponent's upper arm (use laser), and position yourself a little bit below the upper left corner, at the hatchways where the enemies are released. Each of those gains you points, which means money. Switch to auto-fire, go eat, and after that, go to the X-out shop and buy whatever you want.





## Tau Ceti

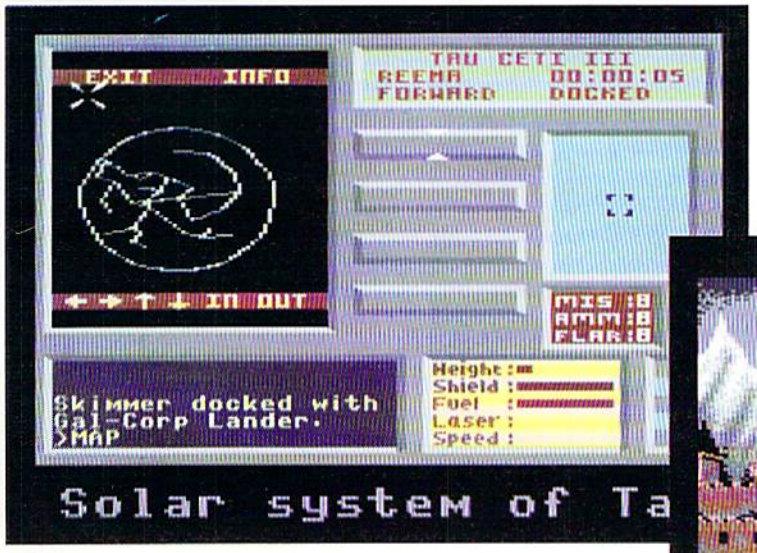
Some general remarks to one of the greatest games of all time (in my opinion): at first: without a map, you'll be lost! Therefore you should take a look at the map every now and then, to avoid landing on the wrong jump-pod or somewhere in the void, or even worse, unprepared in the middle of Centralis. Also, save the game as often as possible. The next town could have heavier security than the one you're in now. It's extremely useful to use the notepad, as it helps you avoid unneccessary trips, especially if you don't play the game every day. Better be careful from the start - once your fuel tank is hit, the fuel will go fast - therefore, don't fly too fast and take care to keep a sufficient stock of rockets, flares and fuel. And for all of those who find that the game is too difficult, here's the cartridge poke which gets you an infinite number of missiles: poke 18590,137.

## B-Bops

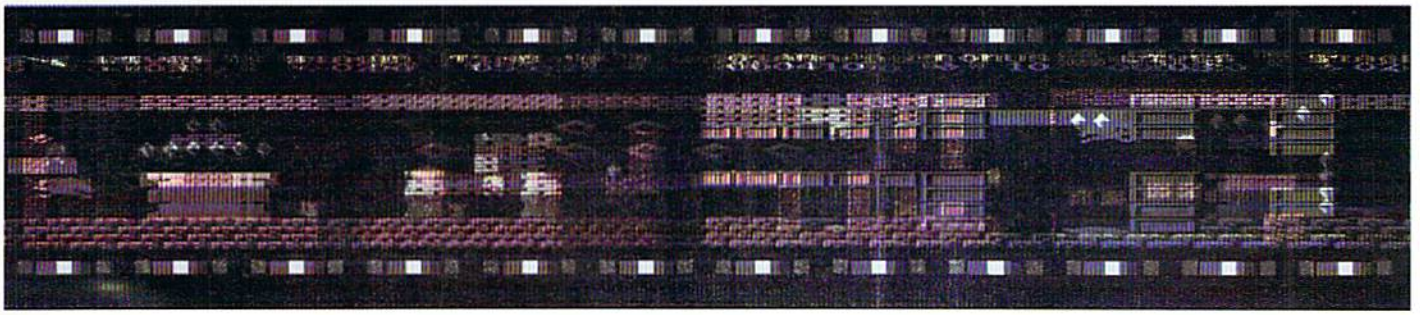
The cheat mode (infinite lifes) is enabled by typing "Fairytale for Computers" in the title screen.

## GGS

And last, but not least, here's the absolute highlight, a cheat I'm sure nobody knows: When playing Great Gianna Sisters, pressing the keys A, R, M, I, and N at once during the game takes you on to the next level!!!




Tau Ceti
and Gianna Sisters



# WORLD WATCH

*by Rainer Buchty*

**This month's focus: FUwhat? FUnet!**

# HELLO WORLD,

always the same questions are asked: Where can I find the wiring diagram of the C64, the 1541, or some other Commodore equipment? Where are construction manuals, Kernel dumps, and lots of other things? Unbelievably, but true - all this information can be found under a single address: The FUNET archive.

## FUwhat?

FUNET is the acronym for Finnish University and Research Network. Originally a pure FTP server, the FUNET archive can also be reached by today's mouse-click generation via HTTP. Where? Quite simply:

**http://www.funet.fi** (Careful, finnish spoken)
**fttp://ftp.funit.fi**

FUNET

Especially interesting about this archive is its comprehensive Commodore library, which can be found at the path /pub/cbm. This library is divided into a great number of different departments - too many to examine them all here, therefore let's concentrate on the most interesting. (For those browsing the web, this is a bit easier; Point your browser to http://www.funet.fi/pub/cbm, which contains an overview of the directory structure right away. Those using FTP will have to summon the file 00INDEX, for example by "less 00INDEX".)

## Has Someone got the Manual for the C64?

Often asked and most of the time answered by silence - in the manuals directory, those thursting for information can find the C64 manual, the Programmer's Reference Guide and other manuals, for instance for the 1541, or the 1351. For those who would welcome some more information, we have to point at the documents directory.

## Hardcore

It's really getting pornographic at documents/chipdata - here the Commodore chips have to drop their pants. Those who have already been on the lookout for ages for the original Commodore and/or MOS/CSG data sheets for the VIC, SID, CIA, and so on, will find these things here. What these chips can really do, how one may use these hidden abilities, or how one may even build replicas of certain chips, can be learned for instance in the VIC article, the REU programming instructions or the PLA construction manual.

## Illegal Opcodes?

Here one may find out the entire truth... But extensive information about hardware from other firms is also found here, for instance concerning the Final Cartridge III.

## If the Hardware strikes...

Certainly this has happened to just about everyone - the beloved hardware malfunctions. Unfortunately, at that time one has either misplaced just the wiring diagram needed, or has even never possessed it - no problem. In the schematics directory, one finds all kinds of circuitries for the various Commodore computers, disk drives, and other peripherals. Well, as everyone knows, not all C64s are the same, there are a great number of different revisions - and all of them are presented here.

But what good is the best wiring diagram, if one hasn't the slightest idea, where to start looking for the bug? Help is on hand in the guise of the documents/repair directory. No matter whether it's the C64, C128, or the 1541 - here one finds specific instructions for trouble shooting. Further tips can be found under documents/disk-drives.

## Is there also Something for Users?

But yes, indeed. For this one should start by looking into the corresponding directories for the C64, C128, and Plus4, yes there are even own departments for PET and C65. In these there are lots of applications, kindly already sorted by topic. Everything about the topic "Crossplatform" (dealing with both the C64/C128 and other "high-end" machines) can be found in the directories crossplatform/ (who would have guessed) and archiving/file-converters, transfer utilities, and many, many more gather here.

The GEOS users have also not been forgotten, and also receive a directory of their own, which due to the vast number of utilities and additional programs, has been divided into several areas.

## Home(computer) Improvement

Only a "tinkered" computer is a real computer. True to this ideal, the interested hobbyist finds a number of construction manuals at documents/projects, for instance, the IEEE488 interface so often looked for, a SwiftLink clone or a number of RAM expansions. Of course, one can also find the coup de grace of projects here - the manual for constructing an Action Replay Cartridge.

## Programming - but for Real

A summary of the most important tips for programming can be found in the programming directory, once more sorted by computer or development platform. At that place, I think hidden a bit too well, one can find an overview over all tokens of the various Commodore BASICs and BASIC expansions. As a special goodie, one can also find an introduction to the workings of the IEC bus here.

## Summary

FUNET Really is a source of abundance. Certainly this archive is not the only one of its kind - but it is one of the oldest. Its really worth it as point of entry, and for those who have the time in order to go through files in detail, you will find that many of the items found on FUNET are also found in many websites and publications. This certainly must serve as a statement to the diversity of the FUNET archive.

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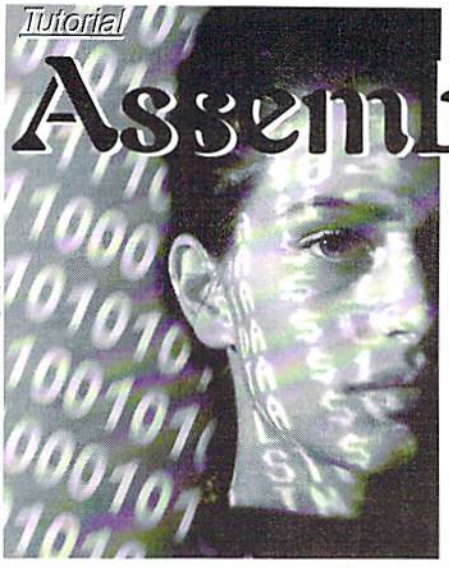
Tutorial

# Assembly Language



Last time I promised you we'd take a look at the different addressing modes. I'm afraid this is going to be a little bit dull, but you should read it by all means, as it'll be important later when we concentrate on the essentials, namely registers and effect routines.

*by Wanja Gayk*

Part 6

Let's begin with the different ways of "addressing" the memory, how we read, write, or change the contents of memory cells. The most important addressing mode is called DIRECT (or ABSOLUTE) ADDRESSING.

We already know this mode; 'direct' means we access a memory cell DIRECTLY, without any indirections, e.g.,

```
LDA address
STA address
```

We read the value at an address in the 64's address space into the accumulator or write the value in the accumulator into the byte at an address. Of course, the same holds for the X and Y registers, meaning "LDX address", "STX address", "LDY address" and "STY address" are legal, direct addressing commands. Another kind of direct addressing is called

## Direct Zeropage Addressing

which is exactly the same as direct addressing, with the difference of the address being in the interval from $00 to $ff, and so the commands only need a single parameter byte to hold the address. For instance, we may write LDA $fa instead of LDA $00fa.

