

Don Lancaster's

# RESOURCE BIN

number forty nine

## Fundamentals of Nutting and Volting.

**O**ur usual reminder here that the *Resource Bin* is now a two-way column. You can get tech help, consultant referrals and off-the-wall networking on nearly any electronic, *tinaja questing*, personal publishing, money machine, or computer topic by calling me at (520) 428-4073 weekdays 8-5 Mountain Standard Time.

US callers only, please.

I'm now in the process of setting up my new *Guru's Lair* web site you will find at (where else?) [www.tinaja.com](http://www.tinaja.com) This is the place you go for instant tech answers. Among the many files in our library, you will find complete reprint sets for all of the *Resource Bin* and other columns. Plus a brand new [Synergetics Consultant's Newtwork](#) & lots of links to unique web sites.

You will get the best results if you have both [Netscape Gold](#) and [Acrobat Reader 3.0](#) installed. This new reader does utterly amazing things online.

### Nutting and Volting

Um, somehow we got up to column #49 and the start of our fifth year. So I guess it might be time to review just where we're at and where we seem to be heading.

Our two-fold charter has always been "finding places to get stuff". And "finding places to learn stuff". If it is unusual, oddball, or off-the-wall, so much the better.

I've always gone on the theory that if it interests me, it just might interest others of a technical bent.

All of my previous columns are now offered online on [www.tinaja.com](http://www.tinaja.com). They are also available in bound hard copy from my *Synergetics Press*. I'm in the process of wrapping some super powerful search engines around my entire library. By using Adobe's great *Acrobat Search* and *Catalog* features. I am also hoping to put all of this on a CD ROM. Real soon now.

Let's start off with...

### Magazines

It appears rather insulting to call them "hobby" or "popular" magazines. For they often have the best technical content and often the most genuinely useful information. They also seem to care *a lot* more about all their readers than the trade journals do.

You obviously know about *Nuts & Volts*, since you are reading this. Here are several of my other favorites...

*Electronics Now* is the largest and oldest of newsstand electronic mags. Publishing fairly advanced technical content. I have a *Tech Musings* column here. Their sister publication is called *Popular Electronics* and tends to focus on simpler and easier projects. Note that this is *not* the original PE of Carl and Jerry fame.

Steve Ciarcia still publishes a great *Circuit Cellar* magazine. Its got mostly advanced projects on microcontrollers and on home automation.

Richard and Karen Perez publish *Home Power*. This is *the* source for info on everything from rural solar energy to electric cars to alternate lifestyles.

And have also got a definitive new solar reference CD.

A number of special interest tech magazines are published by *The Audio Amateur*. Besides their flagship title,

**NEXT MONTH: Don looks at prototyping plastics and injection molding.**

these include *Speaker Builder* and *Glass Audio*. The journal for the rabid fringe of the tube set is *Sound Practices*.

I particularly like their "definitive midrange to upper register sonority" when talking about certain brands of type 80 rectifier tubes. The key secret for vacuum tube sound is simply to add hum, noise, and distortion to an

otherwise clean audio channel.

There are quite a few Ham Radio magazines that we did review back in NUTS17.PDF.

*Midnight Engineering* is one superb and hog-on-ice independent journal on small scale technical startups. I do a *Blatant Opportunist* column there.

So much for the obvious. What else do I read? A lot, actually, since I now subscribe to over 600 magazines and trade journals. I guess my favorite of all is *Whole Earth Review* whose *access to tools* mandate does seem to closely follow my elegant simplicity goals.

That *Wall Street Journal*, of course. Especially their Technology section that usually appears on page B4. And *Science* magazine for their very latest ongoing developments in everything. Actually, *Nature* is better, but I can't afford both of them.

I kinda like *Skeptical Inquirer*, since pseudoscience bashing is a fiendish hobby of mine. More pseudoscience in NUTS18.PDF and in NUTS26.PDF. And especially *FactSheet Five* which reviews thousands of labor-of-love 'Zines each month.

### Trade Journals

By far your best way to get tech literate on any subject is through the *trade journals*. These are little-known, largely advertiser-driven mags which tightly target specific interests. They never appear on newsstands and only rarely show up in any but the largest of technical libraries.

There are over 85,000 trade journals being published today. Most of them are free to "qualified" subscribers. You "qualify" by telling them what they (and all their advertisers) wish to hear on all their qualification cards. It does help to have a registered trade name and a laser printed letterhead. Both of these are trivial these days.

