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MITERS
JOURNAL

PUBLISHED BY
THE MIT ELECTRONICS RESEARCH SOCIETY

Contents:

Editorial: "Welcome Back My Friends..." by Geoffrey G. Rochat

Welcome Members, old and new!

What is MITERS? MITERS is the MIT Electronics Research Society, a non-profit, student-run laboratory for MIT's EE hackers. The Society provides work space, tools, low-cost parts and information to any member of the MIT community. We have a few good 'scopes, various and sundry pieces of test equipment, a b'zillion power supplies, and Bertha, our beloved PDP-7 computer. (No snickers from the peanut gallery, please. Bertha is very sensitive.) We also have the most incredible plunder-trove on campus.

The present Society Officers are:

Jordin Kare	Erstwhile President Bemis 207 dl 5-6267
Ira Goldstein	Venerable Vice-President Wood 110 dl 5-6140
Dave Felsenthal	Dedicated Secretary Apt. 3, 491 Beacon St., Boston 536-5889
Russell Newcomb	Loyal Treasurer Wood 113 dl 5-6143

If you have any questions about MITERS, please call these (ahem!) gentlemen. Or, better yet, visit our lab in 20-B-119. Our 'phone number is x3-2060, and the lab is open most evenings. We expect to have more hours available soon.

And all this for only one buck every seventy-three days!

What is the MITERS Journal? The MITERS Journal is an experiment, an experiment in intra-Society communications. There once was a time when MITERS numbered about six Members. Back then, is one Member had an inspiration (a rare but occasional occurence), everyone else soon knew about it. As of this writing, however, MITERS has about fifty Members. The Society has grown too large for reliable word-of-mouth communications. The MITERS Journal, then, is a newsletter whose purpose is to let the Members of MITERS know what is going on in the Society.

It is my intention that the basic Journal be published whenever the occasion warrants, and the spirit is willing (about once a month), without regard to content, journalistic technique, or proper speling. The basic Journal will consist of the following sections:

> an Editorial, an asbestos soap-box upon which Society Members may flame,

> Intermittents, a column of notes and announcements pertaining to the Society, its Members, and their projects,

> Gizmo-of-the-Month, a unique circuit, of dubious value, submitted by a Society Member,

> Minutes, the minutes of the last Society meeting,

> and Notice, a notice of the next Society meeting.

As I said, the Journal is an experiment. If it does not generate appreciable enthusiasm (like a Pulitzer or two), it will die a quick death. (So it goes.) I hope, however, that the

Society finds the MITERS Journal an informative and useful tool.

If you have any comments, criticisms or suggestions about the MITERS Journal, talk to any of the Society Officers, or call me, Geoffrey G. Rochat, MacGregor J-115, dl 5-9105.

And, if you've got something you'd like to flame about, or some information you think is interesting, or a Gizmo, become a Beneficent Contributor. Submit it to the MITERS Journal soon (very soon).

Intermittents:

Thanx to the generosity of the EE Department, the Society now has a BEAUTIFUL lathe. Three cheers for EE! (Huzzah! Huzzah! Huzzah! Does anybody know how to use it?)

NOTE: DO NOT USE THE LATHE YET. IT IS DANGEROUS IN ITS PRESENT CONDITION!!!!!

The Society will not be getting the Unimat lathe. Some dooby moodge bought the thing one day before we got to it. We are, however, presently applying to EE, ADB and elsewhere for money for a drill press and other goodies.

What are we gonna do about the back wall?

Bertha (our beloved PDP-7) is back up and running. Progress is being made on the disk.

FLASH! There is an excellent chance that MITERS can pick up the PDP-1 computer. (Yes, Virginia, there really is a Santa Claus.) It has 48K of flakey core, a few drums, four DECtapes and four Flexowriters. It also has a graphics terminal and a swell Spacewar. If we get it, it will require significant changes

in the physical layout of the lab. There is possible UROP credit
in getting it working. Details at the next Society meeting.

The large Digi-Key order ~~is in the mail. It should be here~~ will go out right after ~~by~~ the next Society meeting.

Roach is getting together a bulk order for parts for homebrew
Universal Tiger power amplifiers (see Popular Electronics, October,
1970). Figure around $50/channel, less if you're an ace scrounge.
Real cheap! Anybody interested?

Graft and Corruption Department: The Society desperately
needs people to write begging letters. Kickbacks and percentages
have been known to have been given...

Does anyone want to give an IAP course? Jordin Kare has
been scouting around the EE Department and reports that there is
money available. Details at the next meeting.

If you'd like to see, or like to give, a MITERS Mini-Course,
note it in the Society Grutch Book. Interest has been shown in the
following Mini-Courses:

> How to Use a Tek 535 'Scope
> Breadboarding Techniques
> Using the ERS Library
> Intro to the PDP-7 (Hello Bertha!)
> Making PC Boards
> TV Troubleshooting
> Intro to Basic Electronics
> Audio Measurements, Equipment and Construction
> Intro to the M6800 Microcomputer
> Elementary Digital Logic

If anyone wants to make PC boards, see Roach (Geoffrey G.

Rochat) during his sign-up hours, Thursday, 7:30 - 9:30 PM.

Keyholders: Sign up for hours!

If anyone wants 2102-1's (1Kx1, 500 nsec RAMs), for 90¢ apiece, see Jordin Kare.

What magazines should MITERS subscribe to? Note them in the Grutch Book.

The following Members are interested in building the following projects. If you are also interested, let them know:

|	
Jim Bell	4-digit counter
B.W.M.	radar
	radio telescope
	IBM 370 (??!)
M. Mitler	curve tracer

Somebody PLEASE help me with this column for next month.   PLEASE?

Gizmo-of-the-Month: "The Mesmertron" by Ed Berlin

The Mesmertron is a device which displays 128 random patterns on a seven-segment LED display. Ed notes that this circuit does not use the best design techniques, but it works, and can be put together out of a scrapbox.

If you have an interesting Gizmo, please make a reasonably clear, Xeroxable drawing of it, and submit it. Please include a short description of your Gizmo, what it does and how it works.