## Direct Indexed Adressing

This is another addressing mode that we've already seen:

```
LDA address,x
```

loads the byte at address+x into the accu. For instance, if address equals $1000, and x holds 3, the command "LDA $1000,x" would load the value at address $1003 into the accu. Equally to the X register, you can use Y as an index, i.e. LDA $1000,y. But now it'll become more tricky, as we want to access a memory cell indirectly - the magic word being

## Indirect Addressing

The most simple kind of indirect addressing we've already seen is with the JMP command. While a direct "JMP address" jumps to the address directly (as the name tells), we may perform an indirect jump by writing:

```
JMP (address)
```

The address in the parentheses is the location in memory where the JMP command finds its actual target address. For instance, if you want to jump to different addresses, you don't have to change your code but just the target address stored in memory at the address in brackets. Because this kind of parameter does not directly specify an address but rather points to one, we usually call this a VECTOR, and we normally write "JMP (vector)" instead of "JMP (address)". This example illustrates how vectors work:

```
lda #$34
sta $3000
lda #$12
sta $3001
```

In this example, "JMP ($3000)" jumps to the address $1234, which the vector at $3000 represents in the "LOWBYTE, HIGHBYTE" format. What's it good for, you may ask? For instance, you may now work with vector tables that you can change just as needed. The operating system uses this method to call system routines like the LOAD command, which is always called through the vector at $0330. A fastload utility changes this vector to its own load routine. Then if you issue a LOAD command with the fast loader installed, the operating system will jump through the vector at $0330 and is taken to the new load routine instead of the original one. Another application is a simple LIST protection you can get by changing the vector used by the LIST command to point to the routine that prints a SYNTAX ERROR.

We can even extend the idea of indirect addressing by combining it with indexing. Again we can use the X and Y registers for indexing, but this time they perform different functions:

## Y-Indexed Indirect Zeropage Addressing

sounds incredibly complicated, but it's not. ZEROPAGE simply means the vector is located at an address below $0100 in the range between $00 and $ff, and so it can be represented as an operand to a command by just a single byte (the highbyte of zeropage addresses is always zero). (Who wrote this stuff?!) The notation for this type of addressing is as follows:

```
LDA ($fa),y
```

i.e., we load the byte at the address pointed at by the vector at $fa (and $fb) plus the value of the Y register. The following example should clarify how it works:

```
lda #$34
sta $fa
lda #$12
sta $fb
ldy #$03
lda ($fa),y
```

The last command loads the byte at address $1234 (given by the vector at $fa) plus $03 (value of Y register), and so, as a result, the byte at address $1237 is read into the accumulator. But what's the use of such a complicated command? Well, it's more than just useful; for example, an "LDA $1000,y" allows us to access 256 bytes ($1000 through $10ff) with one single address. We can do the same with an "LDA ($fa),y", but additionally, the vector at $fa may point ANYWHERE in the whole address space between $0000 and $ffff. We can access the whole memory with this

command if we set the vector accordingly. The other way to combine indirect with indexed addressing is using the X register as the index. Though it looks less comfortable, it is just as useful:

### Indirect X Indexed Zeropage Addressing

Again, our vector is located somewhere in the zero page between $00 and $ff. Since this addressing mode works different from the previous one, it's also written differently:

```
LDA ($fa,x)
```

As you may guess, this allows us to index the position of the vector in the zero page. The next example will illustrate its usage:

```
lda #$34
sta $fa
lda #$12
sta $fb
lda #$55
sta $fc
lda #$66
sta $fd

ldx #$00
lda ($fa,x) (0)
ldx #$01
lda ($fa,x) (1)
ldx #$02
lda ($fa,x) (2)
```

Now let's walk through this program; at the first "lda ($fa,x)" (0), X holds zero, and the processor fetches the address at $fa+X and $fb+X. In this case, the processor finally reads the byte at the address contained in $fa and $fb. $fa holds the value $34, and $fb holds $12, and so the first "lda ($fa,x)" loads the value at $1234 into the accu. At (1), X has been set to 1. Again the vector is combined from the values in $fa+X and $fb+X, namely $fb and $fc. The byte at $fb holds the value $12, and $fc holds $55, which means (1) loads the value at address $5512. At (2), X equals 2, and the vector is fetched from $fc and $fd. As $fc holds $55, and $fd's value is $66; the byte read by this "lda ($fa,x)" is the one at address $6655. Now what's THIS good for? Well... like before, you can use it to access memory through vector tables; you can put a series of vectors into the zero page and switch between them just by adding 2 to (or subtracting 2 from) the X register. Combined with absolute X indexed addressing, we could use the low bytes of the vectors as pointers or counters; one useful application for this would be a series of stacks. We could switch between them quite quickly. But in general, if we don't need any indexing, we can use this command quite similarly to a "LDA ($fa),y" if we set X to 0 or take care that its value stays the same.

That's all about addressing modes for today. Only one problem remains, that is, we can't combine each of them with every type of command. For this reason, we've prepared a table of all the legal combinations and the number of clock cycles required for their execution, which you will find in the current and the next issue. You might want to xerox it so you can always have it at hand. Well, I guess this might have been a bit much for just one lesson, so I'll stop here, hoping you haven't lost courage to go on next month. The next part will be more interesting than this one, as we'll learn a bit about effects.

*Because the English version of GO64! began with the August 1999 edition, parts 1 - 4 of the tutorial (published prior to August 1999) were only published in the German version. We will, however, offer the tutorial parts 1 - 4 in English on our homepage (www.go64.c64.org). If you don't have access to the internet, you can get the first four parts by mail for free. Simply send a letter to:*

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*Tutorial*

# A BASIC PROJECT

Part 2

Last time theoretical, this time practical! We all now know what modulo and division without remainder is, we know about the solar year and the difference between Julian and Gregorian, and we have learned that our C64 can also say "yes" and "no". Finally, last time we began to make it manage lists and tables we needed for our project.

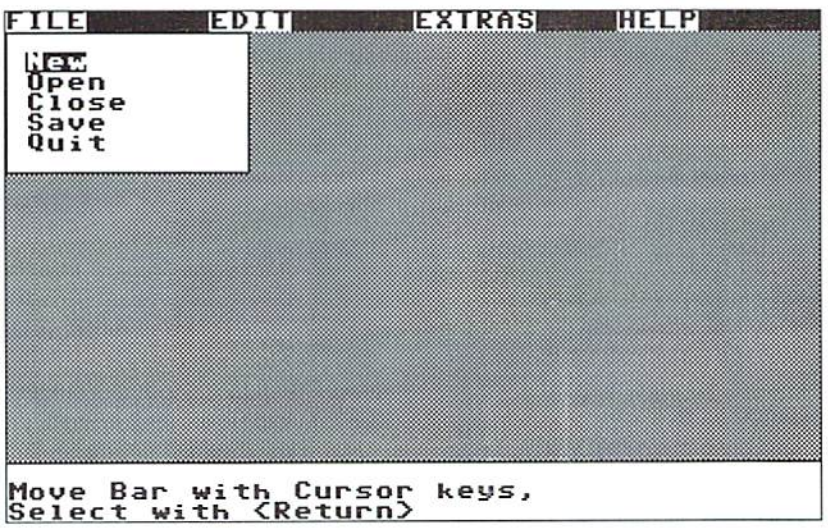
*by Arndt Dettke*

And here I bring in the results of our first BASIC project again - a graphical menu system. Today's task for us will be redoing that former program structure to create a finished application, namely our calendar. Have a look at both of them in the illustrations again, because at the first sight of them, you'll know what to do:

- The menu bar at the top of the screen is left out.
- Of the four menus, only one remains.
- The menu texts are different (of course).
- The status bars at the bottom of the screen are left out or (better put) are relocated and are changed in their appearance and contents.
- An output window (the calendar) is visible nearly all the time.
- Within this output window, we can apply selective changes (highlighting and some others that don't always have a visible output).
- And we have to program the application itself, the calendar, of course.

Do you still remember that we wanted the BP1 program to be as easy to maintain as possible? In order to do so, we split it up into modules and assign several sections to them which should be discernible by the line numbers. For all those of you who don't remember or don't possess the issues 10/98 to 12/98, here are the sections (in the box on page 26 of last issue, you can refer to the modules created for BP1):

Lines 0 to 999: Start preparations and main loop
Lines 1000 to 1999: Program modules
Lines 2000 to 2999: Menu distributor
Lines 3000 to 4999: Free for special purposes
Lines 5000 to 58999: Application program
Lines 59000 to 59999: Initialization of variables
Lines 60000 to 63999: Data




## Adaptation of the BP1's menu system

Let's just take that list of things to do and get them done one by one. First, we load the former program (the one that had a graphical environment from issue 12/98; it's also on our current coverdisk named as "menusystem") and apply the required changes to it.