The best place to find out all about trade journals is the *Ulrichs Periodicals*

Dictionary. Available online through GENie or on the reference shelf of your library. There is also an *International Standard Periodicals Dictionary*.

Let's see. For electronics, your best trade journals are *Electronic Design*, *E.E. Times*, *EDN*, *Electronic Products*, and *Electronic Component News*. Such specialty publications as *R.F. Design*, *Sensors*, *Measurement & Control*, and *PCIM* are also highly useful.

Of those mechanical trade journals, my two favorites are *Design News* and *Machine Design*. But your best freebie sample offers usually appear in *New Equipment Digest*.

The *Industrial Market Place* is a big industrial surplus shopper. Primarily scads of great mechanical buys. With some computers and electronics.

There are great heaping bunches of trade journals. Some random samples I have found handy: *GPS World*, *Fire Engineering*, *Video Toaster User*, *Foiled Again*, *Powder & Bulk Solids*, *Printwear*, *Always Jukin*, *Horsetrader*, *Converting*, *Recharger*, and *Telecom Sources*.

Typical computer trade mags lately seem to be jammed full of overhyped drivel. They appear to go out of their way to deprive their end users of any useful technical content.

Especially anything that empowers end users or saves them money. Or is critical of their advertisers. But I do find *InfoWorld* to be one highly useful exception. And *MacWeek* to usually be fairly informative.

By far the best buys in computers show up in *Comp-U-Mart*, in *Computer Reseller*, and *Computer Hotline*.

The usual ploy to get a free copy of any pub: You contact their advertising department and request either a *media kit* or a "sample copy and ad rates".

My good old SCAR technique.

Much more on trade journals can be found in NUTS08.PDF.

## Online Resources

Getting yourself online literate is essential these days. An obvious route is the Internet with its humongous collection of primarily public domain material. The overwhelming majority of which is sorry drivel and diffuse dregs. Not to mention the obnoxious flammers and uninformed time wasters. All of which you will have to wade on through to get at the buried gems.

Alternately, there's the commercial online services that provide higher quality and more tightly focused info. But at higher cash-and-carry prices.

Of the commercial services, *America*

*Online*, *Compuserve*, and the *Microsoft Network* are your three largest. I still like *Genie* the best of all, though. First, because they pay me to say things like that. And second, because *GENie* still has the finest in the area of quality technical downloads and third party games. And—get this—they are in the black. Mostly by avoiding the insane overpromotion and overhyping of the big three. Last count, I've received *ninety-four* AOL signup disks.

All services offer free signup trials and free software on their floppy or CD ROM mailings.

A third route is to use your local labor-of-love BBS independents. But the best of these are rapidly moving onto the net. And the rest may need long distance phone surcharges. More details in *Boardwatch* magazine.

There's two approaches to Internet access. All of the commercial services offer Internet gateways. These can be your best of both worlds. Except that their hourly costs will eat you alive if you spend more than twenty hours a month on the net.

The commercial services are also a good way to sample the net without fully committing yourself.

The other route is to go through a local Internet *service provider*. Their typical charges these days are around \$25 per month. With surcharges for extra storage or excess access hours. One example of a local provider is at [zeke@zekes.com](mailto:zeke@zekes.com)

The latest of Internet services let you make phone calls to anywhere in the world for the price of a local call.

There's lots of Internet directories. Printed (the *Gale Guide to the Internet Databases*), on CD ROM, or online. The highest profile online search service is *yahoo.com*

As secure petty cybercash becomes available, the quality of the Internet content should dramatically improve. Vastly better reference materials can be offered at twenty cents a download than they can with "free" distribution. Expect to see a convergence between net charges and commercial services.

I have posted a listing for the top electrical engineering Internet sites to MUSE94.PDF.

## Books

Tech books place a distant fourth behind trade journals, magazines, and online resources.

Between the blockbuster mentality of mergers and acquisitions, IRS rules that pay publishers to shred books,

## new from DON LANCASTER

### ACTIVE FILTER COOKBOOK

The sixteenth (!) printing of Don's bible on analog op-amp lowpass, bandpass, and highpass active filters. De-mystified instant designs. **\$28.50**

### CMOS AND TTL COOKBOOKS

Millions of copies in print worldwide. THE two books for digital integrated circuit fundamentals. About as hands-on as you can get. **\$28.50** each.