"The Mesmertron" by Ed Berlin

LARGE 7-SEGMENT LED DISPLAY
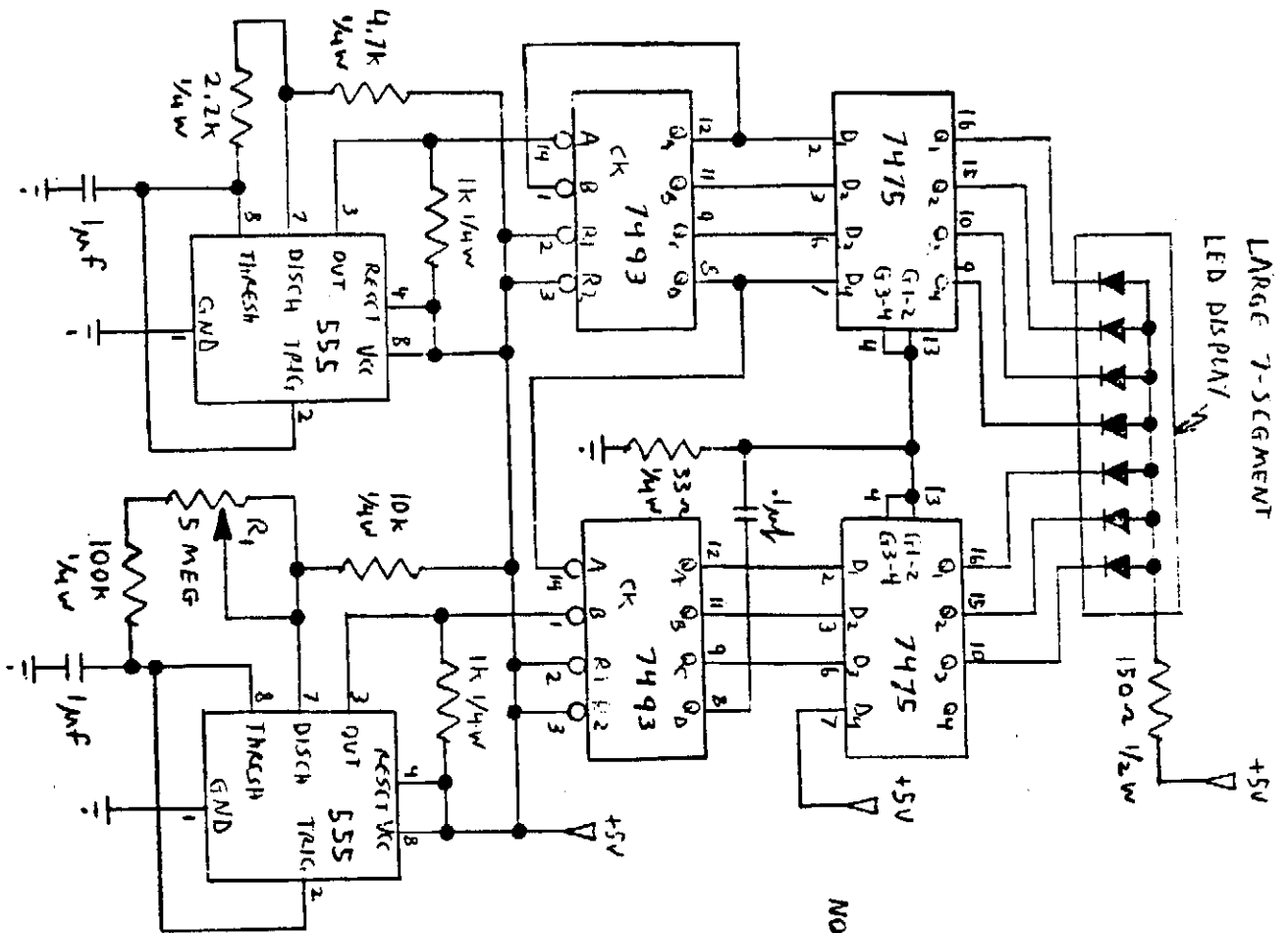
NOTES:

1. Vcc (+5v) FOR THE 7475's IS ON PIN 6

2. GND FOR THE 7475's IS ON PIN 12

3. Vcc (+5v) FOR THE 7493's IS ON PIN 5

4. GND FOR THE 7493's IS ON PIN 10

5. R_1 (THE 5 MEG POT) CONTROLS THE DISPLAY RATE.

MITERS JOURNAL

Contents: Editorial   1
             Intermittents   3
             Membership List   5
             Meeting Notice   7

Editorial: Postal Power

Massachusetts Institute of Technology
77 Massachusetts Avenue, Cambridge, MA 02139
Electronics Research Society, Room 20B-119

No Gizmo this ish.
Sorry, folks.
Thanks to Kou Togashi
for typing the membership
list. Please read this
mess before the meeting,
and please don't get too
disgusted by my "humor"

Jordin Kare

Nov. 31, 1976

Mr. X. Ecutive
President
International Widget Works, Inc.
1234 5th St.
West Walpole, Wis.   54321

Dear Mr. Ecutive:

    The MIT Electronics Research Society is a student organization
which provides MIT undergraduates with facilities to learn elec-
tronics by actual experience. We presently have over 50 members,
engaged in projects ranging from simple audio equipment building
to state-of-the-art microprocessor development.
    Many of these projects would benefit greatly from the use of
high quality widgets, and many of our members would like to work
with modern widget technology. Unfortunately, ERS receives only a
minimal operating budget from MIT, and our own funds are very lim-
ited. We cannot, therefore, simply purchase a sufficient supply
of widgets directly. Thus I am writing to you in the hope that
International Widget Works, as a major manufacturer of widgets,
could donate or otherwise provide us with some.

    Of particular use to us would be at least two type 2345-1
fast-settling circularly polarized widgets, and a number of type
3451-2 economy high-voltage widgets for the Society's frammistat.
Should you have other items more conveniently available, though,
we would certainly be able to make use of them. We would, of
course, be happy to accept cosmetic rejects, discontinued products,
or other items not normally marketable, and to pay reasonable
shipping or handling charges.

As a related request, ERS has a very great need for widget testing equipment, adapters, and other accessories. A single widget tester, such as the IWW-120 would greatly increase our ability to use widgets salvaged from surplus equipment--we have many of those. If any such items are available, for instance by long term loan of a demonstration unit, or as surplus older units from your own laboratories, ERS would appreciate being informed.

If you have any questions regarding ERS or its needs, please contact either myself, or the Society President, Mr Charles R. Bason, at this address. Widgets are an important part of modern electronics technology, and we hope you will assist the engineers of tomorrow in learning to use them. We will be waiting to hear from you.

                              Sincerely,

                              J. Random Gnurd
                              Vice President for Correspondence
                              MIT ERS

That, folks, is a begging letter. In the past, such letters have gotten us all kinds of wonderful junk, from thousands of precision resistors to the 661 sampling scope. They ought to be written by the hundreds, but you have to write them.
    As an incentive to writing such letters, the club policy has been that the letter writer gets a large fraction (20-50%) of all small items received as a result of his efforts. In the case of "heavy equipment" he gets first use of it (maybe even loan of it) for the duration of his stay at MIT.
    Lots of companies are out there just begging to be written to. The only ones written to recently, or otherwise off limits, are Vector, Tektronix, Intel, Bishop Graphics, and a few obscure switch companies. Letters are (hopefully) on their way to GenRad, Wavetek, Motorola, and Datel. Considering the number of companies listed in Gold Book (copies in 20B119) this is a bare drop in the bucket.
    So pick a company, any company. Ask for parts, equipment, anything. 'twould be nice to check with a club officer before you mail, to make sure no one's duplicating your effort, and we'd like a xerox of your letter for the files, but in return we'll give you postage, MIT stationery, etc. If the Flexowriters work, you can even type on them.
    If you aren't sure where or how to write, or want some tips on what to ask for, ask me--I'll try to post some sample letters and addresses. But please, folks, write. Especially now, at the end of a fiscal year when companies want tax writeoffs--the pen is mightier than the 2N3055. Swallow your pride and beg.

INTERMITTENTS

The Digi-Key order is in, but without digital clocks, so if you got an AP super strip or any parts you can pick them up at the meeting. It also follows from this that ERS once again has a parts stock of capacitors, Zener diodes, IC sockets, and even a few more resistors. Clocks may come soon, or your money back.

Your President's efforts to get something out of the Activities Development board have paid off--ERS will be getting a drill press, with a special chuck for PC board drilling. Now all we have to do is figure out how to get bits & accessories. Remember that, as with the lathe, DON'T WORK ALONE. More details to come.

Flash! There is a chance we can get Intel microcomputer kits super-cheap. 8080A and 1Kx8 RAM memory and 2Kx8 UV EPROM and 4 I/O ports, or enough 3000-series schottky bit slices for a 16 bit processor--either set $20 or slightly more. If you don't know micro's, take my word for it, this is a deal worth well over $50. There may, though, be a long delay in getting enough for everyone--if you're interested bring a check to the meeting, as therule is first come first served.

As regards the above, several people have expressed interest in forming a microprocessor group within ERS. Sounds like a reasonable idea--bring your suggestions to the meeting. How about a $5 surcharge on the Inteldeal, to be put in a special fund for micro development equipment?

Other group purchase news: Southern California Computer Soc. has been contacted about their group purchase plan (incl. 2102-1's for 90¢) and as soon as they publish their next price list we'll start taking checks.

Geoff Rochat's Universal Tiger purchase has gotten some interest and will go out. Talk to him or sign up in 20B-119.