It starts with line 60000, there being stated how many menus are to be handled, as well as the maximum number of submenus and the maximal length for the menu texts; we change the numbers 4, 6, and 10 to 1 (only one main menu item), 9 (nine sub-items) and once again 9. The text length of 9 (last value) is due to the width of the calendar frame on the left hand side of the screen, which needs to be 27 chars wide and 25 chars high so that it looks as shown in the illustration. Therefore, 13 chars space remain for the menu. If we then also remember that the width specifications are giving the inside measurements of the box, then a value of 9 is ideal, describing a frame with the exterior width of 11 chars, which fits exactly centered in the remaining space. Therefore:

```
60000 DATA 1, 9, 9
```

Now come the data for the menu titles. Since we have ceased using a menu bar, it doesn't really matter what we put here; an empty string would suffice. But we want things to be proper:

```
60010 DATA "CALENDAR"
```

The next four lines each originally contained the texts for the submenus of one main entry. We can delete them and write instead:

```
60020 DATA 9, "Year", "Month", "Day"
60030 DATA "Gregor.", "Julian",
"Interval", "Print"
60050 DATA "About...","Exit"
```

Since the position of a menu frame was based on its number and this no longer creates a useful result here, we also change this:

```
1600 z1=1: ho=mn%(i7): sp=28
```

SP is set absolutely, and the entire IF statement following is dropped out. So what else has to do with menus? The menu distributor! Everything between 2000 and 3000 can be dropped out. Thus we write:

```
2000 IF i7<>1 THEN 2200
2010 ON i8 GOSUB 5100, 5150, 5200, 5250,
5250, 5300, 5000, 6000, 4900
2200 RETURN
```

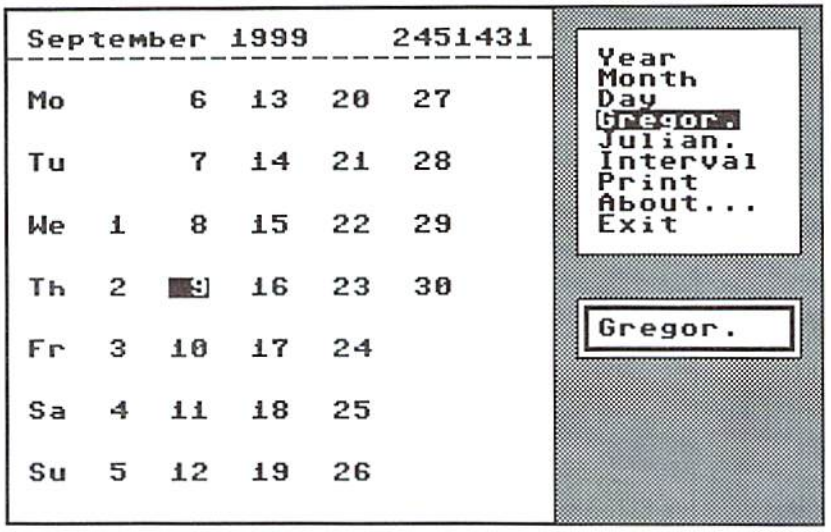
... and by doing so, we also determine the start lines for our calendar application (see 60020 to 60050). The last three targets already exist as routines ("Print", "About...", and "Exit"). To stop the menu bar from being displayed, we simply delete line 59095.

Before testing the program now, we add a little change, making it more user-friendly; user-friendliness should be considered every time you write a new application. In line 5, the Schmieder charset is loaded, which makes the menus look so beautifully GEOS-like. Until now, we always considered drive 8 to be the residence of that charset, but the days with only one disk drive connected are already long gone. It makes sense for us to look for such things like charsets there, where the program itself resides:

```
5 IF i9=0 THEN i9=1: i8=PEEK(186): IF
PEEK(648)<>204 THEN LOAD
"zeichensatz",i8,1
```

At address 186, we find the number of the disk drive last used. The test for the value 204 at 648 tells us whether the program has already been started for a second time. If so, there is no need to load the charset again. At 648, our C64 jots down where the video RAM starts. Usually, we find the value 4 there (for a start at address 1024). Ah yes, the status bar! We'll simply make it disappear as well:

```
30 :
```




Don't be surprised! We will need line 30 later on; therefore, something has to be in it, a colon being quite sufficient. It is neither removed nor seen as a problem by the BASIC interpreter. A beautiful, visible mark which divides the BASIC lines (but does cost some execution time, though). And now...RUN! Does everything work? At the bottom, a white bar remains, which you can get rid of by changing the number 21 in line 59091 to 24. Except for some details, we have already prepared everything for the real application by now. With just seven minor changes!

## Application "Eternal Calendar"

Now that the first three and a half items on our list of things to do have been taken care of, we make the second half shorter so that things don't start to get boring. In the following text, I chiefly want to explain such passages of the program, which may show something new for some of you. The finished program is on the last issue's disk anyway. Let's start with clearing the screen. We use a pattern filling the screen; a routine for that looks like this in our program:

```
1850 sp=0: i4=52263: FOR z1=0 to 24:
GOSUB 1200: PRINT l$(1);: POKE
i4+40*z1,96: NEXT
1860 z1=0: RETURN
```

This routine simply overwrites everything on the screen with a background dot pattern assigned to the char shift space, even at the right edge (there with POKE), which may not be touched by PRINT, lest we get double lines.

Let's move on. Let's say we have already defined all lists and tables and also already filled in the contents in the initialization (relating area starting at line 59000). Take a look at reading in the data for one list; it's quite simple:

```
59035 FOR i9=1 TO 12: READ mo$(i9): NEXT
```

You see, for a list, it suffices to have a simple FOR-NEXT loop which reads continuous values. Now, a table consists of columns and lines; it is best handled by a nested loop. There, the inner loop continously gets the columns (i9) for the table line determined by the outer loop (i8). In the DATA lines, the table can be entered just as shown in the last issue.

```
59040 FOR i8=0 TO 6: FOR i9=0 TO 6: READ
t2%(i8,i9): NEXT: NEXT
```

As said above, let's skip the dull filling of the lists and tables before things get too complicated and boring, and rather, finish our screen with the calendar frame:

```
1900 i5=0: z1=0: sp=0: br=25: ho=23: GOSUB
1100
```

With i5 we choose the box type 0 (thin border); the rest are specifications for its size, it then being displayed in 1100.

```
1905 z1=2: GOSUB 1200: PRINT "{C=q}";:
lg=br: en$="-" : GOSUB
1800: PRINT "{C=d}":
z1=0: sp=sp+1
```

This adds the dotted line (see illustration) for the header. It is integrated into the frame by the two special characters at the left and right. The remainder of the line prepares the caption, which follows now:

```
1910 st$=mo$(m)+"{Space}"+j$: GOSUB 1710
```

Month (in M) and year (in J$) are turned into strings and are displayed at the top of the box

using the old status routine. Then follow the weekdays, reduced to 2 letters:

```
1920 FOR i4= 1 TO 6: zl=zl+2:
st$=LEFT$(wt$(i4),2): GOSUB 1710:
NEXT: zl=zl+2
```

In Germany, we start with Monday. The output once again takes advantage of the old status routine. Now we only need Sunday:

```
1925 st$=LEFT$(wt$(0),2): GOSUB 1710:
GOSUB 5260
1930 RETURN
```

In 5260 the program checks whether the month displayed is part of the Julian or the Gregorian calendar, and displays the result in a special box. It is precise down to a day, the display automatically switching to "Gregorian" on October 15, 1582. The days are entered only when the weekday of the month's first day are determined. We will discuss this next time.

Using entering the month as an example, I want to show you - being thoughtful programmers - what you should consider when dealing with input. Basic rule for programming any input routines is: Never forget the stupidity or malevolence of the user! Always be one step ahead of them! You should be able to enter the month as a name - even abbreviated - as well as a number.

```
5150 i4=m:
```

In I4 we memorize the month chosen before. After erroneous input, we refer to it.

```
5150 ...: i5=1: zl=18: sp=28: br=9: ho=4:
GOSUB 1100:
```

Action - display a frame of type 1 at the bottom right in the remaining corner of the screen ...

```
5150 ...: zl=zl+1: sp=sp+1: GOSUB 1200
```

... and position the cursor in the frame.

```
5155 PRINT "Month?"
5160 zl=zl+2: GOSUB 1200: lg=10: GOSUB
1400
```

Display the user dialog question and wait for input of a maximum of 10 chars - shown a little below.

```
5165 IF en$="" THEN 5190
```

First hurdle - pressed only <RETURN>? Then everything should remain as is. The variable M doesn't get touched anymore.

```
5170 m=VAL(en$): IF m>0 AND m<13 THEN
m$=mo$(m): GOTO 5185
5175 lg=LEN(en$): FOR i9=1 TO 12: IF
LEFT$(mo$(i9),lg)=en$ THEN
m=i9: m$=mo$(m):i9=12
5180 NEXT
```

Line 5170 checks whether a number between 1 and 12 has been entered. If so, the name of the respective month is fetched, and the rest is skipped. In the next line, the program assumes that a string (name of the month) has been typed and compares this string to the list of names. If a match is found, M is assigned the respective number, and M$ is given the complete name of the month.

```
5185 IF m<1 OR m>12 THEN m=i4: GOTO 5150
```

Second hurdle and once again some safety measures! If the string entered is no month name or some nonsensical number (and only then), the THEN statement is activated, and everything starts all over again.

```
5190 zl=18: sp=28:br=9:ho=4: GOSUB1300:
i8=i8+1
5195 RETURN
```

In line 5190 the input box is deleted again. And incrementing I8 at the end "automatically" chooses the next menu entry. The two inputs of year (starting at 5100) and day (starting at 5200) basically work the same way. The routine for the day also simultaneously highlights the date desired in the calendar and shows which Julian day has been computed for it at the top in the frame. This will also be discussed in more detail next time.

Then I will describe the algorithm of how to determine the weekdays for a given date, how to compute the Julian date, and how to read the RTC clock installed in CMD devices.

Yours, Arndt

---

# REX-Shell

## 1.0 REX-Shell - a short review

REX-Shell (Ram EXpansion Shell) is a user interfacee for REUs which allows you to install programs inside the REU and run them from there. REX-Shell has been written especially for the Commodore REU series of ram expansions, namely 1700 (128K), 1764 (256K) and 1750 (512K). The freeware version 1.2XL described here also supports CMD's REU clones 1750 and 1750XL which can hold up to 2 megs of ram.

These are the highlights:
- very comfortable and well-designed user interface
- loads and runs BASIC and machine language programs with a single keystroke
- progress indication during loads
- choose between control via mouse, joystick or keyboard
- automatically identifies type and size of the REU
- REX-Shell uses no memory in the 64
- quickly reactivated with a short (one disk block) boot program
- supports the following CMD hardware:
 * FD 2000 (native mode/1581 emulation mode)
 * SmartMouse (in port 1)
 * 1750XL with 2 megabytes

## 2.0 The concept of REX-Shell

REX-Shell was designed not to occupy any of the C64's memory, so it can't be overwritten by a program being loaded into the REU, which means the programs to be installed may occupy (almost) the whole ram of the C64 whithout causing REX-Shell to crash during installation or when starting a program. When you run a program from the REU, REX-Shell swaps itself into a reserved area of the REU. Just before REX-Shell vanishes from the C64's memory, it copies a small, self-modifying routine into the cassette buffer at $033c and runs it. This routine fetches the requested program from the REU and starts it. In order to reactivate REX-Shell, load the boot program 'Shellboot 1.0' with ,8,1, which will start by itself.