### INCREDIBLE SECRET MONEY MACHINE II

Updated 2nd edition of Don's classic on setting up your own technical or craft venture. **\$18.50**

### LANCASTER CLASSICS LIBRARY

Don's best early stuff at a bargain price. Includes the CMOS Cookbook, The TTL Cookbook, Active Filter Cookbook, PostScript video, Case Against Patents, Incredible Secret Money Machine II, and Hardware Hacker II reprints. **\$119.50**

### LOTS OF OTHER GOODIES

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Hardware Hacker II, III or IV	\$24.50
Micro Cookbook I	\$19.50
PostScript Beginner Stuff	\$29.50
PostScript Show and Tell	\$29.50
Intro to PostScript Video	\$29.50
PostScript Reference II	\$34.50
PostScript Tutorial/Cookbook	\$22.50
PostScript by Example	\$32.50
Understanding PS Programming	\$29.50
PostScript: A Visual Approach	\$22.50
PostScript Program Design	\$24.50
Thinking in PostScript	\$22.50
LaserWriter Reference	\$19.50
Type 1 Font Format	\$16.50
Acrobat Reference	\$24.50
Whole works (all PostScript)	\$380.00
Synergetics Surplus Catalog	FREE
Technical Insider Secrets	FREE

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Ongoing details on Book-on-demand publishing, a new method of producing books only when and as ordered. Reprints, sources, samples. **\$39.50**

### THE CASE AGAINST PATENTS

For most individuals, patents are virtually certain to result in a net loss of sanity, energy, time, and money. This reprint set shows you Don's tested and proven real-world alternatives. **28.50**

### BLATANT OPPORTUNIST I

The reprints from all Don's Midnight Engineering columns. Includes a broad range of real world, proven coverage on small scale technical startup ventures. Stuff you can use right now. **\$24.50**

### RESOURCE BIN I

A complete collection of all Don's Nuts & Volts columns to date, including a new index and his master names and numbers list. **\$24.50**

### FREE SAMPLES

Check Don's Guru's Lair at <http://www.tinaja.com> for interactive catalogs and online samples of Don's unique products. Searchable reprints and reference resources, too. Tech help, hot links to cool sites, consultants. email: [don@tinaja.com](mailto:don@tinaja.com)

FREE US VOICE HELPLINE

VISA/MC

**SYNERGETICS**  
Box 809-NV  
Thatcher, AZ 85552  
(520) 428-4073

Write in 146 on Reader Service Card.

