

CoCo ~ 123 INFORMATION

The CoCo ~123 is the newsletter of the Glenside Color Computer Club. Your annual contribution of \$15.00 keeps our club going. Send your check to the Glenside Treasurer:

George L Schneeweiss
13450 N 2700 E Road
Forrest IL 61741-9629

Our treasury provides newsletters, local meeting room and good times with fellow CoCo users at our annual Chicago CoCoFEST.

CoCo~123 CONTRIBUTIONS

If you have any suggestions for the newsletter or would like to submit an article, please contact the CoCo ~123 Editor:

Howard Luckey
4 Gibson Rd
Park Forest IL 60466-1723

CONTRIBUTORS TO THIS ISSUE

George Schneeweiss	Mark Marlett
Roger Hallman	Marty Goodman
Allen Huffman	Howard Luckey
Carl Boll	Bob Swoger
James Jones	Steve Noskowicz
Louis Schulman	Tony Podraza

G. C. C. C. MEETINGS

The Glenside Color Computer Club meets the second Thursday of each month at the Schaumburg Heights Public Library at 7:30 PM. See our WWW Glenside Homepage at:

<http://members.aol.com/clubbbs/glenside>

if you need a map. A social get-together always occurs at the nearby Sante's Restaurant.

FROM THE PRESIDENT'S DISK

Well folks, the Glenside Color Computer Club sponsored another fine "LAST" CoCo Fest. I haven't heard what the attendance was but it seems to have been equal to or maybe be just a little better than last year. I want to thank all the people who did the work to make it such a success, especially Tony who does a lot of the preparations such as arranging for the room, tables and other things needed for success.

I hope more people can make to next year's "Last" CoCo Fest.

In this issue read two reviews about this year's Fest from Roger Hallman and Allen Huffman. Also, there is a fine comment from Carl Boll who says that he will be submitting updates to his new design for a CoCo like computer.

Thanks again everyone and plan to be here next year.

Howard Luckey, President
Glenside Color Computer Club

The V-P's Platen

Sorry, the V-P's printer broke. There is no "Platen" article for this issue.

Glenside Color Computer Club Has A Web Page!

The Glenside Color Computer Club now has a web site. Look for us at:
<http://members.aol.com/clubbbs/glenside/>

Bob Swoger, Webmaster
Glenside Color Computer Club

TREASURY NOTES

As of July 6, 2002, the balance in our checking account is in excess of \$3500.00. We can we afford to have another CoCoFEST!

George Schneeweiss, Treasurer
Glenside Color Computer Club

THE SECRETARY'S NOTEBOOK

April 11, 2002

Vice-president Brian Goers called the meeting to order at 8:30 PM at the Schaumburg Township District Library. Present were Brother Jeremy, Tony Podraza, Richard Bair, Brian Goers, John Chasteen, George Schneeweiss, Justin Wagner and Bob Swoger.

Minutes of the March meeting were read and approved. Alibis were given by members missing the last meeting, Brother Jeremy had to work, Justin Wagner had to go to a Knight's of Columbus meeting and George Schneeweiss used the > absence of Justin as his alibi.

Those vendors who have mentioned that they will be at this years fest are Cloud 9, Hawksoft, Ken Baker, Luckey Corner, Monk-O-Ware, The Music Men, Steve Noskowicz, FWD Computing, Sub-Etha SoftWare, The Glenside Computer Club and CjB Technologies & Consulting

Steve Noskowicz, who will be the featured event this year putting on a Laser > Graphics show using his CoCo, will require from us a screen no larger than 10' by 10'. From the Music Men he will require an RCA phono connector, sex unknown, so be prepared with both on long cable.

Trea\$ury report, \$1502.69

Rick Uland may become another vender for this years list.

We have 2 guest speakers.

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Brother Jeremy will have a collection of OS-9 software on a CD ROM disk to sell for \$15 at the fest. David Kyle should be encouraged to do the very same thing.