Therefore, REX-Shell is not an enhancement to the OS like the REU driver 'RAMDOS'. It

does not link any modified load/save routines into the system. Unfortunately, this means that multipart programs can't be used with REX-Shell. It should only be used if the programs you want to install don't load from the REU.

## 3.0 Using the tool

All functions described below are only executable with a REU connected. However, REX-Shell includes a hardware recognization mechanism which stops the program if no REU is present in the expansion port.

3.1 How to install software in an REU using REX-Shell

First, you LOAD"REX-SHELL 1.2XL",8 and RUN it. The user interface appears with the floppy folder activated. From here you can reach all its functions with the mouse cursor or the keyboard. The mouse cursor is controlled using either a mouse (in port #1), a joystick (in port #2) or the cursor keys; pressing the (left) mouse button or joystick button is equivalent to pressing the return key. Here's how to load one or several programs into the REU:

- Click upon the $ button to read the directory of the disk in drive 8 (default). The drive number can be set to values between 8 and 11 using the button marked 'G'.

- The list of files appears in the right window. Now, move the mouse cursor into this area. The entry under the mouse arrow is highlighted. Pressing return or clicking the mouse button selects this file and removes the entry from the list.

- After you've chosen all programs to be installed, click on the button marked 'L' (LOAD) to load them and install them in the REU. A progress display bar is shown while loading.

- Now you may leave REX-Shell without running any of the programs you just installed, by hitting the 'E' button (exit). The C64 is put in its initial state. REX-Shell is now completely stored in the memory expansion and can be activated at any time with the boot program.

- If you decide to start one of the installed programs instead, you change to the RAMEXP folder by clicking on it.

- The right window in the RAMEXP folder lists all programs installed in the REU. Mark a program with the mouse arrow and run it by clicking on it, or alternatively by pressing the return key. Like in the floppy folder, the list of file entries can be scrolled up and down using F5 and F7.

3.2 other funcitons in the RAMEXP folder

3.2.1 removing file entries from the REU

- Place the mouse cursor on the file you want to delete

- Press the F1 key to mark the entry. Pressing it again will unmark the file.

- Mark all files to be deleted in this way.

- Pressing the DEL button beside "PRG:" will remove all selected files from the REU. If you'd like to free the whole REU memory, simply press the DEL button beside "REU:" - after a security query, all files will be deleted from the REU.

3.2.2 Info available in the RAMEXP folder

- The REU type as determined by REX-Shell is shown above the window containing list of installed files.

- In the area to the left below the buttons you can find the following:
RAM: the memory size of the REU in KB's or MB's
FIL: the number of programs installed
BLK: free memory blocks (1 block=256

bytes)
Below these entries, you find a graphic display of the REU ram usage.

3.3. Reactivating REX-Shell

After leaving REX-Shell by starting an installed program, or by hitting the 'E' button, you can reactivate the tool at any time using the boot program. Loading the boot program with LOAD "SHELLBOOT 1.0",8,1 will restart REX-Shell from the REU with the RAMEXP folder active.

## 4.0 Troubleshooting

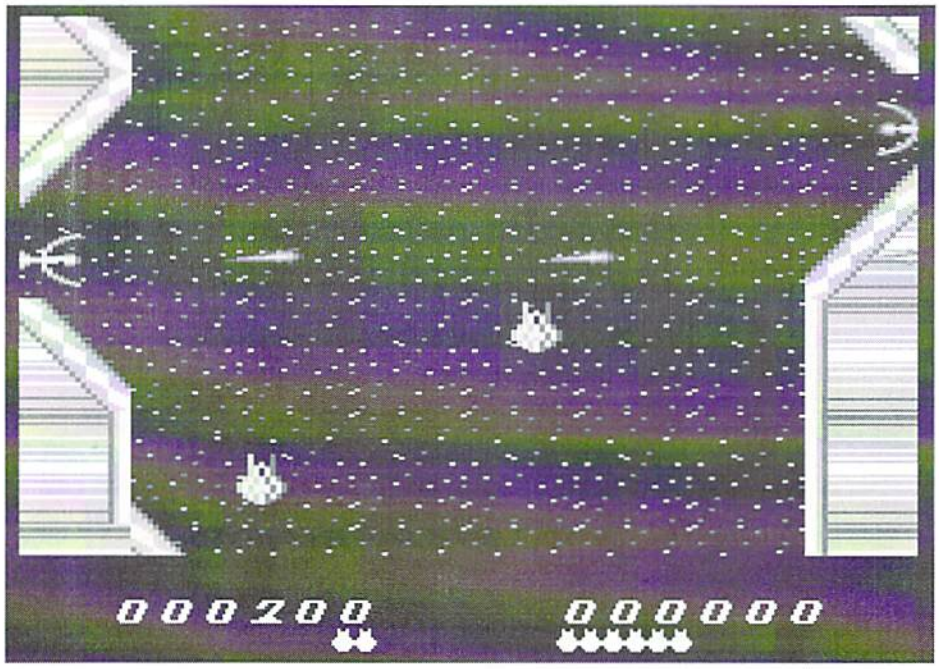
- Programs that occupy the area from $033c to $07e7 in the C64 RAM shouldn't be installed, as you'll fail to run them. This holds for most autorunning programs, too.

- Once you've started REX-Shell, always use the boot program to reactivate it! Never load and run REX-Shell a second time, as the information on which programs have been installed in the REU will be lost.

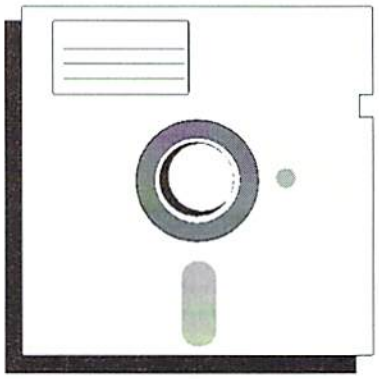
- Don't install any reset-proof software - you'll have to turn the C64 off and lose all programs in the in the REU.

- When using REX-Shell, don't run any programs that access the REU themselves, as the data stored in the REU might be corrupted which will later cause the machine to lock up.

- Some packers (like Happy-Packer) have depack routines that don't cooperate with REX-Shell - starting such a packed program from the shell may cause the machine to freeze. After pressing the reset button, you can reactivate REX-Shell as normal. Any hints helping me remove this bug will be greatly appreciated! For instance, which basic pointers are manipulated by the depacker?



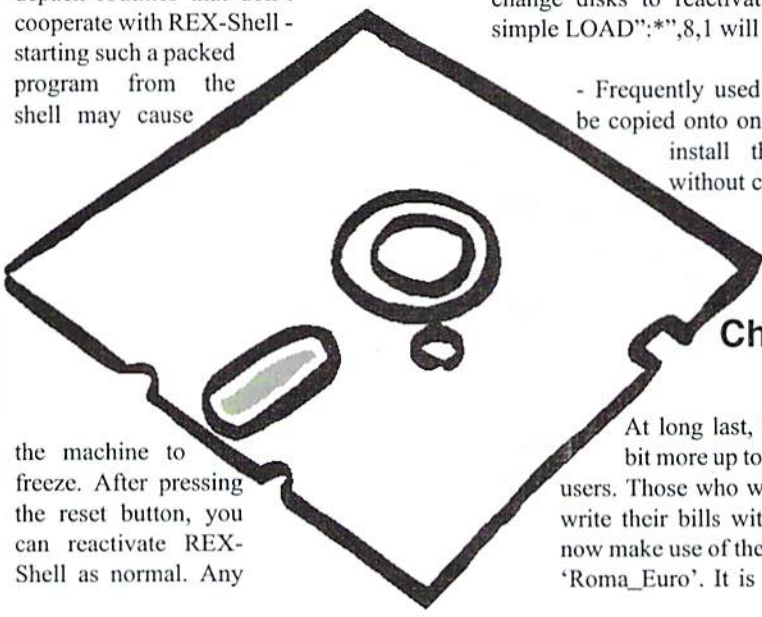

- Some BASIC programs can't be started because the first two bytes of the file don't point to the beginning of the BASIC memory ($0801). In this case, you can force a BASIC start by holding the Commodore key while you hit the key/button to start the program.



## 5.0 Hints&tips

- If you copy Shellboot onto all of your work disks as the first file, you won't have to change disks to reactivate REX-Shell - a simple LOAD":*",8,1 will do.

- Frequently used programs should be copied onto one disk so you can install them in one go without changing disks.



## LQ Charset

At long last, GEOS becomes a bit more up to date for European users. Those who want to continue to write their bills with GEOWrite, can now make use of the GEOSLQ charset 'Roma_Euro'. It is on the cover disk and only needs to be copied onto the work disk, on which GEOWrite resides. The paragraph sign (§) is replaced by the at symbol (@) and the Dollar ($) by the Euro symbol.

## Zynax II

The mission continues with new levels waiting for our brave pilot, or our brave pilots, 'cause two players may chase the aliens together! Like its predecessor, Zynax II may have problems with some cartridges. Besides this, just let your trigger speak...

# Don't rely on names!

NMI is short for "Non-Maskable Interrupt" which means that you can't disable it. But as we talk about C64, there is of course a way to do so.

*by Wolfram Sang*

Some demo-effects or transmission routines have a very critical timing. Hit RESTORE once and everything is gone. Even if the NMI-vector points to a RTI, so the Interrupt will be quit immediately, it will "cost" 13 cycles, but just one would be far too much. So it can be quite useful to disable the NMI, though it is a little against its purpose. First I am going to talk about the theory, if you are just interested in the result, then copy the corresponding lines from the example sourcecode. To avoid confusion I want to mention before, that IRQ and NMI are both interrupts, where NMI has higher priority. As the IRQ is more often used, some people call it just "interrupt". Please don't mix it up! I will use exact definitions in this article.