Anyone want CA3130's or 3140's (RCA BiMOS op amps, high quality and 741 replacement respectively)? They beat 741's all over, and the 1000 (or even 100) piece prices are pretty good.

Magazine subs have been ordered, except for Radio-Electronics. Anyone have one of their subscription forms?

Around the lab: Yes, ERS has a wire wrap gun! Squeeze-grip type Gardner Denver with a #30 bit. This tool must be signed out from the Pres. or Secretary. This isn't the UROP tool (which we're still after), it's ours, so treat it well.

Also available--a somewhat random stock of CMOS chips--price list to be posted. All first quality 4000 series.

Also available--wire wrap sockets, 16 pin, 25¢ Also a few 40 pin an $1, see Jordin Kare

Jim Williams has offered us a Model 33 TTY in exchange for our precision resistor stock and a few other things. Should we take it? A major decision--prepare your arguments now.

The latheisn't working yet. Anyone want to head the CGU--
the Committee to Get the Lathe Up? Involves contacting MIT shops
or South Bend for maintenance info, then (carefully!) tightening
up and lubricating the lathe, and getting a few lathe tools.

No progress on a new room yet, but a request for 20E-103 is
percolating through official channels.

Regarding the PDP-1, who is going to take responsibility for
maintaining it? Remember, it takes lots of work to keep a machine
like that up and running. An organization is needed--maybe a
priesthood (the Devoted Servants of the Great God 1)....

Speaking of running, Bertha still isn't (awwww) and may not
be for a while. Talk to Dave Felsenthal--kick him enough and maybe
he'll fix it.

The two gross typewriters in 20B-119 are MIT surplus flexowriters.
They work, after a fashion, but jam easily. If you know anything
about these beasts talk to Felsenthal or Dave Thompson. They may
be kludged into computer terminals, but more probably will get
used as electric typewriters to type nonsense like this.

In case you hadn't noticed, we're giving 2 IAP courses,
#356 and #366, on do it yourself electronics, and PC boards.
We got some money for these, plus we'll charge about $5 a head.
If you want to take 'em, sign up soon--space is limited. If
you want to help teach one, God bless you--talk to Jordin Kare
or Geoff Rochat soon. Keyholders, please read the notice in 20B119
about registering people.

There are a couple of boxes of data books in 20B-119, for sale
cheap. D.A.T.A. books from around 1973 are very valuable for sur-
plus buyers--$2. Other assorted books (Only from cardboard cartons)
$1. Build up your library now.

Please, folks, treat the tools at ERS with a little care.
Mainly, put them back in the grey tool cabinet when not actually
using them--even if you're "gonna be back tomorrow morning." Es-
pecially, put clip leads back--they break very quickly when left
lying around on the floor, and aren't all that useful hidden in the
clutter on your bench. Think of the poor gnurd who's going to
come in hunting desperately for a phillips screwdriver after you
leave, and have mercy.

                        Jordin Kare 11/19

Current as of 11/18/76

	Name:	Telephone:	Address:
	Aldridge, Jeff	5-9464/494-8552	F424 MacG
	Arnold, Gary T.	5-9375	D215 MacG
	Bell, James D.	5-6311	Mun311 EC
	Berlin, Ed	5-9372	D212 MacG
	Berman, Pandora	5-6180	Someplace on 1E, EC
	Brenner, Alan	547-5880	101 Western Ave, Apt 66
	Choing, Donald	5-8282	323B Bur
	Cooper, Geoffrey	5-8461	533C Bur
	Dowling, Robert C.	266-8724	Fenway House
	Doyle, Allan F.	——	28 Westland Ave, Apt 29
	Dunnington, Jay	5-6441	Wood 411 EC
K	Felsenthal, Dave	536-5889	491 Beacon St. Apt 3
	Fenton, Jim	5-9269	A125 MacG
	Fierke, John	266-8724	Fenway House
	Finberg, Stephen	258-3754*	DL 5-146 Draper Labs
	Fleischaker, Robert	3-5150	Tang Hall, Apt 6-C
	Forman, Steven	5-7569	474 Mem. Dr.
	Frank, Eliot	5-8461	533C Bur
	Freeman, Charles	3-3157	111 Bay State Rd. Boston
K	Goldstein, Ira	5-6140	Wood 110 EC
K	Gussow, Seth	5-6166	Be 106 EC
	Haid, Steve	5-6633	R-403 SrHse
	Haiman, Mark	5-6475	Be 415 EC
	Hanson, Chris	5-6405	Mun405 EC
	Holt, Dave	5-6675	Atk305 SrHse
	Iwatsuki, David A.	5-6107	R-107
	Jackson, Jim	5-9293	C125 MacG
	Jaffer, Aubrey	3-7787	24-617 MIT
	Kanerva, Lauri	5-9627	207 Bexley
K	Kare, Jordin	5-6267	Be 207 EC
	Keane, Michael	5-9103	J113 MacG
	Koslov, Joshua	5-6280	Gd205 EC
	Kroeker, Edwin J.	5-6678	W-402 SrHse
	Miller, Bradford	5-6268	Be 208 EC
	Miller, Mark	5-6216	Hay201 EC
	Mogul, Jeffrey	5-9632	302 Bexley
	Munrow, Michael	5-6447	Wal402 EC
K	Newcomb, Russell	5-6143	Wood 103 EC
	Norton, Scott A.	5-6479	Gd404 EC
	Panchura, David	5-9402	J412 MacG
	Parks, Bob	372-1109	108 Glenellen, W. Roxbury
	Porat, Ron	5-9394	A312 MacG
	Rochat, Geoffrey	5-9105	J115 MacG

K: Keyholder   * :ERS phone costs 10¢ for off-campus calls;
                       use tieline for Draper Labs: 182-8-3754

MITERS MEMBERSHIP LIST
(continued)

Name:	Telephone:	Address:
Sadler, John	5-6512	Mun512 EC
Savan, Alan J.	5-6287	Gd212 EC
Shelton, John	5-6179/494-8661	Gd104 EC
K Short, William	494-8845	5D Tang Hall
K Steffes, Paul	5-9270	A126 MacG
Steffy, David	5-8421	512C Bur
K Thompson, David	5-6284/494-8661	Gd209 EC
Togashi, Kou	5-6262	Be 202 EC
Trelewicz, Eric	5-9616	106 Bexley
Waxer, Michael	5-7161	411 Baker
Winey, Calvin	5-8417	511B Bur
Younger, Harold	3-6888/661-9172	269 Harvard St. Apt 10

K: Keyholder

M.I.T. ELECTRONICS RESEARCH SOCIETY

20B-119

ext3-2060

MIT Electronics Research Society

20B-119   X3-2060   PRESENTS:

THE LAST
MITERS
MEETING
OF THE TERM

WHO wants to take our IAP courses?

WHAT has happened to the Digi-Key order?

WHEN are we gonna get the infamous PDP-1 computer, and

WHERE are we gonna put it?

HOW can we we get people to clean up the lab?

WHY am I asking these questions now? I ought to
     be saving them (and lots more) for the MEETING.

MON. NOV. 29
8 P.M. 20C104
NEW MEMBERS ALWAYS WELCOME

Contents:

Editorial: The Great Flood　　　　by Jordin Kare

It all began with the great flood.

Way back in December, late one night, a pipe in our air
conditioner burst. About an inch of water covered the floor
and dampened the machine shop under us. A janitor noticed water
in the hall and called physical plant. They came, shut off the
valve, and cleaned up most of the water. Somewhere in the process,
MIT Safety Office was called to inspect the scene.

Comes the next morning, I get awakened by a phone call from
Russel Newcomb, who tells me that some people want to talk to us
that afternoon at 2. Ira Goldstein and I show up (Russel arrived
around 3, after all the action) and so do Charlie Paton (our
Faculty advisor, you recall), someone from the shop downstairs,
a safety office representative, and a couple of other people.