Tony reported that he would take off the Thursday and Friday before the Fest to prepare, and the Monday and Tuesday after the fest to recover. All club members are encouraged to help Tony.

The meeting adjourned at 8:58 p.m.

We retired to the Sante Restaurant just west of Roselle Road on Higgins Road to finish our meeting.

---GATOR---

Robert E. Swoger - K9WVY

Co-Secretary
Glenside Color Computer Club

May 9, 2002

June 13, 2002

We did hold meetings, minutes were taken...and important things were discussed. I put the minute in a "safe place". But I have no memory of where that is, any more. But among the items discussed were:

- 1) The expenses of the CoCoFEST! were met and sufficiently so that there will be a 12th Annual "LAST" Chicago CoCoFEST!. It will be held on May 17th & 18th, 2003.
- 2) The IDE Project has been turned over too the Club. Carl Boll has distributed the boards to all that he has shipping addresses for.
- 3) The funds transferred from the defunct OS9 User's group have been deposited.
- 4) The annual Glenside picque-nicque will be held on September 21, 2002. It will be hosted by Bob Swoger. Time: 1:00 till ? Location: Email me@ tonypodraza@juno.com for further details, or contact me by phone, or snail mail.
- 5) We discussed the possibility of opening the FEST! to other "Classic Computers". Your input is appreciated.
- 6) Bob Swoger started teaching us how to get a web page started...the lessons will be

continuing. They are interesting. "Wish you were here".

- 7) The FEST! was reviewed. Suggestions for the elimination of "hic-coughs" and real problems were offered.

There was more. I'll try to get it in in the next newsletter.

11th "LAST" COCO Fest:

Subject: cocofest
Date: Sun, 5 May 2002 20:48:03 -0500
From: Roger Hallman <rhallman@WI.RR.COM>
To: coco@Princeton.EDU
Newsgroups: bit.listserv.coco

Just got back from the Coco fest. It was a great time. The show itself was scaled down but I seemed to enjoy it more that way. There were a lot of familiar faces there and some unexpected entertainment (to say the least!) I got to meet a few new people that are on this list that I had typed at but didn't actually know. Jim Davis did a wonderful job of setting up a Lego city train board. The detail Jim went into was amazing, everything from a person walking away from an ATM machine dropping money to a firefighter helping a cat out of a tree! Not to mention the "coco" train going around the track. Great job Jim! Steve Nosowicz put on a laser light show that was driven by a coco. The show he put on was very good (twice). I think one of the best parts of the cocofest was the auction on Saturday. It just doesn't get any better than this! It started out like the usual auction and then just went crazy. I haven't laughed so hard in a long long time. Tony was accepting bids on a coco tape recorder and that's when things went ... well ... crazy! All of a sudden these tape recorders were coming out of the woodwork. As Tony sold them off ... and was ready to move on to the next item up for bid, more of these recorders were brought to the auction table.

I thought we were going to have to call the paramedics because Tony was laughing so hard he could hardly catch his breath! I brought my coco and was showing cartoons and video from Nick's Pennfest CD. Everyone that saw the pmode4 video playing seemed to be really surprised that it was

actually being displayed from a coco. It was fun to look at the faces of people looking behind the monitor (facing outward) and only seeing a coco behind it. I'm only touching on some the fun things that happened at the fest. I'm sure someone will come out with a "formal report" !

Subject: Micro Fest Report...
Date: Mon, 6 May 2002 00:35:41 -0500
From: Allen Huffman <alsplace@MAC.COM>
To: coco@Princeton.EDU
Newsgroups: bit.listserv.coco

Wow! The CoCo-driven laser show was really amazing! The CoCo fed data to the laser in real time and it did graphics and pictures and patterns and all kinds of goodies. Just amazing.