## Theory...

First question is, how are interrupts on the C64 generated? Let us examine the "standard" IRQ. The CPU checks its IRQ-line for a LOW-signal. If there is one, an interrupt will be initiated. In the C64's architecture, it has to be acknowledged via registers $D019 (for VIC) or $DC0D (for CIA1), so the IRQ-line goes HIGH again. If you forget that, there will be another interrupt right after the first one, as there is still a LOW-signal! Okay? Good. Concerning NMI this procedure is a little different. Not the LOW-signal forces this interrupt, but the change from HIGH to LOW. Of course, the NMI-line has to be raised as well, register $DD0D does that job for CIA2, and some hardware logic for the RESTORE-key. And here is the trick: Don't do that, and nothing special will happen. We still have a LOW-signal, but remember, it is the changing from HIGH to LOW which initiates an interrupt. Best thing is, other incoming HIGH-signals (e.g. from RESTORE) will be overridden. Since The aforementioned change is not possible anymore, the CPU will never get to know if an NMI is requested. I guess, this can be called "disabled NMI", to reenable it, just acknowlege via $DC0D, so do what you have intenionally "forgotten" before.

## ...and practical use

For a better understanding I'll give you some comments on the example-sourcecode. If you are not familiar with CIA-Timers, I recommend getting some descriptions of them, as thier explainations are beyond the scope of this article. At the beginning the program disables IRQ-interrupts and changes the NMI-vector to our own routine. Then

Timer A of CIA2 is stopped and loaded with 0, so after setting it as NMI-source and starting it, a NMI is going to occur. The interrupt routine increases the border-color, which is only for illustration purpose, and then exits the interrupt without reading $DD0D. The interrupt is not acknowledged! The main programm now continuously changes the upper-left corner of the text-screen, again only for illustration. Try pressing RESTORE, which would normally cause a NMI, but nothing will happen, the border-color stays the same. For a counterexample just press SPACE. Timer A will be cleared as NMI-source (otherwise it would initiate another NMI and disable it again) and NMI-line will be set HIGH by acknowledging through reading $DD0D. As NMI is allowed again, pressing RESTORE will increase border-color.

Well, that's it! Like most good tricks, it is not much, you just have to know how it works. If you have problems in understading at first, take your time and try it again. It might look complicated, but it is not, honestly.

```
; 'Disable NMI' by Ninja/The Dreams/TempesT

        SEI             ; disable IRQ
        LDA #<(NMI)     ;
        STA $0318       ; change NMI vector
        LDA #>(NMI)     ; to our routine
        STA $0319       ;
        LDA #$00        ; stop Timer A
        STA $DD0E       ;
        STA $DD04       ; set Timer A to 0, after starting
        STA $DD05       ; NMI will occur immediately
        LDA #$81        ;
        STA $DD0D       ; set Timer A as source for NMI
        LDA #$01        ;
        STA $DD0E       ; start Timer A -> NMI
                        ; from here on NMI is disabled
LOOP:
        INC $0400       ; change screen memory
        LDA #$10        ; SPACE pressed?
        AND $DC01       ;
        BNE NOSPC       ; if not, branch
        LDA #$01        ; if yes, clear Timer A
        STA $DD0D       ; as NMI source
        LDA $DD0D       ; acknowledge NMI, i.e. enable it
NOSPC:
        JMP LOOP        ; endless loop

NMI:
        INC $D020       ; change border colour
        RTI             ; exit interrupt
                        ; (not acknowledged!)
```

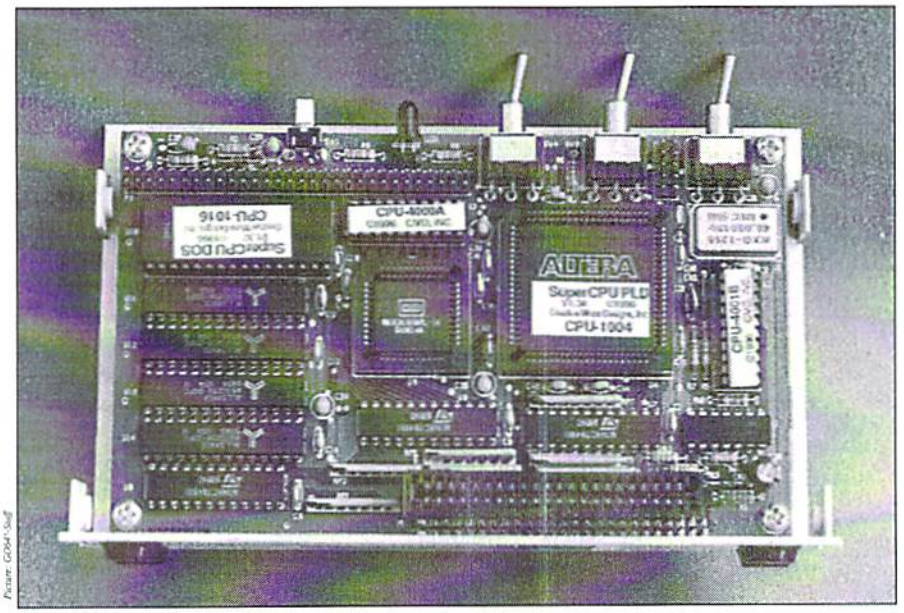
# CMD SuperCPU CORNER

The zero-page of the 6510 has its name because it is composed of the first 256 bytes (a single "page") of the C64's memory, beginning at address $0000. This area is the fastest area the processor can access.

With the 65816 in the SCPU, and also with Rossmöller's Flash8, you can push this special storage around within the first 64KB as you like. That is why the its name was changed to "direct page," everything else stays nearly the same. The advantage is clear: You can now work with several directpages by only changing the vector / pointer to the directpage. It is not longer necessary to save and restore registers. How this works in details, you can look up again in the box. You can achieve a lot with it, but there are more tricks. We will leave the directpage where it is as standard, at $0000 - $00FF, so you can follow easily.

## A small difference

Readers paying attention might have noticed that a few lines ahead it says that nearly everything stays the same at the directpage. There are indeed differences, the most important is the reaction during the memory-wrap, the passing from one page to the next.




Picture: G64-Staff

**The 65816-processor of the SCPU does more than make a "direct page" out of the 6510's zero-page area; Indirectly a lot more is possible.**

*by Wolfram Sang*

Let's take the following commands:

```
LDX #$01
LDA $FF,X
```

According to the numbers in these commands, one would expect location $00FF+$01 (that is, location $0100) to be accessed. With the 6510 you get the value from location $0000, the carry over of the Low-Byte is not taken into consideration! Some people say this is an error, others think this is only consequent because you have addressed the zero-page and so you get a zero-page value. Anyway, with the 65816 things work differently, there we really get the value from location $0100. That means that you can extend the directpage to 2 or more pages by using the following addressing:

```
LDX #$00
L1:
STZ $FF,X
INX
BNE L1
```

So this small routine deletes the storage area from $00FF to $01FE (Caution! necessary!). Accesses to the "extended" directpage are just as fast as to the normal one, the carry over needs no additional loop, so it is useful to file often used tables here. Algorithms/ resource name hasting schemes like search or sort routines can also gain from it if you use them cleverly. And you can easily store vectors there, because the (ZP,X)-addressing works beyond the margin of the page as well.

## 16-Bit-Power

Now the whole thing gets really interesting if you switch the index-registers to 16 Bit. Then you can reach all of the first 64 KB by addressing the directpage. With...

```
REP #$10
LDX #$D020
STZ $00,X
```

...you can set the border color to black. I know this example is not very useful but it gives you an idea of the possibilities that can indeed be useful in other routines. Especially if you already work with 16-Bit-registers this method can not only be shorter but faster, too, because here is valid as well. ZP-addressing needs one loop less. But you have to be a bit careful: All this handling around with the registers can get a bit involved , so that you should check if the trouble is worth it. But still there is an advantage that may make the work pay off: I guess some might have already missed the commands STX $xxxx,Y and STY $xxxx,X. Well, these commands could already be used in the zero-page of the 6510, so the 65816 has them as well. In combination with the possibilities of

### Moving the directpage and the stack

If you try these very useful possibilities of your 65816 you must pay attention and make sure the registers you use are switched to 16-Bit while adapting them. This also means that the SCPU has to work in native-mode. To position the directpage at $C040 you need the following commands:

```
CLC          ; clear carry
XCE          ; Exchange Carry and Emulation flags: activate native-mode
REP #$20     ; Set Accumulator to 16 Bit
LDA #$C040   ; We want to move directpage at $C040 - $C13F
TCD          ; set directpage-vector.
```

This example shows that while moving we are not tied to the beginning of a page. You can position exact to the Byte! The same goes for the stack that is positioned in a similar way:

```
CLC          ; clear carry
XCE          ; activate native-mode
REP #$20     ; Accumulator to 16 Bit
LDA #$9FFF   ; stack from $9FFF on
TCS          ; set stack-vector
```

Equally good is this method, that already exists for the 6510 but of course only in 8-bit:

```
CLC         ; clear carry
XCE         ; activate native-mode
REP #$10    ; X,Y index registers to 16 Bit
LDX #$9FFF  ; stack from 9FFF
TXS         ; set stack-vector
```

Concerning the stack you should also always keep in mind that the stack-vector is now 16-Bit wide. If you are not careful enough you can destroy the contents of the whole first bank!

the 16-Bit-register you can use them inside the complete first bank. According to our first example we set both the border and screen background color to green with one command (the STY, below):

```
REP #$10
LDX #$D020
LDY #$0505
STY $00,X
```

The accumulator is not even touched so we don't have to store anything in-between . This is how we can program elegant and efficient routines by using our knowledge and the registers skilfully. Not only does the 20MHz make a SCPU powerful, the processing unit also offers several advantages.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## $ab1e Routine

Answer to Daniel Keller's question in the 6/99 issue as to whether there are any routines for the C128 equivalent to the $able routine for the C64:

The C64's system has some routines users work with (why reinvent something that's already there?). Maybe they will be mentioned further in the Assembler course.

The $able routine (STROUT) outputs a character string at the current position of the cursor. All 256 characters can be used, except for the code $00 which has a special meaning. It marks the end of a string. If there is no code $00 at the end, the program will crash. One character string can take up to 255 characters.

The current position of the cursor can be checked and newly-placed with the routine PLOT ($fff0).
Placing it:

```
LDX #line (0 - 24)
LDY #column (0 - 39)
CLC
JSR $fff0
```

Checking it:

```
SEC
JSR $fff0
```

In the X-register, you now have the line and in the Y-register the column. You first have to return the pointer that indicates the memory location where the string is stored before starting to output a character string with the STROUT routine.

```
LDA #$Low mark
LDY #$High mark
JSR $able
```

The BSOUT routine makes it possible to output single signs:

```
LDA #$sign
JSR $ffd2
```

Here are two other interesting routines. JSR $e544 deletes the whole screen and

```
LDX #line
JSR $e9ff
```

deletes one single line.