Well, we apologized to the people downstairs, who were quite
reasonable about the whole thing. The safety office man was also
quite reasonable, but less easily satisfied. Indeed, he was very
unhappy about things ranging from crates stored too close to the
ceiling (18" clearance from sprinklers is required) to a couple of
ancient pressure bottles left in the shop.

Mainly, though, he objected to the mess. Blocked corridors,
stacked equipment, tools left plugged in and circuit breakers on.
(I found an electric drill, plugged in, sitting on the floor in
½ inch of water, which even scared me), and so on ad nauseum.
He suggested we clean up. He suggested we reduce our membership.
He suggested that if we didn't make a lot of improvements, we might
find ourselves shut down as a safety hazard.

So we cleaned up. Starting that night at an emergency meeting,
we got rid of the worst of the junk. Over IAP, we closed ERS for
several weeks and did a thorough job. Basically we carted
everything out of the club, including the furniture (which enabled
the 'Tute to strip and wax the floor!!) and tried to bring back
only what we needed. At a rough guess, we threw out half a ton of
junk, including four desks.

Oh, yes, we also moved in the PDP-1 in all its glory.

The place looked beautiful!

So, thanks to all you folks who helped out, it looked for a while as though we had it licked. Alas, when the term began, we had to move out of our borrowed store room, 20E-103, which brought back a lot of useful, but large, stuff. We also ran the PC course in 20B-119, and people began working in there again. In very little time, the place was a mess again. Not as bad as it was, but not too great, either.

QUESTION: How do we keep the place neat?

Partial answer: get a new room, so we have space to store all our stuff. Well, we're trying, but without much luck yet. There may be lots of room in building 20, but all of it is owned by people who don't seem eager to give it up. Anyway, simply spreading our mess around is not enough.

Basically, the solution is to clean up. We could do drastic things to force this to happen, like closing for cleanup one weekend each month, or requiring everyone to sign in and assigning cleanup hours proportionately, but we shouldn't have to. We could set up rules, but they'd be almost unenforceable.

So how about if we just recall that there are now 80 people who use that lab, so its really worth spending that extra bit of time to keep it looking good.

A few guidelines:
Put things away. ALWAYS. Tools and clipleads especially. Even if you're coming back in an hour.
No one can use more than one bench at a time. Ever. Even briefly. No spreading your junk around. There are currently sign up sheets attached to each bench. Use them, so we know who is at work.
No one can leave a project set up more than 48 hours without working on it, barring special arrangements for vacations, etc.
Personal property at ERS must be 1. clearly labelled and 2. stored out of the way, (NOT on top of an active bench or allover the floor.)
Club equipment is always available to whoever's there. Don't leave scope's, power supplies, clip leads, or any club property hooked up such that they can't be easily removed. Better yet, remove them yourself.
SPECIAL SAFETY RULES:
Shut off all equipment and circuit breakers before leaving. Unplug soldering tools, power tools, etc, as well. Exception: breaker box over keyholder's desk powers clock; leave it on.
Drill press, sabre saw, and (when it's up) lathe may be used only with another erson present, and only while wearing safety glasses. Blow this and we really will kick you out of the club.
Sweep up after using power tools, and put bits, etc. away.

FLASH!! The ex-ERS hackers of ECD have been very generous to their "alma mater". On Friday they gave us two (2) oscilloscopes, a small 515, and a classy 545A 30 MHz scope. They also gave us one of their production C-Meters, so we can measure and test capacitors. (the C meter is locked away--See J. Kare or G. Rochat). Thanks, folks.

Jordin Kare

"UROP in ERS" by Jordin Kare

If you're looking for something to do this term, how about
building a project for ERS? The club needs a variety of devices
built - there's a partial list at the end of this article.

The UROP office, which is located just down the hall from us,
is willing to help out in several ways. If you want to build
something small, like a curve tracer, they can provide materials
and supply money - up to about $100 - for parts. For larger
projects, like a disk interface or PDP-1 memory, credit (6 units)
might be arranged. (Editor's note: If you're really clever,
you might even be able to squeeze a Thesis out of this.)

The procedure is simple. Pick a project you'd like to do.
Talk to me, or Dave Felsenthal, or Geoff Rochat, or some other
reasonably knowledgeable person, and work up a method. Write
up a proposal - just a few pages explaining what you want to
build. Include in the writeup any interesting features of the
device, and a rough cost estimate. For the larger projects,
some detail as to why the thing needs to get built, and what you
expect to learn from building it, would be good too.

Once the writeup is done, it must be approved by a faculty
advisor. This should be trivial, especially since ERS will
provide most of the facilities. Charles Patton, the MITERS
Faculty Advisor, has agreed to supervise a couple of projects.
Those dealing with the computers should find many sponsors over
at the Lab for Computer Science (formerly Project MAC), or
elsewhere in the EE faculty, since the PDP-1 in particular was
a well-known and well-loved machine. Indeed, construction of
a modern memory for the PDP-1 is an excellent project for a
digital hardware hacker, since the memory is slow but sophisticated
- a design challenge as well as an "erector set" project.

Finally, the project goes to UROP for money, preferably no
later than early March, and you start building.

No one has to do a UROP, of course. But you could learn
a lot, get to know both ERS and your advisor better, find out

how UROP works if you haven't yet, and help us out, all at once.
You might even get some of those academic thingies - uh - you
know, credits.

A few projects: Talk to:
Small: Transistor curve tracer   JK
          Universal IC test box   JK, G^2R
          PC dip coater G^2R
          PC process controller/timer G^2R
          New PDP-7 paper tape reader electronics   JK, DF
          Simple PROM programmer/checker   JK, G^2R
Large: ERS security system, maybe micro
              controlled   JK
          Fairly smart PDP-7 disk interface   DF
          Full new memory for the PDP-1/7   DF, G^2R, JK
              (Editor's note: I've got
              a great idea for a multi-
              port memory, if anyone's
              interested. G^2R)
???:   Interface for UROP memory card to
              PDP-1/7   JK, DF
          Sophisticated micro or PDP-7
              controlled PROM programmer   RRN, JK, DF
          An all-CMOS micro based on the 1802 G^2R
          A TV typewriter G^2R
          An operating system and other
              software for the PDP-1/7   D. Thompson

        If you've got any other project ideas, let's hear 'em!

    "Intermittents" by Jordin Kare and Geoffrey G. Rochat

        Hear Ye, Hear Ye: MITERS Elections will be held at the
coming meeting. We gotta elect a President, VP, Secretary,
Treasurer and a Facilities Manager.

As far as anyone can tell, MITERS does not have a Constitution. Jordin keeps trying to get around to writing one, but he's pressed for time. Anybody wanna help?

Anybody want an AC VTVM? Draper Labs recently held an auction of old equipment. ERS bid (through Steve Finberg) on about 50 items, ranging from archaic VOM's to a 50MHz oscilloscope to a couple of MacIntosh 30W amps. We got none of those, but we did get:

- 2 Ballantine half-rack AC VTVM's
- 4 HP rack mount AC VTVM's
- 2 HP electrometers, good to 1 microvolt or 10 picoamps FS
- 1 HP audio generator, 20Hz to 20kHz, 3W into 600 ohms
- 2 Krohn-Hite audio generators, rack mount
- 1 obscure pulse generator - fine for digital work. It's capable of 60 volt pulses. (That's VHTL - very high threshold logic.)

Steve also got some items himself, including a large pile of non-rack mount AC VTVM's. Steve and ERS are both willing to sell. Prices are around $5.

Footnote to the above: I mentioned that Steve has VTVM's to sell. Anyone in the club with things to buy/sell/trade can 1.) note it in the Grutch Book, 2.) get it in Intermittents, or 3.) post it on the bulletin board (special goodies only please).

