

the rear apron contains the openings for the card rack, a jack for the AC line, a jack for running power to a monitor, a 110/220 VAC selector switch, the power supply cooling fan and 2 knockouts for DB-25 and DB-9 connectors (not used).

With the exception of the front panel, the ENTIRE box is heavy gauge steel and VERY rugged. there are 4 rubber feet attached to the bottom. Dimensions of the entire unit: 7" H x 15" W x 16 1/4" D.

Many existing expansion cards will have to be modified for use in the RAVE expansion box but the mod is VERY simple and requires only 2 solder joints per card and a bit of wire. Here's the explanation. The TI Pbox was a power monster. It put out WELL over the 12 volts needed by the cards. In order to keep the cards from self-destructing, the manufacturers installed voltage regulators on their cards to hold the incoming voltage at 12. The excess voltage was bled off as heat. The RAVE box uses a tightly regulated supply that requires no such extra regulation. Extra regulators can, in fact, cause minor problems. So, a jumper is installed across the existing regulator to take it 'out-of-circuit'. Cards modified this way CANNOT BE USED IN A TI PBOX UNTIL THE MOD IS REMOVED! Removal, however, is as simple as cutting a wire. The manual contains adequate descriptions of how to do the mod and what to look for as well as a list of cards that DO require the change.

Now comes the critique. Internally, the unit is well laid out with plenty of room for running cables and maneuvering. Airflow is adequate for keeping things cool. The box, while a bit large compared to the TI Pbox, is attractive. My documentation for the unit is admittedly preliminary and John tells me it will be improved so I'll skip over that.

I have only one nit to pick with RAVE. The manual recommends the removal of the clamshells around cards to help them remain cool. Unfortunately, the clamshells are also used to hold the cards in place in the card rack. Without the clamshell, the cards tend to wobble in the edge connectors. With nothing inside the cover to hold the cards in place and nothing to keep them from moving sideways, it is possible for a card to come partially out of the socket with disastrous results. This is more of a danger to cards with cables connecting them to the outside world, like Geneves and serial cards. My solution was to glue 2 strips of resilient foam inside the cabinet cover, OVER the edge connectors and perpendicular to the cards. This effectively HOLDS the cards in their sockets and keeps them from moving sideways as well. Since I set my PBox up in a 'Tower' configuration, this modification was doubly necessary. I sent John a sample of the material I used in hopes that he will add it to future versions. I have been asked how much I paid. My answer is that it is no longer a valid price. I paid for the unit in April of '90. SEVERAL modifications and upgrades have since been made to the initial design that have changed the price upwards. Those of us who pre-paid were locked in with no further charges. For an accurate CURRENT price, contact:

RAVE99 Co.
112 Rambling Road
Vernon, CT 06066
John McDevitt AFTER 7pm: (203)871-7824

Finally, the grade. I can't grade the documentation properly since what I received was VERY preliminary. On that basis, I'd say:

Documentation - B+

On the PS/2-A, taking into account workmanship and functionality, I'll say:

Product - A

On RAVE's customer relations, counting willingness to communicate, honesty and willingness to listen, a definite:

Customer Relations - A+

Do I like what I got? Yes Would I recommend it to others? Yes. Was it worth the wait? YES!

>> Dave <<

cont. from prev. page

If you are not adventuresome, you can always cut these four wires two or three inches from their attachment to the card and use either shielded crimp couplings to join the wires (available from Radio Shack) or even heat shrinkable tubing placed over soldered connections. I used both types of connections,

I'm going to label all major components with an alpha designator, followed by an identified point on that component to make a list of point-to-point wiring and for text references. I'll explain as we go along.

First, with the items I've already described removed, be sure you have a RED wire going from item "I" point "L" in Fig. B to item "S" point "2a" in Fig. C, in other words: IL to S2a. That is easy isn't it? The next is a WHITE wire from IN to S1a. Study it. Here is the entire AC wiring list:

IL20 to S2 IL to S2a IN to S1a
 S1 to TPC2# S1 to FA* IF to TPC1#
 IF to FC* (# * means no polarity and may be exchanged to it's like point)

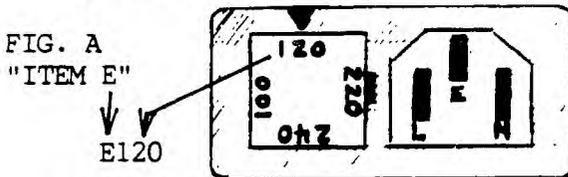


Fig. A is only included here so you can see the FUSE and it's special way of being inserted to select for input of AC voltages. Pulling and rotating the fuse actually selects different taps on the transformer you removed. This means that if you have LOW AC voltage you can just by rotating this fuse, so that 100 is located at the top, increase the internal DC voltages. If you have 220 VAC at your home, rotate the fuse to put 220 at the top. Fig. A is an external view.