Mark Marlette's new flash project (working with Boisy Pitre) is something, too -- imagine being able to have custom Disk Basic ROMS without needing a ROM programmer! Eight different 32K ROMS all selectable by holding a key on startup or by going into a menu and changing the defaults -- then another 256K of flash available for program use (or a flash disk under OS-9). Sweet.

CoCo TV (Roger Hallman) was neat -- if you've ever seen a DS-69 digitizer "preview" images real-time, imaging seeing things being played back like that direct from an IDE hard drive. It was very nice (black and white, CoCo 2 screen with dithering) -- several very long video pieces. Now, if encoding could be done offline for color and such (since there is no way to digitize realtime color on the CoCo) I am sure the CoCo could playback color TV too.

Markus (CoCo home page) made it down and went home with an AMDISK (dual 3" drive) -- after a bidding war with Dave Poitras (of course). I and Carl England chipped in. (Carl England has a CoCo playing MIDI music in his church, by the way.)

Brother Jeremy received another OS-9 Level 2 Upgrade disk -- this one from James Jones -- and it contained more different modules. The mystery continues: what is the last revision to the upgrade? When Kevin Darling saw it at PennFest 2000, he was ashamed of the version Brother Jeremy had

because it wasn't the good one -- apparently the latest version let windows in the background continue to be animated when partially covered. Wow -- that would have been a major deal.

I picked up a SlotPak-III (revision D) in the auction on Sunday, but thanks to Dave P. bidding against me the price got up around \$90 ;-) Glenside's gotta love that guy.

John Donaldson (a guy I knew from Houston back in the pre-1984 days from a BBS he ran) returned to the Fest. Neat!

Curtis Boyle had an Elgin local stop buy -- a guy who wrote several of the original CoCo 1 ROM paks for radio shack include Robot Wars and the breakout game! I'll let Curtis post more details on this guy -- VERY interesting stories.

Brother Jeremy had a "three week old" version of the OS-9 Archive CD which has about 500 megs of stuff on it now (!).

iCoCo (known in the real world as the Super Board from Cloud-9) should be a reality before the next Fest, easily, says Mark Marlette. Ethernet *might* even be a standard option now that a new dual purpose networking chip is available...

Jim Davis showed up with a massive Lego train set that had alot of in jokes on it -- a Radio Shack, for instance, and a Cloud-9 office building. Who was the man on the ledge, though? :-)

Many regular faces where there, and I'll leave all of them out so I don't leave anyone out accidentally.

Ken Baker says he only has about 100 CoCo 3s left in the box, and about 100 more new out-of-box units.

John Strong may be working on a new CoCo / PalmOS game...

I have no clue what attendance was, but enough money was made for Glenside to say they'll do a show in 2003.

More to come...

COCO 123

From: James Jones <jamesjones01@MCHSI.COM>
Subject: Re: cocofest

It was indeed a great time, but I'm not sure I'd call it "scaled down" in comparison with, say, 2001. In 2001 there was a considerable space left open for attendees to set up their systems or their purchases and so forth. This year, there wasn't enough space to do much of that--people were nice enough to set up one table in the very corner so I could set up and try to get going with SCSI and the data transferred from my venerable RLL hard drive.

James Jones

From: mmarlett@isd.net
Subject: Re: cocofest
To: coco@Princeton.EDU
To: coco@Princeton.EDU

At 12:30AM this morning we arrived home from the fest. A good time but it was VERY busy. I didn't get a chance to walk around until after 12PM on Sunday and some were already packing up. Jim's Lego were something to see and I viewed it from a distance and missed the Cloud-9 tower, sorry Jim! :(Me jump NEVER, too much to do yet. :) Too little time. This year was even busier than lasts. Great time. A lot of neat stuff that others have already mentioned but I will repeat that the LASER show was VERY neat!!!

Take care all,

Mark
Cloud-9

Carl's Commentary:

Subject: CoCo4
From: "Carl J. Boll"
<carlboll@CHICOCO.CHI.IL.US>

OK, I am surprised at the amount of discussion generated by my posts.