Footnote 2: Special thanks go to Paul Steffes, who braved icy roads and truely insane Boston drivers to help us move the Draper buys to ERS in his own car. Paul has helped ERS out by driving people and/or equipment around many times in the past, and has never been adequately repaid for his assistance. If we had an ERS Outstanding Service Award, he'd deserve it. Thanx, Paul. Huzzah, huzzah, huzzah!

Footnote to the above Footnote: While we're on the subject

of cars, we haven't had any Taunton trips lately. Now that the ice is starting to melt (and about time, too!), such trips again become practical. Taunton is government surplus, available only to educational institutions (and the Tute is considered as such, 'though Lord only knows why). A variety of special rules apply, most notably that any purchases on the ERS account must be authorized by an ERS officer. Therefore, if you're planning to go to Taunton, Russel or Jordin must go along (or, of course, the new officers...). Typically, large cars or small trucks are needed to haul everything - if you have one, let us know.

In a dramatic example of reversed entropy, the ERS files have been getting more organized as time goes by. These files contain manufacturer's literature on all kinds of random things. They currently occupy the second filing cabinet from the right near the keyholder's desk. An up to date list of categories should be posted nearby - or ask the keyholder. Feel free to browse through the files, just be sure to put it back when you're done! The files are always hungry, too - any free data you get and don't want could go in them.

MITERS now has a supply of RCA CA3140 BiMOS op amps (good stuff!), and more CMOS, especially CD4011 quad 2-input NAND's. They were donated for the IAP course (thanx, RCA), but were not used. CA3140's - 25¢   CD4011's - 15¢

RCA also gave us an 1802 CMOS microprocessor. This could be turned into a demo/general use ERS micro, or used for some other purpose. Any suggestions?

Also donated for IAP were 25 LM324's by National (all used up), and a quart of AZ-111 positive photoresist and a gallon of AZ-303 developer by Mr. John Bohland of Shipley. Thanx to both.

And speaking of IAP courses, if you are still waiting for

a PC board, I've got some happy news. The bugs that appeared
in the process seem to have been cured (he says hopefully).
I will be producing boards as fast as possible. Further
information is posted on the MITERS door. G^2R

Another Digi-Key order went out recently for various digital
clocks and the like. The only major new additions to ERS stock
will be some polystyrene precision caps (2.5%), assuming they're
not yet sold out. They're excellent for time bases, etc.

Speaking of group purchases, the SCCS group purchase went
away, thus eliminating our chances of getting 2102-1's for 90¢.
They may still be available for $1, along with various other
items, from a California company known as Solid State Music,
provided we come up with a $1K order. Anyone want to look into it??

Stll hunting for a room, rather desperately now that the PDP-1
is in place. No luck yet... JK

No word yet on the Intel order. The first order went out on
5 Jan. or so, but a 60 day delay is expected. Anyone interested
in 3000 series chips please call Jordin (6267). He has enough
checks for another 8080 order, but nothing else.

A new keyholder signup sheet has been posted. If you're a
keyholder and you haven't signed up for time yet, please do so.
We are trying to get a few more keys/keyholders so we can be open
more often.

On the condition of the PDP-1/7: The PDP-7 is running, more
or less, but since the air conditioner is gronked thermal shutdown
is a very real problem. If anyone would like to fix the air
conditioner, please do so. Apparently, the fix is pretty simple.
A tacky version of Spacewar is working - the PDP-7 340 Precision
Display has been fixed by cannibalizing the display for the PDP-1.

Steve Forman is trying to get us a copy of the very excellent
Spacewar we had in the old days (and which mysteriously disappeared
some time ago...). The PDP-1 is down due to lack of electrical
power (it draws over 30 amps), and there are still some cables
which must be pulled. John Shelton is looking into getting juice
for the PDP-1. Dave Felsenthal claims that, with a little bit of
help, the PDP-1 processor can be made to talk with the memory.
He's been making some pretty wild claims about the PDP-1's circuitry,
and if only half of what he says is true, that's some flakey
machine. Literature (uncollated and diverse) on the PDP-1/7 is
available if you want to learn about it. Lots needs to be done on
these machines, and Dave Felsenthal should begin giving some kind
of a course in DEC logic pretty soon.

A curious anecdote about PDP-7 documentation: I called DEC
'tother day with the hope of getting a fairly complete list of
all the documentation available on PDP-7 hardware and software.
I got a very pleasant lady on the other end of the line, and when
I said I was interested in information on the PDP-7, she burst
into gales of laughter. She said she had worked for DEC for five
years, and in all that time, no one had ever asked about a PDP-7.
Maybe I should've asked about a PDP-1... G^2R

The random IBM typewriters, etc., scattered all over are
PDP-1 terminals, to be hooked up when and if we need them. We
may want to modify one or more of them, and they all need servicing.

Believe it or not, the PDP-7 has an industry standard tape
drive. It's that ugly cream-colored thingie next to the wall. The
only problem is that, although the interface for it has been built
and installed, it has never been debugged. Anyone want to do it?

Ye olde coffee urn has been repaired. Stocks of Maxwell House
instant coffee, fake cream and real and fake sugar are available.
10¢ in the cookie jar per cup.

GIZMO: THE THEORETICAL POWER SUPPLY   by Jordin Kare

(If you'd like to build this, call me for more information if you need to)
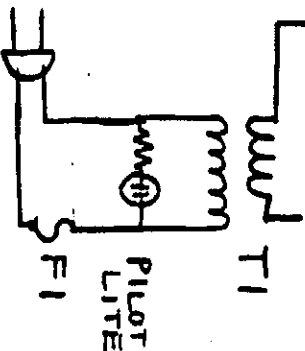
This is a 30 volt, 1.2 Amp power supply. It has full current limiting, with foldback and crowbar, dual metering, and should have excellent stability. It uses 1 IC and 4 transistors. It was originally designed in an hour, during the IAP PC course, and has been redesigned 3 or 4 times--but nobody has built it yet, hence the theoretical supply.

Parts list

C1	4000 uF, 50 V or larger
C2	50 uF 50 V
D1	15 V 500mW zener
D2	6.2V temp. comp. zener
D3	any silicon diode 1N914
D4	LED (overcurrent indic.)
F1	3/4 A fuse
F2	2 A fuse
IC 1-4	4 sections of an LM324 quad op amp, or equiv. (IC2 must have input range to 0 volts)
T1	24 V, 1.5 A or greater
Bridge	50V, 2A (or 4 diodes)

M1	0-1 mA output voltage
M2	0-1 mA output current
Q1	Pass transistor, min. 3A, 60W, plus heat sink. 2N3055 suggested.
Q2	NPN, ½A, 5W. Heatsink bar limiting.
Q3,4	NPN gen. purpose, 40V, ¼ W, 50 mA. 2N2222 will work if Q3 has some heatsink.

Notes: Pot labelled S1 selects normal current, limit, foldback to current. Switch S1 sets maximum output current.

300 mA max, and crowbar limiting.

Trimpots A are op-tional, as is S1 and D3.

Op amp power is taken directly across D1 (+15 and gnd). Point B is also the reference diode supply.

MITERS ELECTION MEETING

MONDAY,   FEB 28
8:00 P.M.   RM 20B-119

---ELECTION OF OFFICERS FOR 1977---

---DUES: SHOULD WE RAISE THEM??---

---WHAT SHOULD WE DO ABOUT OUR CONSTITUTION??---

---THE GREAT CLEANUP: HOW DO WE KEEP IT THAT WAY??--

---COMPUTERS: WHEN IS ONE GREATER THAN SEVEN??---

        AND MANY OTHER CRITICAL QUESTIONS.

WITH A LITTLE LUCK, THERE MAY EVEN BE

MUNCHIES!