I can't tell you anything about the equivalent routines for the C128, because I only work with the C64.

*Hans Dombrowa*

## C64 & Fax

Answer to Hans Dombrowa's question in the 6/99 issue. He was searching for a fax program compatible with his fax modem:

There is a fax program for C64s, but it only works under GEOS. It's called GeoFax, and it was designed by Maurice Randall. You have to have a fax modem with a memory in order to be able to work with it. You just have to type in the command AT+FBUF to find out if yours has a memory. If you get an error message, your modem cannot work with GeoFax. GeoFax may still be available from PPE Michael Renz and is directly available from Maurice Randall (arca93@delphi.com).

*Arndt Oevermann*

## 1541 compatible with VC20?

Are floppy 1541s compatible with the VC20? Does a combination of the two work?

*Markus Riesner*

As far as I remember, the floppy 1541 works great with the VC20; I think I tried it once. It is not feasible the other way round, because the floppy 1541 doesn't depend on the VC20's CPU bad lines. However, a C64 does have bad lines, and therefore the timing would be disturbed.

*Marc-Jano Knopp*

The floppy 1541 has a special VC20 compatibility mode which brings the timing into line. I think the commands are UI+ to start it and UI- to stop it, but it could also be the other way round.

*Marco Baye*

## Strange HD

My problem is this. My C64 had a permanent, external connection of two 1541-IIs, an HD-40, and an FD-4000, all connected with a serial cord. But the HD hasn't been working properly ever since I took the whole thing apart and put it together again. It displays the directory without any problems, but it doesn't load the files correctly, though I get 'loading' and 'ready' messages. Every time I disconnect one of the other disk drives, the whole thing works perfectly. Where's the fault?

*Andreas Kwias*

Any good advice out there?

## Wrong colors and a mains power supply

I've connected my metal-cased C128D and a Commodore 1084S monitor with one of the standard 9-pin sub-D cords in order to get a 80-column display. But the color displayed doesn't work properly (only in the 80-column mode!). When I boot GEOS, for instance, the screen looks pink (instead of the normal gray). I've also noticed that the colors white and green are not displayed at all. Is the monitor's 80-column mode out of order, or is the cord's connection wrong? Can anybody tell me which would be the right connection of the cord?

That's not my only question. The drive of my Commodore floppy 1581 was out-of-order, and I changed it for that of an old Atari without any problems. Unfortunately, the whole contraption didn't fit into the old floppy case anymore, so I installed the drive and the circuit board in my C128D's case. The power supply is external. My question is this -- is it possible to connect the disk drive to the internal power supply (switchboard power supply, a more recent version). The only other hardware I have is a Commodore RAM expansion of 512 KB.

*Sirko Neuenfeldt*

Who can help here?

**The Internet For Commodore C64/128 Users**
by Gaelyne R. Gasson

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# Uncle Wanja's Mailbox

**Some people prophesied that the world would end on the 11th of August, the day of the solar eclipse. Well .. and now you're sitting here with an issue of GO64! and the world still exists.**

*The day Commodore went bankrupt is even further ago and the day the C64 and Amiga scenes will die has yet to come, although there are people who have been foretelling this event for about five years now. If you ask me, there's something gone wrong here. But really: If people like politicians, doomsday prophets and managers don't get it right, why should we? If we had done it 'right' we now would use a PC like all the 'others', we wouldn't have any idea of programming computers and our pastime C64 would be far far from us. Thank you, I don't buy it. I prefer not being sensible and keeping my C64 for the fun of it. The reward for this insensibility is my beloved GO64! and this mailbox with a letter from 'Lord X' in it, who is at least as insensible as me, but seems to have a little trouble to keep the faith:*

A sweet hello to my dear little uncle ... please forgive me for this casual kind of address but I'm not thinking very straight at the moment (just as always). However, I just had to write to you. Just imagine my situation: I'm writing at my laptop with a distorted interlace display in front of me and the PC's screen saver to my right. This is just to give you an idea, but it's getting even worse; I start to mistype everything on the C64 because I write too much with the PC keyboard. What to do? Hey thanks for the advice, I should have know that anyway: The PC is lying on the street, my laptop has some more dents and the C64 is in need of a new keyboard as I spent the whole night getting myself accustomed to it again. Hey, nothing of this last paragraph is true. As you see, PCs are useful things to work with, otherwise I couldn't have sent you this e-mail. So this goes out to all the PC haters: I myself once was one of you (or respectively I still am). My alias was Lord Anti-Pentium and I spent a lot of time criticizing PCs and praising C64s. The C64 is a cult machine but the way it is today makes it hard to work with it (for graphic design, music production, language training etc.). It would need a complete revamping (new graphics adapter, more RAM, faster bus) but then it wouldn't be a C64 anymore!

I surely admire all those who exploit the C64's abilities to the fullest but I would prefer a souped-up C64 that works on the original set of commands as nowadays in most parts of the scene C64s have been transformed more and more into PCs. Many graphics and sound effects are produced by PCs. You need a PC to convert texts and for an Internet connection etc.. Well, so much for the tiresome subject of the never-ending war.

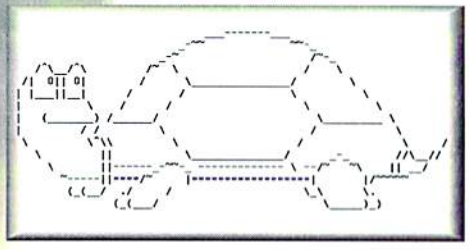
I've got a question: Couldn't you put a little disc ID into the magazine with an entry for each file (group)? That would be useful because you wouldn't have to check why a file doesn't open. It would be nice to have a mascot. Why not a small C64 with arms and legs :-) Besides, here's a proposal for your cover design: Some people are 'fed up with Lilly' - not me :-) - so why not let all of the readers send in photographs that could be put together on one page. That way everybody could have a picture of all the C64 buddies in case any parties are planned :-)

Something else: As I live in Switzerland, I'd like to know what's going on round here. Nothing doing or what? Hugs and kisses ... oh hey, wrong kind of standard good-bye .. greetings to all the C64 out there, prosper and stay numerous!

*Yours, Lord X, lord_x@bluewin.ch*

*Well, you're surely right insofar as admittedly it is not as easy with a C64 as with a PC but music producers like Welle:Erdball (Station:Globe) prove that the possibility to use the C64 for professional sound and music production exists. People like Martin Kopetzki (KomaDat trade list) or Mike/Sunrise (Milestone Magazine -RIP) have proved more than once that C64s can even be used for layout design. Of course you shouldn't forget that 64 kilobyte memory, 16 colors and a one megahertz pulse rate with an average of three processor clock cycles per command in Machine Language are by no means the perfect prerequisites for the professional layout of colored pages. Speed and memory along with a super CPU in combination with a RAM link and an REU tuned to 16 megabyte nearly fulfill the requirements, but only a graphics adapter would turn the whole thing into a machine that could cope with all the demands of layout production or the Internet, although it would not reach the speed of a PC with an AMD 600 MHz Athlon CPU, an Alpha PC by Digital, a G3 Macintosh or an Acron RISC with StrongARM CPU ... naturally. But nevertheless: If we had anything comparable to a graphics adapter, all that would be within reach. Even a sound card with hardware MP3 decoding could be imagined as the various components are all available. I passed on your proposal to put a disc ID into the magazine, maybe we can do that but I'm not in the position to decide that. But concerning the mascot? Come on, don't even mention it ... a small C64 with arms and legs was the mascot of the C64 magazine. We do not plan to copy it. I'm sorry I can't tell you much about the scene in Switzerland so this is to all you Swiss people out there: Send your e-mails to 'Lord_X'. As far as I know, he also writes for the 'Computer Flohmarkt' (Computer Flea Market). There you can also place an advertisement to get into contact. Oh wait ... talking of mascots, we received mail from Oliver Schmidt:*

As our uncle complained in the last issue that no one took part in the never-announced turtle-painting contest I'm going to take part here now:



*Oliver Schmidt*

*Wow ... thank you for the little friend ... I'm sure it will provide a delicious soup for all the editorial staff *burp!* ... the ASCII gourmet amplification of our traditional letter soup so to speak. Hey, who's*

Are there any requests, suggestions, complaints, or comments about the GO64!/ Commodore World Magazine, or do you just feel the urge to chat a bit with our own "uncle Wanja"? Just send us those letters, before Wanja's mailbox starves!

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**w_gayk@bielefeld.netsurf.de**

or

**brix@plush.de**

Wanja's homepage: **www.plush.de/brix**

*disturbing our cooking circle now? Shut up out there! Oh, it's one of the C64's disciples - then of course we will forgive him. Let's hear what he's got to say:*

Yeah!!! I love the great C64! It's the best, coolest and greatest computer in the world!!! Hey, I'm really in high spirits! And I hope you are too! At the moment I'm sitting here in my school (of course that's not so great) and having my own personal four people computer party!

We spent the last week preparing projects (in German schools normally one week of working together in small groups of volunteers with a leading teacher on different projects like history of the hometown, computer science, painting, biological or chemical experiments etc. that on an extra day are presented to parents and other students) and as we formed the groups for the different projects I read a notice entitled 'Computers' in bold type. Actually I didn't really want to do that kind of thing 'cause they normally tend to be all about PCs, but the little postscript was such a provocation to me that I had to enroll. This is what it said: 'Computers - past and present, from C64 to PC'. I GOT ABSOLUTELY CROSS! So some (--- censored ---), (--- censored ---) moron really had written that C64s belonged to the past?! Ha! My fists clenched, my teeth ground, a deep frightening roar broke from my throat and a strange, uncanny stench filled the air (back then, I was suffering from diarrhea, and then, you know, when you get upset and flex your muscles too much, well ...). When I came back from the bathroom I took a ball-point and decided sternly to enroll. Enraged, I pressed very hard when writing and well, I couldn't deny the deed because my name was there, and so I had to pay and erase my autograph off the wall with my own hands and a lot of mortar. But actually I believe I said that I'm in high spirits now that it's the presentation day, the reason being that everything turned out completely different. First, I was sick during the first three days and kept myself informed by means of the telephone about the on-goings in school. There they had rummaged the basement for a lot of old computers and had installed them. Then they tried to obtain information on the Internet about how the computers worked. I was told that some boys from seventh grade sat at the C64 and were playing all the time. I prayed that it would stay whole until Thursday and spent my whole energy on preparing my appearance in school. I searched my disc boxes for my best demos and packed in lots of C64 and GO64! magazines.

