

Don Lancaster's

RESOURCE BIN

number eighty four

¶ look at some medical electronics.

Our 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.

Be certain to frequently check out my new *Guru's Lair* web site you'll find at (where else?) www.tinaja.com This is the place you'll 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 [Research InfoPack Service](#).

You will get the best results if you have both [Netscape Communicator](#) and [Acrobat Reader 3.0](#) installed.

Some Medical Electronics Topics

This month, I thought I'd round up a bunch of resources which seem to relate to medical electronics in one way or another. But first, an obvious big disclaimer: Please do not consider what follows to be medical advice in any way, shape, or form. Do not base any critical decisions upon anything said or suggested here. At least not without careful further research.

Working with medical electronics has major hassles. Typical electronics suppliers flat out refuse to allow their components to get used in life critical applications. There's untold zillions of regulations. You might easily end up illegally practicing medicine.

The market is strictly by, for, and of big bucks and long term insiders. And betting a life on something that does not work or puts off seeking proper help until too late can obviously end up a deadly travesty.

But there is a lot of very interesting possibilities here. If you are thorough and use the available resources.

Some Alternates

I have personally found the best of alternate medicine to be exceptionally useful in prevention and dealing with chronic problems. While a traditional medicine is by far your better choice when working with urgent repairs.

There's a lot that's very good and very bad about both routes. I also do believe that most medical problems are your own dumb fault. Caused or made worse by lifestyle, activity, and diet considerations.

Your key secret to dealing with any problem, medical or otherwise, is to get *multiple information from several independent sources*. If you are dealing with a single source of medical info, the chances are more than good there may be hidden agendas or some cross purposes not in your best interest.

Second opinions are crucial.

Much more on these topics can be found in [DONTSICK.PDF](#) and in those alternate medicine links you can find at www.tinaja.com/beewb01.html

Essential alternate medical reading is anything by or about Dean Ornish or most books relating to the Pritikin

NEXT MONTH: Don looks at some of his favorite web sites.

clan. Yes, "wash it down with a steak" near-vegetarianism seems to work like a champ. At least for me.

Medline

The definitive online research tool that all doctors and medical pros use is called *Medline* Any time you want to know anything about any medical topic, it is just common sense to go to Medline for a second or third opinion. Sadly, Medline has been outrageously expensive. But a number of sites are

now offering you free Medline access of one type or another.

One superb Medline access site is *Health World* at www.healthy.net. The second is *American Health Network* at www.ahn.com. Other gateway sites for medical stuff are Emory University's at www.gen.emory.edu/medweb and the folks at www.medaccess.com

Convenient click-through links to all of these and a few others are found at www.tinaja.com/beewb01.html

Medical Electronics Products

This is one of many free "shopper" industry trade journals which address medical electronics. Here's some more journals and shoppers...

- Biomedical Instrumentation and Technology
- Medical & Biological Engineering and Computing
- Medical Design Technology
- Medical Devices Report
- Medical Electronics & Equipment News
- Medical Electronics and Medical Electronic Products
- Medical Electronics Manufacturing
- Medical Equipment Designer
- Medical Product Manufacturing News

As an aside, there's a company that specializes in those antique scientific instruments from the 16th to the 19th centuries. Find them at *Early Scientific Instruments*. And scads of intriguing books on turn-of-the-century science and technology can be found through *Lindsay* at www.lindsaypub.com Or use his banner link on my website.

Fun With Dentists

I may have actually found a use for dentists. Several actually.

Firstoff, they have these wonderful X-ray machines. Which are just dandy for snooping around inside of sealed modules such as telephone interface

blocks or pulse monitors. Yeah, their film size is tiny and their res isn't that great. But, with practice, you can tell an awful lot about a chip simply by looking at its number of pins, its lead frame, and its die size.

Secondly, you might think of your dentist as a precision machine shop. I once needed a shaft coupling for a HP Distortion Analyzer. A little grinder work on a delrin rod, and an tricky to get item was cheaply substituted.

Dentists could be highly useful for carved shapes (such as odd connector cases or proof-of-concept plastics), to "unencapsulate", or simply for elegant mechanical design.

Some dental products may have all sorts of unintended uses. A few years ago, there was an introduction of new disposable low cost handpieces. These were basically a small and powerful turbine that could be cut down to fit inside a plotter pen. And had all sorts of printed circuit, mini-CAD machine, and other flutterwumper uses. A few details appeared in [HACK76.PDF](#) And there's great heaping bunches of light curing plastics and other items.

One of several trade journals here is *Dental Products Report*. More on some of these mini-turbine possibilities at www.tinaja.com/flut01.html

Finally, certain dentists seem to get off on all those perpetual motion and overunity energy scams. so, better to let them buy those overpriced videos and books. Then, you'll borrow these fiction works for utterly fascinating fantasy reading and viewing. Of the mesmerizingly awful.

More info on pseudoscience topics at www.tinaja.com/pseudo01.html

Pulse Monitors

There sure appears to be a bunch of interest in pulse monitors lately. I've personally found these exceptionally useful for working around some long term medical problems. Others apply them extensively for aerobics.