MITERS

JOURNAL

PUBLISHED BY
THE MIT ELECTRONICS RESEARCH SOCIETY

Contents:

Editorial: "The Fatal Glass of Beer"   by Geoffrey G. Rochat

There is a movement afoot to change the name of MITERS to the
MIT Antique Computer Museum. I won't mention the name of the left-
wing pinko radical alleged perpetrator heading this movement, but
his initials are Jordin Kare. Why is this villain committed to this
foul deed? Well, you know that MITERS has a PDP-7. And you know
we have that monstrosity, the PDP-1X. Well, we have been graced with
the ownership of yet another venerable DEC product, a PDP-5.

Now that you've picked yourself up off the floor, shaken the
dust out of your creases, and seated yourself firmly, let me
explain. A few weeks ago we received a note from Professor J. W.
Irvine, Jr., Executive Officer of the Chemistry Department. It seems
that the Chemistry Department had finally given up trying to
maintain a certain PDP-5, and Professor Irvine was wondering if
MITERS wanted it. I received word of the offer from Jordin, and
he and I debated, amidst great dispair, as to whether we should
accept the Chemistry Department's largess. It's not that we had
anything against the Chemists, or Professor Irvine. Indeed, their
kindness and thoughtfulness in considering us was quite astounding.
It's just that the idea of having yet another antediluvian DEC
behemoth in our already overcrowded laboratory was heartbreaking.
Anyway, Jordin and I decided that there would be no harm in going
to look at the thing, and we called Professor Irvine to ask for an
appointment.

And that, as they say, was the fatal mistake.

Jordin and I took one look at the PDP-5 and we fell in love
with it. There it sat, one tiny rack, all alone in a corner of a
musty storeroom, it's sky-blue cabinet looking lost and afraid.
What could we do? We carefully wrapped the PDP-5 up, and trundled
it across campus.

It turned out to be quite a trundle too. A PDP-5 may be
small, but it is by no means light. Or well balanced. En route
we were besieged by a frantic graduate student who demanded to
know where we were taking HER computer. We gently explained that

the PDP-5 had been declared surplus, and that we were taking it away. Her eyes misted over, and we discretely stepped back to allow her a few parting moments with the PDP-5. We then continued on to MITERS.

Anyway, the PDP-5 has been here a few weeks now. I've been busy with other things, but Jordin, with an assist from Guppy, has been patiently egging the machine back into operation. The latest reports I've heard say that the PDP-5 is up and running.

I worry, though, about Jordin. His love for the PDP-5 seems to have pushed him over the edge. Reliable reports have it that he has been seen reading a copy of the Communist Manifesto, and that he is trying to grow a beard. If anyone sees him wearing battle fatigues, let me know. We might be able to get him to help in time.

Anyway, while I'm at it, let me tell you what a PDP-5 is. Slow. A PDP-5 is essentially a PDP-8 built out of System Modules (the kind found in the PDP-1X). The PDP-5 program counter is stored in, of all places, location 0 in memory. The PDP-5, then, is forced to make an extra memory fetch each instruction. The only software difference between a PDP-5 and a PDP-8 is in the handling of interrupts. An interrupt causes a PDP-8 to store the program counter in location 0 and jump to location 1. An interrupt on the PDP-5 stores the program counter in location 1, and a jump is made to location 2. Otherwise, the two machines are identical.

Oh yes, I nearly forgot. The last meeting saw the election of new Society Officers:

Jordin Kare

Erstwhile President
Bemis 207
dl 6267

Geoffrey G. Rochat

Fervid Facilities Manager
MacGregor J-115
dl 9105 or 494-8187

Brian Pinette   Loyal Treasurer
                                 Holman 401 (Argentina)
                                 dl 6647

Michael Keane   Dedicated Secretary
                                 MacGregor J-113
                                 dl 9103

Also, there are now underlings in charge of various committees:

Ron Hoffman   Librarian
                                 Bemis 213
                                 dl 6273

Steve Forman   Safety
                                 New House 474 Room 311
                                 dl 7569

Intermittents: by Geoffrey G. Rochat

There is a new student activity on campus, the Association of
Recording Science, founded by our own Seth Gussow. ARS has an
eight-track audio recorder, lots of random studio goodies, and lives
in an honest to goodness real recording studio buried somewhere in
the F-Wing of Building 20. (Ha ha! Bet ya' didn't even know it
was there.) Anyone interested in ARS should get in touch with Seth.
     And speaking of Seth, it seems he met with an accident the
other day. It cost him some time in the hospital, and his right arm
is in a cast, but he seems to be on the mend. Floral arrangements
and sympathy are being accepted...
     At long last the first batch of Intel goodies has arrived.
If you were in on the first order for 4040s, 8080s or 3000-Series
chips, come and get 'em. The second set of orders will go out soon.
     What are we going to do with the PDP-1X? It's been sitting
there since January, collecting a fine layer of dust. The sole

meeting of the Computer Facilities Committee agreed that there was much work to be done, and that nobody wanted to do it. Somebody PLEASE come up with a brilliant idea.

The PDP-7 is no longer dead, although it isn't feeling too well. There were some holes in memory Bill Short, through wizardry known only to himself, somehow managed to patch. Thanx, Bill. It turns out that the bootstrap loader sat right in the midst of one of those holes. (No wonder nuthin' worked!) Anyway, the Dectapes are still quite sickly, and a good chunk of Dectape-resident software seems to have gone away, but we have backups. Is anyone interested in investigating?

Slowly but surely the MITERS Constitution is being forged. Jordin is having a tough time of it, though, and would like some aid and advice.

We have a rudimentary library, and an overflowing bin of unsorted mail. The Librarian, Ron Hoffman, is being buried under a paper mountain, and would like some help in digging out.

The Laboratory is beginning to look like the day after the night before. If you use something, put it back. And for a change, let's start using the broom in the shop.

Is anyone planning to go to Taunton soon?

Who is gonna be here this summer?

Begging letters have recently been sent to CBS and DEC. The silence of their replies has been deafening, but these things take time. Anyone feel up to writing a letter?

Now that the 8080s are trickling in, is anyone interested in forming a microcomputer designer's/user's group within MITERS? How about over the summer? If you're interested, please see me. $-G^2R$

How about being a Beneficent Contributor to The MITERS Journal? No, you don't have to know how to write. (Witness the present example.) All you've got to do is have something to say.

Eric Treila... Triela... Treller... ah, Eric T. has finally worked out all the bugs in Jordin's famous Theoretical Power Supply, which appeared as a Gizmo some time back. The darn thing works, and well too. Eric did a beautiful construction job. He's now working

on Jordin's design for DEC-TTL and TTL-DEC converters for the computers.