## NUTTING AND VOLTING RESOURCES

<b>AEE Energy Books</b> PO Box 1026 Liburn GA 30226 (404) 925-9558	<b>Design News</b> 8773 S Ridgline Blvd Highlands Ranch CO 80126 (303) 470-4000	<b>Electronics Now</b> 500-B Bi-County Blvd Farmingdale NY 11735 (516) 293-3000	<b>InfoWorld</b> 155 Bovet Rd #800 San Mateo CA 94402 (800) 227-8365	<b>New Equipment Digest</b> 1100 Superior Ave Cleveland OH 44114 (216) 696-7000	<b>Skeptical Inquirer</b> PO Box 703 Buffalo NY 14226 (716) 636-1425
<b>Always Jukin'</b> 221 Yesler Way Seattle WA 98104 (206) 233-9460	<b>Dialog Information Svcs</b> 3460 Hillview Ave Palo Alto CA 94304 (415) 858-2700	<b>Factsheet Five</b> R Seth Friedman PO Box 170099 San Francisco CA 94117	<b>Lindsay Publications</b> PO Box 538 Bradley IL 60915 (815) 935-5353	<b>NTE Electronics</b> 44 Farrand St Bloomfield NJ 07003 (201) 748-5089	<b>Stanford Bookstore</b> 135 University Ave Palo Alto CA 94305 (800) 533-2670
<b>American Science &amp; Surplus</b> 3605 Howard St Skokie IL 60076 (708) 982-0870	<b>Digi-Key</b> 701 Brooks Ave S Thief River Falls MN 56701 (800) 344-4539	<b>Fair Radio Sales</b> PO Box 1105 Lima OH 45802 (419) 227-6573	<b>Machine Design</b> 1100 Superior Ave Cleveland OH 44144 (216) 696-7000	<b>Op-Amp Books</b> 1033 N Sycamore Ave Los Angeles CA 90038 (800) 468-4322	<b>Surplus Traders</b> PO Box 276 Alburt VT 05440 (514) 739-9328
<b>Audio Amateur</b> Box 576 Peterborough NH 03458 (603) 924-9464	<b>ECG/Phillips</b> PO Box 3277 Williamsport PA 17701 (717) 323-4691	<b>Fire Engineering</b> PO Box 1289 Tulsa OK 74101 (918) 835-3161	<b>MacWeek</b> One Park Ave New York NY 10016 (212) 503-4433	<b>Parallax</b> 3805 Atherton Rd #102 Rocklin CA 95765 (916) 624-8333	<b>Synergetics</b> Box 809 Rocklin AZ 85552 (520) 428-4073
<b>Boardwatch</b> 8500 W Bowles Ave Ste 210 Littleton CO 80123 (303) 973-6038	<b>Edmund Scientific</b> 101 E Gloucester Pike Barrington NJ 08007 (609) 573-6250	<b>Foiled Again</b> PO Box 538 E Brunswick NJ 08816 (908) 238-1800	<b>Measurement &amp; Control</b> 2994 W Liberty Ave Pittsburgh PA 15216 (412) 343-9666	<b>PCIM</b> 2472 Eastman Ave #33-34 Ventura CA 93003 (805) 658-0933	<b>Telecom Library</b> 12 West 21st St New York NY 10010 (800) LIBRARY
<b>C&amp;H Sales</b> PO Box 5356 Pasadena CA 91107 (800) 325-9465	<b>EDN Magazine</b> 275 Washington St Newton MA 02158 (617) 964-3030	<b>GENie</b> 401 N Washington St Rockville MD 20850 (800) 638-9636	<b>Media Magic</b> PO Box 507 Nicassio CA 94946 (415) 662-2426	<b>Popular Electronics</b> 500-B Bi-County Blvd Farmingdale NY 11735 (516) 293-3000	<b>Telecom Sources</b> 1020 Church St Evanston IL 60201 (708) 475-1900
<b>Circuit Cellar Ink</b> 4 Park St #20 Vernon CT 06066 (203) 875-2751	<b>Scott Edwards Electronics</b> 964 Cadmus Wren Lane Sierra Vista AZ 85635 (520) 459-4802	<b>Global Eng Documents</b> 15 Inverness Way East Englewood CO 80112 (800) 854-7179	<b>Microchip Technology</b> 2355 W Chandler Blvd Chandler AZ 85224 (602) 786-7200	<b>Printwear</b> 1008 Depot Hill Rd Broomfield CO 80020 (303) 469-0424	<b>Ulrich's Dictionary</b> 121 Chanlon Rd New Providence NJ 07974 (908) 771-7714
<b>Comp-U-Mart</b> 899 Presidential Ste 110 Richardson TX 75081 (800) 864-1155	<b>EE Times</b> 600 Community Dr Manhasset NY 11030 (516) 365-4600	<b>Stan Griffiths</b> 18955 SW Blanton Aloha OR 97007 (503) 649-0837	<b>Midnight Engineering</b> 1700 Washington Ave Rocky Ford CO 81067 (719) 254-4558	<b>Recharger</b> 4218 W Charleston Blvd Las Vegas NV 89102 (702) 438-5557	<b>UMI</b> 300 N Zeeb Rd Ann Arbor MI 48106 (800) 521-3044
<b>Computer Hot Line</b> 15400 Knoll Trail Dr #500 Dallas TX 75248 (800) 999-5131	<b>Electronic Component News</b> 1 Chilton Way Radnor PA 19089 (215) 964-4345	<b>Heathkit</b> PO Box 1288 Benton Harbor MI 49022 (616) 982-3200	<b>MIX Bookshelf</b> 6400 Hollis St #12 Emeryville CA 94608 (800) 233-9604	<b>RF Design</b> 6300 S Syracuse Wy #650 Englewood CO 80111 (303) 220-0600	<b>US Government Bookstore</b> 720 N Main St Pueblo CO 81003 (719) 544-3142
<b>Computer Literacy Books</b> 2590 N First St San Jose CA 95131 (408) 435-1118	<b>Electronic Design</b> 611 Rt #46 W Hasbrouck Heights NJ 07604 (201) 393-6060	<b>Home Power</b> PO Box 520 Ashland OR 97520 (916) 475-3179	<b>Mondo-tronics</b> 524 San Anselmo Ave #107 San Anselmo CA 94960 (800) 374-576	<b>Rochester Electronics</b> 10 Malcolm Hoyt Dr Newburyport MA 01950 (508) 462-9332	<b>Video Toaster User</b> 273 N Matilda Ave Sunnyvale CA 94086 (408) 252-0508
<b>Computer Reseller</b> 600 Community Dr Manhasset NY 11030 (516) 365-4600	<b>Electronic Products</b> 645 Stewart Ave Garden City NY 11530 (516) 227-1300	<b>Industrial Market Place</b> 7842 N Lincoln Ave Skokie IL 60077 (800) 323-1818	<b>Mouser Electronics</b> 11433 Woodside Ave Santee CA 92071 (800) 346-6873	<b>SAE Library</b> 400 Commonwealth Dr Warrendale PA 15096 (412) 776-4841	<b>Whole Earth Review</b> 27 Gate Five Rd Sausalito CA 94965 (415) 332-1716
<b>Coriolis Books</b> 7339 E Acoma Dr Ste 7 Scottsdale AZ 85260 (602) 483-0192	<b>Electronic Servicing</b> PO Box 12487 Overland Park KS 66282 (913) 492-4857	<b>Information Store</b> 500 Sansom St #400 San Francisco CA 94111 (415) 433-5500	<b>Navtech Books &amp; Software</b> 2775 S Quincy St #610 Arlington VA 22206 (800) NAV-0885	<b>Sensors</b> 174 Concord St Peterborough NH 03458 (603) 924-9631	<b>ZEKE@ZEKES.COM</b> Zekes General Store Central AZ 85531 (520) 428-1112