Here is my take, there are a lot of good ideas out there, a lot of wish lists too. It seems everybody sees a CoCo4 differently as well.

Now here is my view on this whole thing. I am proposing a project that can be expanded on. If you want to design a new GIME, OK it will work in my project, just build a card with the new GIME and memory.

If you want to get rid of the keyboard scanning ditto. If you want to incorporate DMA, that's doable too. If you want to scrap the GIME altogether OK, build a replacement card with whatever chips you want, make it work.

This whole discussion of PCI vs ISA vs CoCo vs everything else is totally meaningless because I am not talking about a bus per se. I am building a backplane. No logic on the backplane at all. Its speed is determined by the CPU. This has been done for years in industrial computers.

A connector is a connector. There is very little loss of anything other than reliability between ISA, PCI, Euro, etc. The various connectors have nothing at all to do with bus speed.

I am not proposing that we interface PC cards into this computer, it is likely too much work and would never happen. I am proposing a project that isn't too big in scope that has the inherent flexibility to allow upgrading and changes.

You want to build a soundblaster type card for the new computer? use an ISA prototyping card and voila, plug it in.

USB? Parallel port? Fast serial ports? Ethernet? You name it. this design allows you to do what you want to do. If we need to buffer the lines for the bus we can do that on the CPU card. If we need to provide a faster path between the GIME and the CPU it can be done with headers and sockets between the two cards. If you need them on the same card it can be done at some point.

My whole point is that with a backplane we >CAN< start to improve the CoCo >NOW< without doing anything that is at all impossible.

I'd love to see a new CPU, a GIME replacement that is better but I don't expect that we are going to easily be able to drop these into a CoCo3 and get them working.

My design allows for different pinouts, different everything because you build a card for it. Nothing is set in stone and you are >NOT< cutting traces, pulling chips adding satellite boards, etc.

What is it that has made the PC such a hit? The ability to add capabilities to it as they are needed. Sure the '386's had serial ports. They had the same limitations as our CoCo's did. They weren't reliable at higher speeds and would drop characters. When the 16550 came out you could buy a card and pop it in your '386 and now you eliminated that problem.

It's fine if somebody else wants to set up to the plate and design a PCI card that holds a "CoCo" that can be plugged into another computer. I don't need it, am not going to work on it. It would be beyond my skills and I don't want to move in that direction anyway.

So, if you have ideas and want to see them happen do what I am going to do. Work on it, otherwise they won't happen. All I've seen is a few people here that actually are interested in doing something and a lot of people (who usually preface everything with I don't have the time or skill or am not quite sure how we could do this but I think it would be cool) with wish lists that won't, can't do anything to get this or any other project off the stove.

Carl

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Carl Boll: root@chicoco.chi.il.us

From: "Carl J. Boll"
<carlboll@CHICOCO.CHI.IL.US>
Subject: IDE and Fest

Well, the Fest has come and gone again. It was a great time and I got to see a lot of old friends and meet a few new ones. I was asked by several people to keep them posted via the list about my 3 card CoCo. Here is the current status. I have three passive backplanes to play with right now. My current plan is to use ISA prototyping cards to build the bus based CoCo.

The three cards will probably go this way:

- Card 1. CPU, ROM and crystal
- Card 2. GIME, memory (128K, 512K and 2 Megs in that order) & video
- Card 3. All I/O including a real RS-232 port

The idea is to completely replicate a CoCo3 right down to the cassette port on the first iteration.

Having looked at the backplane I've decided that I will lay out the bus so that regular CoCo cards can be plugged into it directly. This will allow me to use existing devices like the floppy controller, etc rather than build adapters or additional cards right away. The additional lines from the CPU will also be brought out onto the bus, the ones that are absent from the original "CoCo bus". As soon as I get a chance I will post a pinout for others if they are interested in duplicating my project.