When I arrived on Thursday, the school was completely empty as nobody had cared to tell me that the whole thing started one hour later than usual. But my being so early proved to be a big advantage because I could monopolize the C64, and the first thing I did was letting the sound hammer thunder through the school. That attracted a couple of teachers who had the feeling they knew this sound. Later on, when some other students had gathered around my enormous screen I decided that the time was right for 'Second Reality' [This is a C64 demo by Smash Designs which is modeled on 'Second Reality' for PCs by Future Crew - ed]. Faces changed, mouths fell open and I read great wonder in their faces. My science teacher could absolutely not contain his enthusiasm and told me over and over again, "Wow! I don't believe it! Man, this is so great! From when is that? Really? I didn't know there still was so much ...!" And so it went on!

In the meantime I kept on telling my fellow students that the whole thing worked with only one megahertz and 16 colors! One of the computer science teachers of the school was totally fascinated and repeated all the time: "That's marvelous! I didn't know that there's still so much you can do with a C64! What a stroke of luck I didn't throw away the old thing! Could I borrow your magazines for the summer break? I have to inform myself of everything!" The he gave me a pack of diskettes and asked me to format them for him because he didn't have enough time as he had to take care of his project. Of course I said yes and gratefully accepted a stack of old C64 magazines from the time of the fall of the Berlin Wall.

Tomorrow I'm going to offer him to subscribe for the GO64! mag and propose to found a demo group. Today is the day of the presentations and when I arrived I found the C64 out in the corridor so I didn't want to miss the chance to be able to torture some students of other projects with Opium by Samar. We (that is, my teacher and two buddies) had a great time watching demos ad nauseam, playing Bombmania with a four-player adapter until it hurt and listening to music till our ears rang.

Now, as the end is nearing, I'm writing this letter, still totally spaced out on a C64 and 'Opium' high! The C64 will now stay in its place in the corridor where I can always keep the other students informed about the latest news of the scene, if they want it or not (a malicious grin creeps over my face). Happy ending!

Maybe you'll soon have a new subscriber, the scene maybe will have a new group and I have a great time and indulge in the old C64 magic.

With this sentence I'll end my letter; all the best to you! In that sense: C64 forever! One for all and all for the C64!!!!! CU! or Read U!

*Yours, Toni Neumann*

Well, there's not much I can add here, except for 'Helluva time, brother!'. The history of computers live and in color for all PC users and Play Station freaks who do not get to know more than the user interface of the TurboPascal editor in school or are only taught to click some icons. I think that was a great idea for a week-long project and to tell you the truth, I, too, would be interested in seeing what the latest demos look like on an Amstrad CPC or an Atari 800XL. Maybe other readers will manage to put on some of the best demos on so many different systems from C64, Spectrum, Atari to Amiga and Acorn, so that the people of today see what the computers everybody is smiling pityingly about are really able to do. And last but not least at all: Many thanks for the free publicity of GO64! We all appreciate it when our readers support GO64! It is balm on our poor wounded souls. Till then, Uncle Wanja!

# CMD WAREHOUSE BARGAINS
# 1-800-638-3263

CMD's Warehouse Bargains include many hard-to-find used and (where noted) new items. In most cases we have only one or two of each item in stock, so be sure to place your order before your selection has been taken! A minimum order of $20.00 applies to all Warehouse Sale orders. Shipping charges are not included in the prices shown. *(See our main advertisement elsewhere in this issue for shipping information).*

## TELEPHONE ORDERS ONLY ON THESE ITEMS

*Mailed in orders for non-reserved out-of-stock items will result in a merchandise credit. No cash refunds. All items listed here are sold "as-is", and all sales are final. Prices and specifications subject to change without notice. Not responsible for typographical errors.*

### BOOKS
32 BASIC Programs for the C64 ... $8.00
Anatomy Of The 1541 ... $8.00
Basic Computer Games ... $6.00
C128 Computer Aided Design (new) ... $8.00
C64 Programmer's Reference Guide ... $25.00
Commodore 64 Favorite Programs Explained ... $10.00
Commodore 64 For Kids from 8 to 80 ... $8.00
Commodore 64 Games Book ... $5.00
Commodore 64 Programs for the Home ... $8.00
Compute's First Book of C=64 Sound &Graphics ... $10.00
Computes Second Book of Commodore 64 ... $10.00
Computes Second Book of Machine Language ... $10.00
"Guide to Care, Feeding and Training of C-64" ... $6.00
How To Use The Commodore 64 Computer ... $10.00
Inside Commodore DOS ... $10.00
Osborne 1 User's Reference Guide ... $15.00
Superbase The Book ... $10.00
The Elementary Commodore 64 ... $10.00
The Official Book Of King's Quest-Daventry ... $10.00
Using & Programming the C64 ... $8.00
Using Newsroom ... $10.00
Your Commodore 64-A Guide to the C 64 ... $10.00

### BUSINESS
64 Powerpack-NEW ... $10.00
Better Working File & Report (new) ... $15.00
Business System- Sales Analysis Management ... $10.00
Datamanager 128 ... $15.00
Datamanager 128 ... $20.00
Datamanager 2 (new) ... $15.00
Easy Finance 1 ... $5.00
EPYX Microsoft Multiplan Spreadsheet ... $10.00
Financial Cookbook-NEW ... $8.00
General Ledger for the C=64-NEW ... $15.00
Paperback Filer 64 ... $10.00
Paperback Planner 64 ... $10.00
Payables for the C=64-NEW ... $15.00
Planner's Choice -Personal Planning System ... $8.00
Power Assembler-(new) ... $10.00
Practicalc 64 ... $5.00
Practicalc-(new) ... $10.00
Practifile 64-(new) ... $10.00
Receivables for the C=64-NEW ... $15.00
RUN Productivity Pak II ... $8.00
Silent Butler (Check Writing system) ... $15.00
Superbase Starter-NEW ... $10.00
Swiftcalc 128 ... $20.00
Swiftcalc 64 ... $10.00
The Consultant (Database Management) ... $15.00
The Home Accountant ... $15.00
The Home Banker ... $10.00
The Home Manager ... $10.00
The Manager ... $10.00
The Word Machine/Name Machine (new) ... $5.00
Valuecalc ... $8.00

### CARTRIDGES
Alf in The Color Caves ... $10.00
Alpha Build ... $10.00
Big Bird's Special Delivery ... $10.00
Bubble Burst ... $10.00
Dragonsden ... $8.00
Facemaker-(new) ... $10.00
Heskit ... $10.00
Kids on Keys-(new) ... $10.00
Kindercomp ... $10.00
Lemans ... $8.00
Linking Logic ... $10.00
Mach 5 Cartridge ... $15.00
Mastertype (new) ... $10.00
MS Pac-Man ... $8.00
Pinball Spectacular ... $8.00
Radar Rat Race ... $8.00
Sea Speller ... $10.00
Speed Bingo/Math ... $10.00
The Final Cartridge ... $15.00
Up & Add 'em ... $10.00

### CARTRIDGES (No Docs)
Blueprint ... $8.00
Clowns ... $8.00
Ducks Ahoy ... $8.00
Kindercomp ... $8.00
Lemans ... $8.00
Linking Logic ... $8.00
Magic Desk I ... $8.00
Maze Master ... $8.00
Memory Manor ... $8.00
Popeye ... $8.00
Speed/Bingo Math ... $8.00
Up & Add 'em ... $8.00
Vic 20 -Hesware-Gridrunner ... $5.00
Vic 20- Avenger ... $5.00
Vic 20-Jupiter Lander ... $5.00
Vic 20-Omega Race ... $5.00

### DESIGN
Awardware ... $8.00
Delta Drawing-(new) ... $6.00
Jingle Disk-NEW ... $6.00
Printer's Devil for Print Shop ... $8.00
The Christmas Kit-NEW ... $10.00
The Newsroom ... $10.00
The Newsroom (new) ... $15.00
The Print Shop ... $15.00
The Print Shop Companion ... $10.00

### DISK UTILITY
Commodore 64 Software Bonus Pak ... $5.00
Disk Utilities ... $5.00

### EDUCATIONAL/CHILDREN
Computer Science ... $5.00
Early Learning Friends ... $10.00
Easy Lesson and Easy Quiz ... $5.00
English I ... $5.00
ENGLISH II ... $5.00
First Men on the Moon -Math-(new) ... $6.00
Grade A Math ... $5.00
In Search of the Most Amazing Thing-(new) ... $6.00
Jungle Book Reading-(new) ... $6.00
Koalagrams Spelling 1-use with Koala Pad-(new) ... $6.00
Logic Builders ... $8.00
Math Busters ... $8.00
MECC Expeditions ... $8.00
MECC Odell Lake ... $8.00
Paint-A-Rhyme -for use with Koala Pad-(new) ... $6.00
Peter Rabbit Reading-(new) ... $6.00
Snooper Troops Case #1 (new) ... $6.00
Snooper Troops Case #2 ... $5.00
Snooper Troops Case #2 (new) ... $6.00
Snoopy's Skywriter Scrambler ... $10.00
Story Machine ... $8.00
SUNBURST-Memroy Building Blocks ... $10.00
Tales of Mystery ... $8.00
The Argos Expedition ... $8.00
Up for Grabs-(new) ... $6.00
Weather Tamers ... $8.00
Where in Europe is Carmen San Diego (new) ... $20.00
Where in the USA is Carmen Sandiego ... $20.00
Where in the World is Carmen San Diego (new) ... $25.00
Wizard of Words ... $10.00