and the 22 week turnover economics of chain bookstores, the end reader has been left completely out of the loop. The bottom line is that its real hard to conveniently find any fairly priced technical book that can exactly meets your needs.

At any rate, we looked at the best of the best back in NUTS11.PDF. Many of you felt that *The Art of Electronics* by Horowitz, my *CMOS Cookbook* classic and that *Radio Amateur's Handbook* are the "must have" starting points.

About the *worst* possible place to find a technical book is some mall chain storefront which has a sign that says "Bookstore" outside it. Instead, seek out larger technical booksellers.

Especially those in and around main universities. A few favorites of mine do include *Computer Literacy*, *Op-Amp Books*, and the *Stanford Bookstore*.

But your best bet by far is to go to those direct mail resellers who offer specialty book services. All of the best titles in any narrow field. With all the dregs and dogs removed.

Let's see. *Lindsay Books* for antique electronics, craftsman machine shop stuff, and generally obscure how-to. The *MIX Bookshelf* for everything audio and video. That *Audio Amateur* for hi-fi, speakers, and tube audio. *SAE Library* for most automotive. *AEE* for energy books. *Mondotronics* for robotics. And *Navtech* for GPS and

navigation.

*Telecomm Books* for anything in and around the phone network. *Electronic Servicing* for repair titles. *Coriolis* for its Windows and PC titles. And *Media Magic* for computers in science or art.

Or my own *Synergetics* for only the very best of all PostScript titles. I've also just picked up a great heaping batch of used technical books at very low prices. You can write, email, or call for a complete list.

### Learning Electronics

Sadly, a lot of community colleges are now dropping their electronics programs. Even sadder, there is far more money to be made in selling off

their surplus lab stuff than there ever was teaching for them.

In one case, electronics got dropped because the football team needed the money. Seems they were paying the spectators \$58 each to attend the home games and it just wasn't enough.

To me, this is shooting your seed corn in the foot. Or, more bluntly, it is pissing in the soup.

If your community college still has an electronics program, grab it before it folds! This is often your most cost effective choice towards learning and understanding tech fundamentals.

These days, your finest technical education will be a mix of traditional electronics with computer software and programming. That formal BSEE with a masters in computer science seems like a winning route to me. But beware of corner cutting. I feel the BSEET technician degree is largely a cost ineffective ripoff. That locks you into second rate positions. Especially in more traditional firms.

Yeah, *Heathkit* is still in business. They have superb technical education and self-study courses. They just cost a lot more than they used to and have a much lower profile. They are still by far your best home study bet.

I can't emphasize enough just how important your trade journals are in becoming electronics literate. These should be the first and foremost route towards all technical education. And are by far the most cost effective.

### Research Fundamentals

How can you find out everything about anything? Once again, the trade journals are one good starting point. Closely followed by the online search services. But the best way I've found is with the *Dialog Information Service*. Yeah, it's expensive. But it instantly gives you the very latest and best on any technical subject.

Dialog is available by the minute at your local library. Or cash-and-carry on *GENIE* and other online services.

At the local library, try *Ulrich's*, the *Encyclopedia of Associations*, the *Thomas Registry*, or the *Science Citations Index*. And, if you do not personally own a copy yet, the *Business Phone Book CD*. Or one of their competitors.