Gizmo-of-the-Month: "A Clock Module Alarm" by Jordin Kare and
                                                    Geoffrey G. Rochat
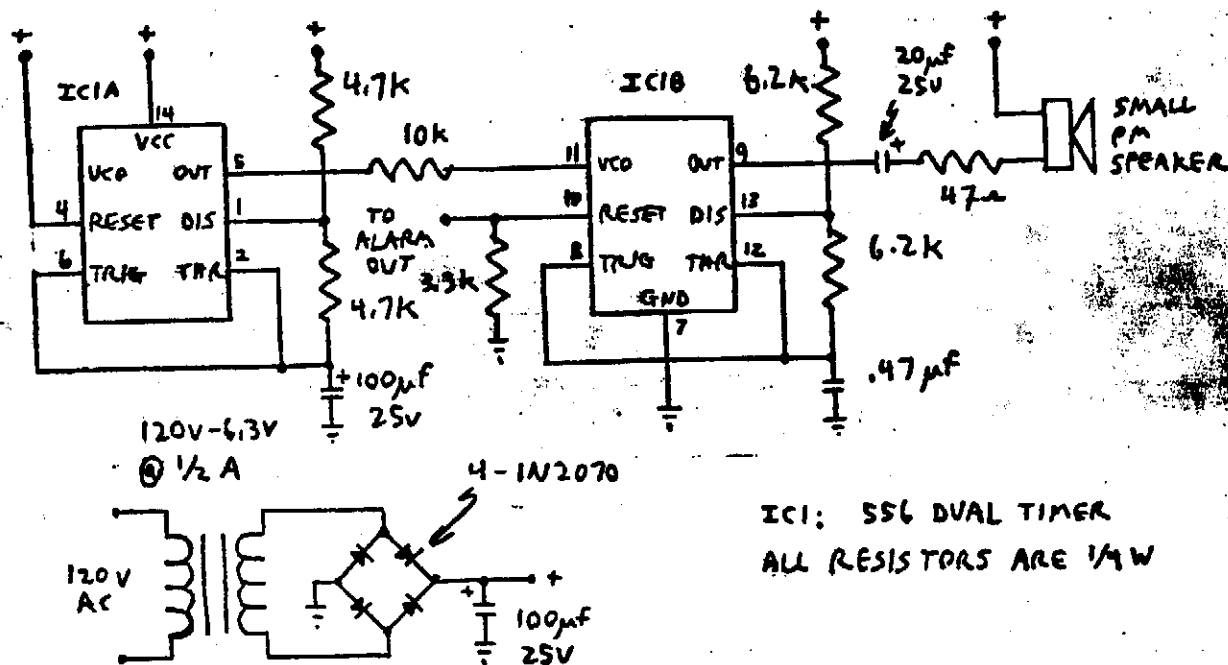
If you've gotten one of those National Semiconductor Clock Modules from Digi-Key, and you've been wondering how to make an alarm for it, here is one possible solution. The design is a minor modification of one of the circuits used in Jordin's IAP course. IC1A is a square-wave oscillator running at a frequency of 1 Hz. It drives the frequency control input of a second square-wave oscillator, who's center frequency is about 500 Hz. The second oscillator is gated by the alarm output of the Clock Module.

The sound produced has been described by Jordin as "eeee-oooo-eeee-oooo". The loudness can be adjusted by varying the 47 ohm resistor. The depth of modulation is controlled by the 10K resistor. The transformer powering the Clock Module cannot handle the current

required by the alarm, and a separate power supply is required.

Minutes: by Michael Keane

Summarized minutes of the February meeting

Meeting called to order Monday 28 Feb., in Room 20C-104 at 8:05 PM
No Minutes of previous meeting
Report of the President:
    Digi-Key order in, new order out soon
    Got goodies from Taunton: 'scope and tube tester
    Status of 8080 order
Report on IAP 366 (Rochat's)
Report on IAP 356 (Kare's)
Election of Officers:
    President: Jordin Kare
    Facilities Manager: Geoffrey G. Rochat
    Treasurer: Brian Pinette
    Secretary: Michael Keane
Dues and money:
    Passed a motion to "lower" dues to new dues schedule:
        $8.00/year
        $6.00/starting IAP
        $4.00/second term
        $5.00/freshmen
        New dues start RO week '77
Passed a motion creating a Computer Facilities Committee
Passed a motion creating a Safety Committee
Passed a motion to create the post of Librarian
Passed a motion to create a Constitutional Committee
Meeting adjourned at 9:22 PM

ANOTHER
MITERS
MEETING !!!

WILL BE HELD (LIVE AND IN COLOR) IN ROOM:

20B-119

AT

8:00 PM

ON

MONDAY, APRIL 25

COME, PUNT THAT PROBLEM SET AND:

--SEE THE NEW OFFICERS PERFORM (WITHOUT A NET!)

--HEAR THE CONSTITUTIONAL COMMITTEE (THE SOUNDS OF SILENCE)

--PARTAKE OF OUR MUNCHIES (WE HOPE)

--JOIN IN THE RIGHTS OF SPRING AS THE MEMBERS CELEBRATE THE
   ARRIVAL OF DAYLIGHT SAVING TIME (AND THE LOSS OF AN HOUR'S SLEEP!!)

NEW MEMBERS ALWAYS WELCOME

MITERS Fact Sheet

WHAT IS MITERS?   The MIT Electronics Research Society, or
    MITERS, or E.R.S., or ERS (pronounced with a soft 's': erss)
    is a student-run activity at MIT, a member of the ASA.

WHY IS MITERS?   ERS exists to provide, space, facilities, and
    assistance to members of the MIT community who are interested
    in electronics, and/or who wish to work on their own electron-
    ics projects.

WHERE IS MITERS?   The ERS lab is located on the second floor of
    building 20, facing Vassar Street, room number 20B-119.

        "ers isn't a place. it's a state of mind." -- james blish

WHAT HAS MITERS GOT?   A brief list of our facilities:

    Tools: from pliers and soldering irons to wire wrap tools.
    Test Equipment: Tektronix and HP 'scopes to 50 MHz, a 5
        digit DMM, power supplies, pulse generators, signal
        generators from .001 Hz to over a GHz, and more (a
        milliohmmeter??).
    Parts: Resistors, capacitors, diodes, some transistors and
        IC's, plus a stockroom full of more random items.
    Machine Shop: A drill press and full size lathe, plus power
        drills, sabre saw, and hand tools.
    PC Facility: Positive and negative photoetch process for
        printed circuit boards. Large board (12x18 in), double
        sided board, and plated thru hole capability in the works.
    Computer Facility: A PDP-11V03 minicomputer with 16K words of
        memory, floppy disk, DECwriter, and VT52 terminal. Also
        available: a PDP-7 computer with vector graphic display,
        a PDP-5 (old PDP-8), and peripherals including DECtape,
        teletypes, 300 cps paper tape, and floppy and fixed-head
        disks. MACRO, BASIC, FORTRAN, and others available.
    Library: Currently subscribing to Electronics, Popular Elec-
        tronics, Byte, Kilobaud, and various industry journals.
        Signetics, RCA, Intel, and many other data books avail-
        able with more to come, plus filing cabinets full of
        literature.

WHAT CAN YOU DO AT MITERS?   Build, design, repair, or take apart
    anything electronic. Program computers, or interface them, or
    put them together. Make group purchases and surplus buys.
    Arrange for industry donations. Take IAP courses, or give them.
    Get advice. Give advice. Have arguments. . . .

WHEN IS MITERS OPEN?   Primarily evenings and weekends, since our
    keyholders are students. A schedule is normally posted on the
    door of 20B-119. But call us anytime and every time, before
    you come by.

ARE THERE MITERS MEETINGS?   Glad you asked. Yes, on the last
   Monday in each month, if class is in session. Usually at
   8:00 pm in room 20C-104. Elections are held, decisions are
   made, money is allocated, and often munchies are consumed.
   And by the way, we will soon hold the

YEAR'S FIRST

—M—I—T—E—R—S—

MEETING

MONDAY   SEPT. 26th

8:00 P.M.   ROOM 20C-104

UNLESS OTHERWISE POSTED

WHO CAN JOIN MITERS?   Anyone from the MIT community: under-
   graduates, grad students, faculty, staff, or family thereof.

HOW MUCH DOES IT COST?   Dues are currently $8.00 per year, or
   $4.00 per term plus $2.00 for IAP. There is a special rate
   of $5.00 per year for freshmen.

OK, HOW CAN I JOIN, OR FIND OUT MORE?   Call, and/or stop by, the
   lab in 20B-119. Or send us a note with your name and address.
   Or if you have to, call me, Jordin Kare, at 253-7220 and leave
   a message.

THANKS. SEE YOU SOON.   You're quite welcome. So long.

OH, BY THE WAY, WHAT IS THIS MITERS JOURNAL? A club newsletter,
   sent to members and interested individuals. It appears roughly
   (very roughly) monthly, and includes news, editorials,
   articles, circuits to build, and last but not least, our
   meeting notice. Good bye.