There are two popular types. One low cost solution is the *plethysmograph* that clips onto a finger, a toe, or your earlobe. These operate on finger or toe capillaries expanding and contracting on each heart beat. They often consist of an infrared LED photorelector.

The problem is that *motion artifacts* make these totally useless for aerobic exercise programs. Instead, the more costly EKG types can be used. Typical units are the *Polar Edge*. These consist of a chest strap that has two sensing conductors and a small transmitter. A

separate "wristwatch" receiver senses and displays the pulse information.

The transmitter converts each pulse beat into a burst of roughly 35 cycles of 5 kiloHertz sinewaves. The receiver detects the sinewave bursts and then averages and displays them.

You can think of this system as an ultra low frequency pulsed-CW radio transmitter. Or as a loosely coupled higher frequency audio transformer. Either way, a computer interface can be easily built. You can even sense the signal using an eight inch loop of wire on a scope probe. Since you are very much in the near field, ranges above five feet or so will be hard to do.

Gotchas here include the nulls of the ferrite rod transmitter in the chest unit; making sure any other ferrites or cores used offer decent Q and good permeability at 5 kHz; and working out a suitable averaging algorithm for a stable yet current display. It would seem that a four beat running average is a pretty fair starting point.

Interesting books on this subject do include John Parker's *Heart Monitor Training for the Complete Idiot*, and Ed Burke's *Precision Heart Rate Training*. I have placed links to these and others to www.tinaja.com/amlink01

Tech details, sources, software, and insider info on pulse monitors can be found in [HACK68.PDF](#). I've also got [InfoPacks](#) available on this.

Disabilities

We looked at several disability and handicapped resources way on back in [RESBN44.PDF](#). Chances are that if you have come up with a "solution" to some limited hearing or limited vision problem, others are likely to already have a better approach. It also seems to me that there are lots of hidden agendas in the disability "industry" that you should be aware of. Profits are also exceptionally elusive.

At any rate, one extremely useful gateway resource is *Trace Center*. They appear to have the definitive CDROM resource bases on handicapped and disability aides. A bimonthly mag on using microcomputer technology for the disabled is *Closing the Gap*. One that targets children with disabilities is the *Exceptional Parent*.

Useful newsgroups include...

[alt.comp.blind-users](#)
[alt.disability.blind.social](#)
[alt.discuss.disability](#)
[alt.education.disabled](#)
[alt.society.deaf](#)

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SOME MEDICAL ELECTRONICS AND RELATED RESOURCES

Berkeley Wellness Ltr PO Box 420148 Palm Coast FL 32142 (904) 445-6414	Disabilities Digest 522 Cinti-Batavia Park Cincinnati OH 45244 (513) 528-0404	Health & Healing PO Box 60042 Potomac MD 20859 (800) 539-8219	Medical Design Tech 275 Washington St Newton MA 02158 (617) 964-3030	New Mobility PO Box 8987 Malibu CA 90265 (800) 543-4116
Biomedical Insts 210 S 13th St Philadelphia PA 19107 (800) 962-1892	Disability Policy Jnl 346 North West Avenue Fayetteville AR 72701 (501) 575-3656	Health Wisdom for Women 7811 Montrose Rd Potomac MD 20854 (301) 762-6061	Medical Electronics 2994 W Liberty Ave Pittsburgh PA 15216 (412) 343-9666	Ornish Medicine 900 Bridgeway #1 Sausalito CA 94965 (800) 64-1110
Cardiac Alert 7811 Montrose Rd Potomac MD 20854 (301) 424-3700	Disability Rag PO Box 145 Louisville KY 40201 (502) 459-5343	Herb Quarterly 223 San Anselmo Ave #7 San Anselmo CA 94960 (415) 455-9540	Medical Electronics Mfg 3340 Ocean Park Blvd #1000 Santa Monica CA 90405 (310) 392-5509	Polar 99 Seaview Blvd Port Washington NY 11050 (516) 484-2400
Careers & the disABLED 150 Motor Parkway #420 Hauppauge NY 11788 (516) 273-0066	Early Sci Insts PO Box 151 Hastings NY 10706 (914) 478-2594	In Vivo Metric PO Box 249 Healdsburg CA 95448 (707) 433-4819	Medical Electronic Prds 2994 W Liberty Ave Pittsburgh PA 15216 (412) 343-9666	Prevention/Rodale Press 33 E Minor St Emmaus PA 18098 (610) 967-5171
Closing the Gap PO Box 68 Henderson MN 56044 (612) 248-3294	Educom Review 1112 16th Street NW #600 Washington DC 20036 (280) 872-4200	Issues in Law & Medicine PO Box 1586 Terre Haute IN 47808 (812) 232-0103	Medical Equip Designer 29100 Aurora Rd #200 Solon OH 44139 (216) 248-1125	Pritikin Center 1910 Ocean Front Walk Santa Monica CA 90405 (800) 421-9911
Dental Prod Report 2 Northfield Pz #300 Northfield IL 60093 (847) 441-3700	Exceptional Parent 209 Harvard Street #303 Brookline MA 02146 (617) 730-5800	Lifetime Health Letter PO Box 420342 Palm Coast FL 32142 (800) 829-9177	Medical Product Mfg News 3340 Ocean Park Blvd #1000 Santa Monica CA 90405 (310) 392-5509	Synergetics Box 809 Thatcher AZ 85552 (520) 428-4073
Dentistry Today 26 Park St Montclair NJ 07042 (201) 783-3935	Gale Research 835 Penobscot Blvd Detroit MI 48226 (313) 961-2242	Lindsay Publications PO Box 538 Bradley IL 60915 (815) 935-5353	Medline 8600 Rockville Pike Bethesda MD 20894 (800) 638-8480	TASK 100 West Cerritos Avenue Anaheim CA 92805 (714) 533-TASK
Diet & Nutrition Ltr 53 Park Place New York NY 10007 (800) 274-7581	Grey House Pubs Pocket Knife Square Lakeville CT 06039 (800) 526-2139	Mayo Clinic Health Ltr 200 First Street SW Rochester MN 55905 (800) 333-9037	Mobility International USA PO Box 10767 Eugene OR 97440 (503) 343-1284	Trace Center Publications S-151 Waisman Cen UWI Madison WI 53705 (608) 263-5408
Disability Bookshop PO Box 129 Vancouver WA 98666 (800) 637-2256	Harvard Heart Letter 164 Longwood Avenue Boston MA 02115 (800) 829-9171	Medical Bio Eng & Comp 445 Hoes Ln Piscataway NJ 08855 (908) 981-0060	Natural Health 17 Station Street Brookline Village MA 02147 (800) 526-8440	Women's Health Advocate 10310 Main St #301 Fairfax VA 22030 (800) 829-5876