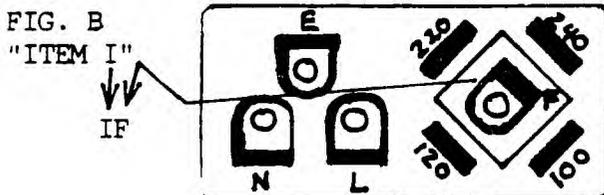
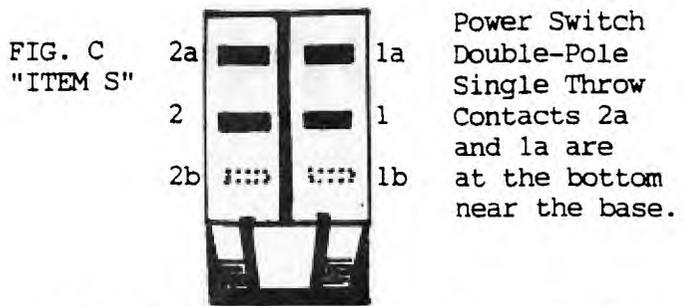


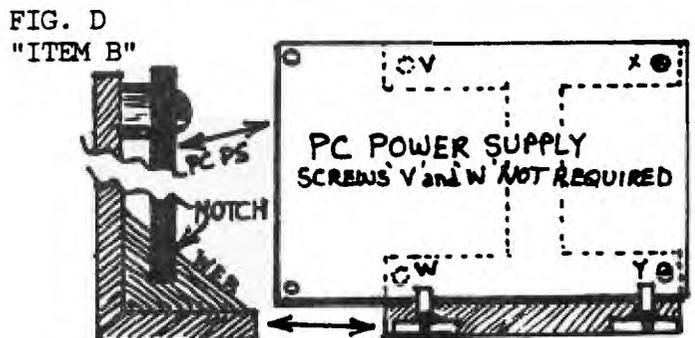
Fig. B is an internal view of the power input and fuse connectors - "I".



The RED and White wires I described in the column to the left and down one, are already in place and will be located under the new circuit board. The rest of the AC wiring will have to be done after the PC power supply board, the system bus board and fan items are prepared.

I mention the fan, remove it especially if you intend to reverse it's direction to quiet the PEB operation, otherwise you may want to leave it in place so that when you install the PC power supply, you can refer to it for contention of space.

The plastic bracket that held the regulator in place may now be examined to see how you might mount the new PC power supply in very much the same way as was the the original regulator. See Fig. D for a suggestion on notching the plastic support webbing to provide a new slotted area on the bracket which can act as a guide and as support for the bottom of the new card. The top of the card and any already existing mounting holes should be taken into consideration when making this study.



I'm running out of space for this month, so while your looking for the PC power supply, I'll be finishing this article and maybe making corrections to what I've already written. If you already have the idea you may want to go ahead. If you do, you may want to get in touch because ALL PEB cards must be modified. Next Month - JFW

CONFIDENTIAL FILE

Guest Columnist:
Dave Ratcliffe, Harrisburg, Pa.

The RAVE PS/2 Expansion Box: A RAVE Review (sorry, couldn't resist)

At the 1990 TICOFF show, lots of people crowded around the RAVE99 table to get a 'first' look at the proposed RAVE PE/2 expansion box for the TI-99 and Geneve computers. What we saw was a prototype, set up to run a TI-99 and what a wonderful sight it was. NO console, (Rave Keyboard Interface and computer mounted INSIDE the box), hard drive (Myarc HFDC) AND quiet! Several people ordered then and my order was submitted in April. Even though I did NOT receive the unit till January 1991, I am still VERY satisfied. Why? Because every step of the way, Rave's owner, John McDevitt, kept me informed of progress and setbacks. I knew going in that I was buying an as yet unfinished product and the manufacturers openness through the whole process was both refreshing and welcomed. This is the second product I've purchased from Rave (keyboard interface was the first) and I have yet to be disappointed. Now on to the 'official' review..