### GAMES
20 Solid Gold C64/128 Entertainment Hits ... $10.00
20 Solid Gold Hits -5 Disks ... $10.00
Aliens ... $4.00
Amnesia ... $6.00
Archon ... $10.00
Ardok-The Barbarian ... $6.00
Batman ... $10.00
Batman-The Caped Crusader ... $10.00
Beach-Head ... $6.00
Below The Root (NEW) ... $10.00
Beyond Zork-NEW ... $6.00
Blood Money-NEW ... $6.00
Blue Angels-Formation Flight Simulation ... $10.00
Bop'N Wrestle-NEW ... $6.00
Bureaucracy ... $10.00
CavemanUgh-lympics ... $4.00
Championship Baseball ... $6.00
Championship Golf (new) ... $6.00
Championship Wrestling ... $6.00
Chomp (new) ... $4.00
Classic Concentration ... $6.00
Commodore 64C Test Pilot-NEW ... $6.00
Conflict in Vietnam-NEW ... $6.00
Countdown to Shutdown ... $4.00
Crossfire ... $4.00
Cyrus Chess ... $6.00
Deadline ... $4.00
Demon's Winter ... $6.00
Dig Dug ... $4.00
F15 Strike Eagle ... $10.00
Feud ... $6.00
Fist - The Legend Continues ... $6.00
Flight Simulator II ... $15.00
GBA Championship Basketball-2 on 2-NEW ... $6.00
GFL Championship Football ... $6.00
Gold Record Race-(new) ... $6.00
Grand Prix Circuit-(new) ... $10.00
Guerilla (new) ... $6.00
Hacker ... $4.00
Hardball (new) ... $6.00
Heartland (new) ... $6.00
High Roller-NEW ... $6.00
Howard the Duck-Adventure on Volcano Island ... $4.00
Invaders of the Lost Tomb-(new) ... $6.00
Jack Nicklaus Greatest 18 Holes of Golf-NEW ... $6.00
Jaws ... $6.00
Jeopardy-Junior Edition ... $6.00
John Elway's Quarterback ... $6.00
Jordan vs Bird ... $10.00
Karate Chop (new) ... $6.00
Kings of the Beach (new) ... $6.00
Knight ORC ... $6.00
Kung Fu II-Sticks of Death (new) ... $6.00
Last Ninja 2-NEW ... $6.00
Legionnaire ... $5.00
Lords of Conquest-(new) ... $6.00
Lords of Conquest-NEW ... $6.00
Mean Streets ... $10.00
Megaplay Volume 1 ... $4.00
Minit Man ... $6.00
Murder by the Dozen ... $8.00
Navy Seal ... $6.00
Navy Seal (new) ... $8.00
Operation Whirlwind ... $6.00
Pathwords ... $6.00
Power Drift ... $4.00
Predator ... $6.00
Presidential Campaign ... $6.00
Project Space Station ... $4.00
Q-Bopper ... $6.00
Qix (new) ... $6.00
Questron II ... $4.00
Raid Over Moscow ... $4.00
Raid Over Moscow ... $6.00
Rambo III ... $4.00
Rick Dangerous ... $4.00
Robbers of the Lost Tomb ... $4.00
Sanxion ... $6.00
Sargon II-(new) ... $6.00
Sargon III-(new) ... $8.00
Serve and Volley (new) ... $6.00
Shinobi ... $6.00
Silent Service ... $4.00
Sky Fox ... $6.00
Snow strike-NEW ... $6.00
Spiderman ... $4.00
Sporting News Baseball ... $6.00
Star Trooper-(new) ... $6.00
Stationfall ... $6.00
Summer GamesII ... $4.00
Superman ... $4.00
Superstar Ice Hockey ... $6.00
Suspended -A Cryogenic Nightmare ... $5.00
Sword of Fargoal ... $4.00
Tag Team Wrestling ... $4.00
TETRIS ... $6.00
The Last Ninja ... $4.00
The Lords of Midnight ... $6.00
The President is Missing (new) ... $5.00
The World's Greatest Baseball Game ... $4.00
Thud Ridge-NEW ... $6.00
Times of Lore ... $4.00
Titan-NEW ... $6.00
Total Eclipse (new) ... $5.00
Ultimate Wizard ... $6.00
War in Middle Earth-NEW ... $6.00
Wheel of Fortune ... $8.00
Wild Streets-NEW ... $6.00
Word Flyer ... $6.00
Z-Pilot ... $4.00
Zenji ... $6.00
Zork I ... $6.00
Zork II ... $10.00
Zork III-NEW ... $8.00

### GEOS
Deskpack 1-NEW ... $10.00
Fontpack 1-NEW ... $10.00
GEOBASIC (new) ... $10.00

### HARDWARE
1351 Mouse w/Manual-no disk ... $20.00
1702 Monitor -Color 40 Column-refurbished ... $99.00
1802 Monitor-Color Monitor 40 Column-refurb ... $139.00
Aprotek 1200 Baud Mini-Modem (new) ... $30.00
Assorted Joysticks ... $5.00
C128D Keyboards (NEW) ... $69.95
C128D Keyboards-REFURBISHED ... $59.95
C64 Keyboard (NEW) ... $49.95
C64 Keyboard (refurbished) ... $39.95
CPU64 Version 1 Base Model ... $139.00
Datasette ... $5.00
EPYX Fast Load Cartridge w/Manual ... $10.00
Homewriter 10 Printer w/manual ... $45.00
Koala Pad Only no docs ... $20.00
KXP 1080I Printer ... $75.00
Laser 190E Printer ... $30.00
Magic Mouse ... $10.00
Magic Voice Speech Module ... $50.00
Multiplexer ... $50.00
Okimate 10 Color Printer w/manual,disk,ribbons ... $45.00
STAR Gemini 10X w/Manual ... $25.00
Super Expander 64 ... $8.00
The Voice Messenger -Speech 64 ... $20.00
Used SlimLine cases for Commodore 64 ... $10.00
VICMODEM for VIC20 ... $5.00

### MISCELLANEOUS
10 Assorted Commodore Magazines 1985-86 ... $10.00
64 Doctor ... $5.00
Home Video Producer ... $10.00
Instant Music-NEW ... $6.00
LOADSTAR Disks#46,65,66,67,68 ... $10.00
Synthesound 64 ... $5.00
Vic 20 Cassette-Intro to Basic Part 2 ... $10.00

### MISCELLANEOUS SOFTWARE
Aerobics ... $6.00
Bobsterm Pro (new) ... $10.00
Commodore ... $5.00
Commodore Technology ... $5.00
Music Construction Kit ... $5.00
SAT Score Improvement System ... $5.00
Writer/File Pak 1541 ... $8.00

### PROGRAMMING
Better Working Power Assembler ... $10.00
GEOBASIC (new) ... $10.00
Hesware - Graphics Basic ... $10.00
Introduction to BASIC/Part I ... $8.00
Oxford Basic ... $10.00
Oxford Pascal ... $10.00
Simon's Basic ... $10.00
Start Programming w/Gortek and the Microchips ... $5.00

### WORD PROCESSING
Easy Script ... $5.00
Mastertypes Writer ... $8.00
Mirage Concepts-Word Processor -Professional ... $10.00
Outrageous Pages-NEW ... $20.00
Super-Text Professional ... $5.00
Supertext Word Processor ... $10.00
The Printed Word ... $8.00
The Write Stuff 128-NEW ... $20.00
Word Writer 128 ... $20.00
Word Writer 6-NEW ... $15.00
Wordpro 3 Plus/64-NEW ... $15.00
Wordpro w/turbo Load & Save-NEW ... $15.00
Writers Choice ... $8.00

Shatter the 1 MHz Barrier

# SuperCPU

# 20 MHz Accelerators for the Commodore 64 & 128

- Breathes New Life into your Commodore 64 or 128
- Increases System Performance by up to 22 Times
- Makes Sluggish Old Programs Quick and Useful

## Take Your Commodore Into The Next Millenium!

Programs will suddenly spring to life, screens and menus pop up instantly, scrolling becomes fluid, and graphics fly. A Commodore equipped with a SuperCPU is like having a Volkswagon with a V-8. There's one small difference: the SuperCPU rides much smoother. And while the SuperCPU provides your computer with a radical increase in horsepower (up to 22 times faster), its operating system makes that power easy to use by maintaining compatibility with most existing programs and by making itself virtually transparent to the user and the computer.

Looking to the future, the powerful 65816 microprocessor gives programmers vast new resources to create powerful and sophisticated software. With its 16-bit registers, up to 16 Megabytes of system memory and an enhanced instruction set based on the 6502 core, the SuperCPU makes it easy to enhance existing software while providing the muscle needed to create a whole new generation of Commodore programs integrating more extensive graphics, sound and animation.

To get the most from your existing programs and to get ready for the future with just one puchase, get a SuperCPU. You'll wonder why you waited this long!

SuperCPU 64 $179.00*
SuperCPU 128 $239.00*

*prices do not include shipping

**Features:**

- High-speed microprocessor, 128K or 256K of fast RAM, advanced hardware logic, and up to 512K ROM enable you to run all types of existing commercial software at speeds up to 22 times faster than stock machines.
- BASIC programs, including most Bulletin Board Systems, seem to run as fast as machine language, and compiled BASIC programs run faster than ever!
- Commercial machine language programs (databases, spreadsheets, word processors, telecommunications, graphics, etc.) run so fast that you'll think you're running them on a completely different computer!
- GEOS comes alive—No typing or scrolling delays, graphic operations happen instantly, plus faster printing and disk access! Includes an enhanced GEOS setup utility!
- Easy-to-use: Plug it into your cartridge port** and start working—no special adjustments needed.
- Built-in JiffyDOS Kernal boosts disk access speed up to 15 times faster with JiffyDOS-equipped drives.
- Pass-thru port provides compatibility with RAMLink, SwiftLink, Turbo-23 2, REUs and other cartridges.
- Unit Enable/Disable, JiffyDOS On/Off, Normal/Turbo, and Reset switches make using the SuperCPU a snap!

**Additional MMU SuperAdapter installation required for 128 version.

**SuperRAM Card (0 MB) $79 · 4 MB $114 · 8 MB $139 · 16 MB $179**
**SuperCPU 64 w/SuperRAM (0 MB) $219 · 4 MB $254 · 8 MB $278 · 16 MB $318**
**SuperCPU 128 w/SuperRAM (0 MB) $279 · 4 MB $314 · 8 MB $338 · 16 MB $378**

Prices do not include shipping and are subject to change without notice. Not responsible for typographical errors.