Ok. that's the status right now, it is a work in progress.

I have turned the IDE project over to the Glenside Club. I still have a few boards to ship so wait a week or so before contacting them about any unfulfilled orders or contact me first.

The Fest was great as always and the laser light show was nothing short of amazing! If you didn't come to the Fest you don't know what you missed. I am looking forward to next years Fest and will have a booth with several projects as well as a lot of stuff for sale or give away.

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The auction was a hoot. I thought Tony was going to either pass out or at least fall down laughing when the cassette recorders started multiplying like rabbits (you had to be there to see it). Mark Marlette was there and he had a lot to show off. The Superboard is really going to be SUPER.

I'm not going to go into any further detail right now, gotta get a nap.

Thanks to everybody who came.

Carl

Doctor! Doctor!

From: Marty Goodman
<martygoodman@WORLDNET.ATT.NET>
Subject: Removing a CPU

Winston wrote: "I'm currently trying to remove the CPU from my CoCo 3. I've used the desolder braid on the bottom of the board with the help of some solder flux. Of course the CPU is still stuck. Are there any other suggestions to aid in removing the CPU? I don't have a solder sucker, just a 25 watt pencil iron."

I happen to be biased (for most desoldering situations) against use of solder wick, in favor of the use of a solder sucker. This based on years of experience with both. While the solder wick is often useful for soaking up blobs of excess solder, it's in my experience of limited value in freeing a pin that's soldered to a plated-thru hole in a PC board. I've removed one or two dozen 68B09E's from CoCo 3's for myself and others over the years, most times without harming either the chip or the circuit board (tho I confess I have on a very few occasions either broken a pin on the CPU or torn a trace on the circuit board... 'tho in all of those cases I managed to find and repair the damage). As well as innumerable other cases of removing a chip from a circuit board in the situation where one wishes to harm neither the chip nor the circuit board (the most delicate and difficult of all chip removal cases: It's FAR easier if you don't care about harming the chip, or if you don't care about harming the circuit board). Different people use different techniques and

equipment, and there are many approaches that will work. Here's the one that I've arrived at after years of experience with chip removal: I don't have a \$500 or \$1500 desoldering station (such equipment really IS helpful!!) But I do have, and STRONGLY urge anyone who wishes to do ANYTHING that involves soldering on their CoCo to get, a high power (40 or 60 watt) TEMPERATURE CONTROLLED soldering pencil. I happen to use an ancient Weller WCTPN solder station with a PTA7 (set to 700 degrees F) tip, but there are dozens of other temperature controlled soldering stations available, in the \$50 to \$200 price range. Including modern ones with continuously variable electronic temperature control. It's extremely foolish, in my humble opinion, to try soldering... and especially to try DESOLDERING... with anything less.

My technique:

For removing a 6809 from a CoCo 3 I use such a temperature controlled high power soldering iron and a high quality hand held mechanical solder sucker. It takes a while to get the technique of using a solder sucker to work well and consistently. You have to be very well able to judge when the solder is sufficiently liquid to apply the sucker. One often has to ADD solder to make enough of a pool of solder around the pin for the sucker to do a proper and complete extraction of the solder. It's something of a skill and an art, that requires patience and experience. After doing the best job I can at solder sucking the pins clean, I still find that many pins have some degree of solder bridges between them and the inside of the hole. And the ground pin(s) and +5 volt pins, which are connected to thicker traces, most typically still have some solder in them. At this point I very briefly apply the soldering iron to the pins that are stuck (that don't wiggle freely when I try to wiggle them with a screwdriver, or which LOOK stuck) and wiggle them after briefly heating them. Then I remove the iron, while continuing to wiggle them with a cold screwdriver. This frees up most remaining pins, tho the ground trace pins and perhaps a very few others may still be holding the chip in. Finally, I hold the circuit board in a vise (padding the area where the jaws grab the board) and apply a HEAT GUN to the solder side of the board. I use a paint removal gun set at HIGH temperature, but held about 2 inches or more from the board. This part is VERY tricky, and if you are not familiar with removal of chips using a high