To get a reprint on any reasonable story, go to *UMI*, formerly *University Microfilms*. They've also opened a new division called *The Information Store*, from where you can pick up the really oddball and tricky to find stuff. Like conference proceedings and such.

Many government documents are available retail in a national chain of *US Government Bookstores*. I've listed one in the N/N sidebar. An instant but pricey source for most standards is *Global Engineering Documents*.

More on research fundamentals are found in my *NUTS30.PDF*. Standards organization info in *HACK47.PDF*.

### Building a Data Library

A good way to build up a technical data library is to start with the trade journals and then use the bingo cards to score data books and applications manuals. There's lots of free technical information out there. Full names and numbers appear in *NUTS20.PDF*.

And, of course, you will want to collect all of the mail order catalogs. Especially the electronic biggies such as *Mouser* and *DigiKey*. Maybe even old line full service distributors such as *Allied* or *Newark*. Plus *Grainger*.

Then get my surplus favorites that do include *American Science & Surplus*, *C & H Sales*, and *Surplus Traders*. Plus, of course, good old *Edmund Scientific* and *Fair Radio Sales*.

Do aim for a bare minimum of *one hundred lineal feet* in your data library. This is just barely enough to let a rank beginner squeak by.

### Starting a Lab

We reviewed what you'll need in test equipment in *NUTS25.PDF*. You'll want a volt-ohm-milliammeter, either digital or analog. Along with a decent lab power supply or two.

If you are at all serious about what you are doing, a good oscilloscope is a must. Your three choices are simple – *Tektronix*, *Tektronix*, or *Tektronix*. As brand new; as aerospace recycled 465 era instruments; or as the classic Tek doghouses such as the 545 and found in most markets for around \$150. *Stan Griffiths* has written a great *Selecting and Restoring a Classic Oscilloscope*.

His sequel on the newer Tek scopes is supposedly in the works.

The first thing to do with your lab, of course, is get your *Basic Stamp* up and running. The PIC is the chip of the decade. No matter what your project, you can make it faster, cheaper, and better by adding a PIC to it

Start with the *Microchip Technology* data books, all the Stamp documents from *Parallax*, and those *Scott Edwards Tools*. I've got most of the stamp ap notes and reprints on *tinaja.com*

More PIC in *MUSE98.PDF*.

If you get into repairs at all, you

might find *Electronic Servicing* to be of major interest. The usual sources for replacement semiconductors include *ECG* and *NTE*. Your best place to get really obsolete or out-of-date chips is *Rochester Electronics*. More on obsolete semis in *NUTS02.PDF*. And more on Electronic Servicing in *NUTS27.PDF*.

I've got some great buys in surplus test gear. Especially on *Heath* Digital Logic Breadboards. Call or write for a free catalog. Or you can grab this as *SURPCAT1.PDF* on *tinaja.com*.

### Your Own Tech Venture

The fun really starts when you try to convert your tech interests into a paying venture. Once again, *Midnight Engineering* is your finest bimonthly magazine for this sort of thing. My *Incredible Secret Money Machine II* and my *Case Against Patents* should be of help as well. I also run a US technical helpline on startup topics.

Details per the end blurb.

### This Month's Contest

For our contest this month, just tell me about anything that seemed to be missing from our previous columns. Or tell me about anything new which you'd like to see in the way of secret insider resources.

There will be a largish pile of my new *Incredible Secret Money Machine II* books going to the dozen or so better entries, plus an all-expense-paid (FOB Thatcher, AZ) *tinaja quest* for two that will go to the very best of all.

Send all your written entries to me here at *Synergetics*, rather than to *Nuts & Volts* editorial.

To be fair to everyone, all entries must be written and mailed. ♦

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*Microcomputer pioneer and guru Don Lancaster is the author of 33 books and countless tech articles. Don maintains his no-charge US tech helpline found at (520) 428-4073, besides offering all of his own books, reprints, and consulting services. Don also has two free catalogs full of his resource secrets waiting for you. Your best calling times are 8-5 on weekdays, Mountain Standard Time.*

*Funding and time constraints restrict this helpline service to US callers only.*

*Don is in the process of setting up his Guru's Lair at <http://www.tinaja.com>*

*Full reprints and preprints of all Don's columns and ongoing tech support appear here. You can reach Don at Synergetics, Box 809, Thatcher, AZ 85552. Or send any messages to his US Internet address of [don@tinaja.com](mailto:don@tinaja.com)*