IN THE GRAND
NEW TRADITION OF
TOOL WARS, starring
LUKE DOMEWALKER and PDP1
KENOBI, the MIT ELECTRONICS
RESEARCH SOCIETY MORE OR LESS
PROUDLY PRESENTS THE TERM'S FIRST

MITERS
MEETING

MONDAY, SEPT. 26, 8 PM

IN VIEW OF THE MOMENTOUS IMPORTANCE OF THIS EVENT,
WE HAVE RESERVED FOR THE MEETING THE LECTURE HALL

54-100 [GREEN BLDG.]

ON THE AGENDA:
   ELECTION OF A NEW FACILITIES MANAGER
   OUR CONSTITUTION, OR LACK THEREOF
   ORGANIZATION OF THE MITERS COMPUTER GROUP
   GROUP PURCHASE ANNOUNCEMENTS
   FORMATION OF A STOCKROOM PURCHASE COMMITTEE
   SUGGESTIONS+ ADVICE, AND ANSWERS FOR NEW MEMBERS
       AND MUCH, MUCH MORE

REMEMBER, DUES ARE $8 PER YEAR--$5 FOR FRESHMEN
   PAY AT THE LAB BEFORE THE MEETING AND AVOID THE RUSH!!

MUNCHIES WILL BE SERVED IN 20C104
FOLLOWING THE MEETING

MITERS   Room 20B-119   X3-2060
FOR MORE INFORMATION, CALL OR STOP BY.

MITERS*

FIRST MEETING
NEW FACES WELCOME

Rm. 20B-119

TEST YOURSELF: Are you a MITERS person?

1. You think electronics, or electronics people, might be interesting.

2. You think computers, or computer people, might be interesting.

3. You think electronics or computer technology could help your work or studies somehow.

4. You want to build or fix something electronic -- i.e., hifi, ham radio, your own computer, etc.

5. Some other reason --

Our first meeting of the Fall season will be at 8 PM on Monday, Sept. 25 in Room 20C-104. Come and join us!

Our phone number is X3-2060.

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*MITERS: MIT Electronics Research Society. An informal group of MIT students, staff and faculty people interested in fun as well as work electronics.

MIT ELECTRONICS RESEARCH SOCIETY
Room 20B-119
Massachusetts Institute of Technology
Cambridge, Mass. 02139

TO:

GEOFFREY ROCHAT
71 RANSOM AVE
SEA CLIFF, NY 11579

As many of you probably don't know yet, (but you would if you stopped by the lab) ERS has acquired a few pieces of new equipment over the summer. Thanx to our former president, Jordin Kare. We now have a competent function generator, which sweeps! No, no, not the floor, but it does do it either linear or log. We have a pair of weller soldering stations, temperature controlled.

We also have a pair of DMM's. Please be carefull with these instruments; you can't measure volts on an amps range! Some one has blow the protection fuse twice already. Please be carefull with the equipment, if you destroy it, you will not have it.

Unfortunately the sale of the PDP-7 fell through do to administrative bureacracy and red tape. It took so long to get the sale cleared that Jeff decided to buy another processor. Anybody want to buy a seven?

After a shaky start, the midway went very well. The VT-17 blew its 10 amp fuse when it was plugged in. In desperation we replaced it with a 3 amp....and it worked just fine for 3 hours. Who knows?!? I would like to thank those who helped out at the midway. Jeff Mogel had Adventure running on our LSI-11 - with a memory board that Rodger Colson was kind enough to lend us. Robert Dowling, Paul Trevathick, Seth Gussow and several other members whose names I can't remember - sorry about that, helped set up and run the show. Thanx.

8080A kits are in! If you ordered one, come by with your receipt and pick up your kit. Happy computering.

MITERS

Election Meeting.

to be held this Monday
April 10. at 8:00 pm 20C-104

Topics:
  1) The Election of course.
  2) All those goodies DEC was
     kind enough to give us — what?
     haven't heard- well come over!
  3) 16 K dynamics — factory prime $14.00
  4) We Have floppys for the 11 V03 for Sale
 5) Another disk drive order? — What should we

do you like to mess with electronics?

Well, so do we.

We're MITERS, the MIT Electronics Research Society. We have our own lab, with several 'scopes, lots of power supplies, and all kinds of other equipment. Our stockroom is an incredible plunder-trove. We've got power tools, a printed circuit facility ... oh, yes, and an assortment of computers that must be seen to be believed.

We could go on about our group purchases, our do-it-yourself courses ... but we'd rather tell you in person. Stop by sometime. We're in room 20B-119. Or call us at MIT extension 3-2060. At the very least, come see us at the Activities Midway.

Whether you're a beginner or a master builder, whether you're into microphones, microwaves, or microcomputers ...

MIT ERS
TUIT
20B 119   x3 2060
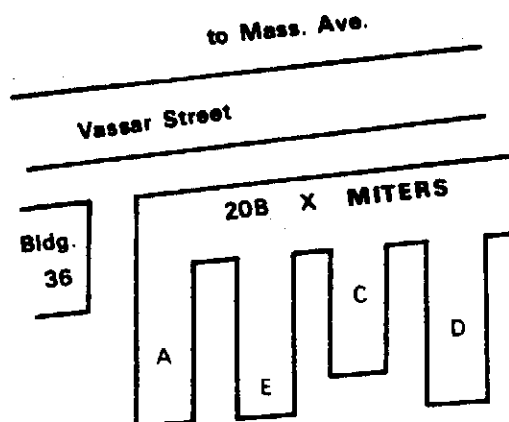
come over to
MIT ERS
as soon as
you get a-
round to it

QUESTIONAIRE

Is your CPU losing an ALU and gaining a random number generator?

Are your electrical requirements so large that the electrical inspectors threaten to shut you down unless you upgrade from your present AWG 0000 power cord?

Were you the first to have bubble memory? Not the new, magnetic kind, but the type that has to be recharged with Tide.

Are your transistors dated 1949 and identified with the words "Shockley no. 5," "Bardeen no. 37," "Brattain no. 8," etc.?

Have you ever tried to emulate ENIAC, only to find that your processing speed, reliability, and memory capacity were not up to it?

Does your instruction set end after 13 lines with the statement, "That's all, Folks!" ?

Are your bus drivers wired open collector? I.e., did the assembly line workers either run out of solder or forget the operation entirely?

Is the clock of such a low frequency that neighborhood dogs bark and howl when the system is up?

Was your computer built in the days when "hermetically sealed" meant two paper cups and a dab of Elmer's glue?

Does the system generate so much heat that the Seabrook protestors threaten to occupy the building if you dump your air conditioner water into Boston harbor?

Have you opened up a cabinet labeled "Emergency Power," only to find a kite, a key, and a copy of Poor Richard's Almanac?

Does the magnetic tape reading circuitry consist of a row of Boy Scout compasses linked to rotary motion detectors?

Does the disk have a sign that says, "For reliable operation feed and water mice twice daily" ?

Are the peripheral drivers suddenly becoming tri-state? I.e., the third state is negative 10,000 volts?

Does the computer drop so many bits that you must keep a broom and a dustpan around to clean up the mess?

Are the 20 ma. current loops used unconventionally? I.e., connected to the big toe on each foot of a well-trained typist?

Are the squarewaves so bad that the fellows down the hall in the Testing Department demand you run a wire down there so that they can have a sample of worst-case noise?

Do your resistors run so hot that you were almost awarded the Nobel prize for discovering how to turn carbon into diamond?

Do you find that replacing the power supply with a sine-wave generator actually decreases the error rate?

Do you suspect the manufacturer of over-economization when you discover that the paper tape reader and punch are designed to work equally well with both standard tape and Charmin?

Is the memory best described by the words, "Non-refreshable Dynamic" ?

Are the first-in-first-out registers turning into first-in-probably-never-out registers?

Does the error rate of the line printer remind you of the saying, "If an infinite numbers of monkeys type on an infinite number of typewriters for an infinite amount of time ..." ?

If you answered "yes" to more than 2 of the above questions, put you computer where it belongs: Give it to MITERS!