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temperature heat gun it's VERY easy to burn the board and irrevocably damage it! One needs LOTS of practice removing chips from boards you don't care about destroying before you can be confident you won't hurt the CoCo circuit board! But with the experience I have, I find it trivial to apply JUST the right amount of heat to begin to make the last bits of remaining solder liquid. As I carefully aim the heat gun at the board (moving it around, keeping it at just the right distance, judging how much heat I'm applying in part from the "smell" of the board and the gun) I am grabbing the chip with an IC removing tool, and GENTLY tugging on it. When the solder heats up JUST enough for those last tiny shreds of solder to "let go", the chip pulls out cleanly. I remove the heat gun immediately at that point.

I've carefully applied JUST enough heat for a chip that has already been MOSTLY desoldered, and on which there is a constant tug, to be removed. Which invariably (given my experience with the heat gun) is NOT enough heat to either burn the board or to cause other electronic components to falloff.

Most of the holes where the 6809 was are free of solder: I tend to only have to solder suck a few remaining holes to clear the spot on the circuit board to properly accept a 40 pin IC socket.

With this technique I get virtually 100% success in clean removals without hurting the circuit board. The times I did have problems with a broken pin or a damaged trace, I wasn't using the heat gun as part of my technique.

Under no circumstances would I consider trying to remove a 40 pin IC from a circuit board that has plate thru holes using solder wick!! I just can't see that as being possible, if one cared to preserve both chip and board.

Note that the 6809 one removes has CUT PINS, and sometimes will make only INTERMITTENT contact with any given IC socket one installs: One sometimes has to solder the removed 6809 into a 40

pin "header", with long enough pins to make reliable contact with a normal IC socket.

Note, too, that if you have a good supply of spare, new 68B09E's (or 63B09E's, if that's what you want to install) you will find it MUCH easier to do a DESTRUCTIVE removal of the original 68B09E: Using a diagonal cutting pliers CUT ever one of the 40 pins of the original 6809. Then, using a soldering iron and a fine long nose pliers or tweezers, one by one remove the remains of each pin from each of the 40 holes. Then use a solder sucker to clean out the holes. This technique will take as long or longer as the more sophisticated technique I described above, but it's far easier to do. It requires less skill and experience. It has the down side that you will almost certainly render the removed 68B09E unusable.

Be sure to use VERY high quality, ultra fine diagonal cutting pliers (good sets of such pliers can cost \$20 to \$30, tho adequate ones may be available for \$8). You must be careful not to damaged the traces on the circuit board, and ideally it's best to cut the pins as high up and as close to the IC itself as possible, to leave something the tweezers or long nosed pliers can grab hold of.

I don't recommend ANY of this to someone who's never done it before! You need to practice even the easier of these two techniques before you can be confident you won't hurt the CoCo when applying the technique to 68B09E removal. Chip removal... especially where the circuit board has plated thru holes, and doubly especially where you don't wish to hurt EITHER the circuit board OR the chip... really does require experience, skill, and care.

---marty

A Second Consultation

From: "Nosko S.new"
Subject: Re: removing CPU
-To: coco@pucc.princeton.edu

Winston,

Here goes... There are probably several other ideas to be heard out there...

COCO 123

The standard "Don't-do-this-at-home; -We're-professionals" disclaimer...

The unsoldering of IC leads is a balance between getting enough heat in there to melt things quickly without getting so much heat in there that you melt everything immediately - like damaging the PCB runners or the IC. Also spending too much time there runs the same risks. How much is too much heat or time? It depends on the PC board quality. Poor quality and one attempt causes the pads to lift. Good quality and it seems like you can spent all day in there with a difficult lead.