[alt.support.disabled](#)
[alt.support.disabled.artists](#)
[alt.support.learning-disab](#)
[misc.handicap](#)

There's all sorts of newsletters and ezines as well. Normal web searches should be able to quickly pin all these down for you.

Brainwaves

Various *biofeedback* schemes can be based on sensing and acting upon low frequency brainwaves in that one to twelve Hertz region. One apparently proven use is for stress management. Systems and results range the gamut from legitimate traditional medicine to far out new age hogwash.

The key source for biopotential skin electrodes seems to be *In Vivo Metric*. Additional suppliers do appear in the trade journals mentioned above.

But please think twice before you hot wire your cat.

The Placebo Effect

A patient that wants to get better and believes they are taking positive steps towards a "cure" is often much more likely to actually do so. This is called the *placebo effect*. Placebo effects are very real and very powerful. As such, they often mask whether some process or medicine is useful.

A lot of the locals around here seem to get off on "arthritis cures" that are magical little grey electrical boxes. In some of them, a very weak electrical current gets used (literally creating a "live" or a "warm fuzzy" sub-shock). But in others, the circuitry makes no sense whatsoever.

In my opinion, there is no credible basis as to why such a device would work. Except for that overwhelming placebo effect. But the locals are sure convinced otherwise.

As before, careful and independent research is essential. When something

works, fine. But don't bet on a far out (or far off) device to the point where it gets too late for traditional medicine.

And do remember that "net" is the acronym for *not entirely true*. Always seek out second and third opinions. And realize, that, the further you get away from Medline, the less likely the credible or useful results.

For More Info

There's bunches of books out there on medical electronics and medical instrumentation topics. Since there are so many of these, I have gathered them at www.tinaja.com/amlink01.html

Additional research on any med electronics topic is available per my *InfoPack* service that you'll find at my www.tinaja.com/info01.html. Otherwise mentioned tutorial files are easy to find by using my website search.

I also have some new pulse monitor software I developed which appears exceptionally useful in chronic angina

management and reversal. If you are a professional in this area, please do contact me for additional details. A credible co-author is being sought.

You can make use of the previously mentioned Medline access sites as gateway links to take you to untold thousands of health and medicine related web sites.

A few medical electronics bargains are at www.tinaja.com/bargte01.html. A lot of other medical gear can be gotten as military surplus at very low prices. We saw details in [RESBN81.PDF](#) and [RESBN82.PDF](#). And, as we have seen, many useful links can now be found at www.tinaja.com/beewb01.html

This Month's Contest

As our contest for this month, just tell me about any useful, oddball, or unique medical electronics resource that I haven't already come across.

There'll be a dozen or more of my new *Incredible Secret Money Machine III* books going to the better entries. Plus an all expense paid *tinaja quest* for two (FOB Thatcher, AZ) going to the very best of all.

Send your written and snailmailed entries on this contest directly to me here at [Synergetics](#)

There's lots of exciting possibilities here. Let's hear from you. ♦

Microcomputer pioneer and guru Don Lancaster is the author of 35 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 offers a free catalog full of his unique products and resource secrets. The best calling times are 8-5 on weekdays, Mountain Standard Time.

Don is the webmaster of his Guru's Lair found at <http://www.tinaja.com>

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