My experience is that the solder must be gone from the top as well. That is, if there is a solder fillet on the top side you will have lots of trouble. There is no fillet if you can see the actual hole with the IC lead going into it - instead of a nice solder covered hole & lead. IT "looks like" an unsoldered lead. A good solder sucker is the best, but a good hand with the wick works IF it has removed all the solder out of the hole. If you can see that "all" the solder is gone from the hole (see daylight through the hole along side the IC lead, then you can proceed. If this is not the case, you can't proceed. If I can't get to this stage, then it is difficult to keep trying a one-lead-at-a-time approach and I usually go to the melt everything at once-don't-try-this-at-home-we're-professionals technique. I make up custom solder-gun wire tips to heat an entire IC (or one side) once.

A hole which resists giving up all the solder is usually connected to a larger amount of conductor, such as ground, which is pulling the heat away, keeping the top from melting.

Of course there is the cut-off-the-IC-leads-and-pull-the-lead-remains-out-then-try-to-salvage-the-old-one-or-get-another-6809 technique. Then there's the "tri-state the 6809 and solder a socket to the top" technique.

Back on task:

With all the solder out of the hole, the lead will usually be "stuck" (soldered) to the outside of the hole. This is due to the leads being formed to be wider than the lead spacing. At this "clear hole"

stage, here's what I do. From the solder side usually, I "push" the IC lead with the hot iron (NOT touching the pad on the board, just the IC lead) away from the side of the hole it appears to be stuck to. If done with enough skill, you can get it unsoldered without letting it stick to the other side – or back on the original side. It's tricky. The trick is knowing the amount of pressure to use to get it unstuck without ripping the plating. With a quality boards, and good removal of solder, you can just rip it off with the tweezers, but there is ALWAYS the risk of tearing the plating off too.

A pointed toothpick can be inserted into the side being unsoldered. If not pushed so the lead becomes pushed against the other side, but is just holding in the center, you now only have the edges of the flat IC lead to contend with. If there is enough lead protruding, I have been known to grab it with tweezers and heat things and pull it to the center of the hole. A frequent result of this step is that the lead will be soldered only near the top side-outer edge. Sometimes this can be fixed by pulling the lead away and breaking the COLD solder joint, but you run the risk of pulling away part of the hole plating. My eyesight won't allow me to do this anymore.

At one time I had access to small diameter Teflon insulation which I could shove over the lead while the solder was melted, thus displacing the solder away from the lead and out the hole. This was usually done after the previous step and it was still stuck, though I think I did this as a primary method when the holes were big enough to just "shove her" in.

If only one lead on a side of the IC is a "difficult" one, you can also try to get all the others on that side free, then melt the trouble one (even adding solder to get the job done quickly) and lift that side of the IC - rotate it out.

P.S. You can also BLOW the molten solder out with an air blast... This can do the job AND cool things off as well. I'd blow from the component side and close my eyes.

Steve Noskowicz

And A Third

From: Louis Schulman <louiss@gate.net>
Subject: Re: removing CPU

Radio Shack sells an excellent desoldering tool for \$15. I have desoldered entire boards of chips without damage with this tool.

Here are some tips to make it work:

- 1) Wait for the tool to heat all the way up.
- 2) If there is not a mound of solder to heat up, add a little new solder so heat will transfer better.
- 3) After the solder is removed, the pins will probably still be stuck on one side. Push them away from this side with a small screw driver or similar.

This technique works well, much better than desoldering braid, IMHO.

Louis

EOF

This is a bit briefer than I wanted. And I haven't gotten Cloud-9's new web-pages in this newsletter.

They are really something to see.

The instructions on the CPU replacements caught my eye, I think that they present a couple of interesting viewpoints.

I trust that your Fourth of July holiday was both safe and joyful.

Until next time....

I bid you Peace.

-tony podraza

P.S. Joy is the banner flown from the castle of the heart when the King is in residence.