There are 2 versions of the RAVE PS/2, the A and the B series. I purchased the A series, designed for the Geneve computer. The B version allows the use of both the TI/99 AND Geneve computers IN THE SAME BOX, or just the TI alone. Since mine is for a Geneve, the following description is of the PS/2-A version except where noted:

The cabinet is made by Magitronics and contains a 200 watt fully regulated power supply. There is room for 3 5.25" 1/2-height drives and 1 3.5" floppy drive all in externally accessible drive bays. The 3.5 floppy space is NOT available if the Rave keyboard interface is used (PS/2-B version). The 5.25" area CAN hold 1 full height and 1 1/2 height if desired. Additionally, there is internal space for a vertically mounted 3.5" hard drive behind the front panel and adjacent to the 5.25" bay. Let me assure you, the power supply is fully capable of running ALL of these devices as well as the CPU and all related cards. While the power supply contains a cooling fan, RAVE saw fit to install a second fan in front of the card rack that moves air directly across the expansion cards providing extra cooling capacity. The card rack is a well designed unit and even includes a removable section to make room for the internal 3.5" hard drive. The backplane shows good design and workmanship and all jumpers are laid out well with easy access. 1 bad note here, while the documentation refers to numbered pins at the jumper selection points, NO numbers are printed on the board. After a quick call to John I found out that the pin closest to the front at ALL jumper locations is pin #1. For the Geneve, there is a small wiring harness that requires a bit of soldering to install. It will connect the front panel reset switch to the Geneve card to provide a HARD reset when needed. An additional connection provides for use of the front panel KEYLOCK switch.

The backplane comes with 5 16 bit slots (#'s 1, 2, 6, 7 and 8) and 3 8 bit slots (#'s 3, 4 and 5). There is a reason for this. You have the option of removing your cards from the clamshells or leaving them in. If you choose the latter, you'll need to use slots 3, 4 and 5 since the clamshells have no opening for the extra connectors in the other positions. those 3 positions CAN be made into 16 bit if desired. I purchased the extra connectors with my unit but have not installed them yet. One note here. At present, there exists no hardware to utilize the full 16 bit backplane. This is provided as a possible expansion route for the future.

The front panel contains 2 push button switches, 1 keylock switch and 3 LEDs. The 2 buttons are RESET (obvious purpose) and TURBO (inactive with the Geneve, used to PAUSE the CPU in the TI version). The keyswitch is used to disable the system when locked. 2 keys are provided with the unit. The TURBO LED (yellow) indicates bus activity. Since all cards are in the BACK of the box, there is no way to see their respective activity lights. This LED is a suitable replacement. The HDD LED (red) indicates hard drive activity. A pigtail with plug is provided to connect this to your hard drive. The POWER LED (green) serves an obvious purpose. The power switch is at the lower right front corner of the box.

PC PS in the PEB
by John F. Willforth

Got a dead P.E.B. (Peripheral Expansion Box)? Are your Myarc HDPC or 9640 cards turning brown and operating when they feel like it? Does carrying that heavy PEB to meetings cause regular trips to the chiropractor. Does putting another disk drive or more hardware in the PEB cause you a head ache or sleepless nights, not to mention an empty wallet? If you can relate to any of the above, you may want to read on.

A.L. Beard wrote an article explaining generally the placement of an IBM PC power supply in a PEB replacing the TI transformer and regulator card. The transformer being the HEEAAVVYY unit. I intend to include enough information to accomplish the same thing with the New Style PEB, which Mr. Beard said he knew little about. The New Style PEB can be identified easily by the ON/OFF switch. The New Style PEB switch rocks, push on the top to turn PEB on, push the bottom to turn the PEB off.

The power supply in both styles of PEB are linear, not switcher, and are heavy, inefficient (low power and high heat), and costly to repair. If your transformer is bad let's say, you must either order one (over \$75.00), or you could send the PEB back to TI for a guaranteed repair at something between \$50.00 and the cost of the transformer.

Availability of a PC power supply as well as it's cost must be considered before you begin this hardware mod. to your PEB, as well as your ability to do it. I used an old PC power supply taken from an original IBM PC. The power that is available is considerably less than is available from newer XT and AT power supplies. This one was free! You should get a 135 watt or greater power supply. I can't imagine you being able to stuff enough of ANYTHING inside a PEB and add external power (DC) for stand-alone drives to draw excessively on a 150 W. PC power supply. I'm going to describe in the next couple pages what I learned putting the PC power supply in the N.S. PEB.

Opening the PEB to gain access to all it's wonders involves, first making sure the AC POWER IS REMOVED. Lift the lid to

gain access the cards. Remove ALL (incl. the interface card attached to the firehose) the cards and any disk drives in the drive port. Turn the PEB over and remove all screws with the exception of the two that hold the black plastic block that rested under the disk(s) in the drive port. Turn the box upright and remove all in the rear except the two that hold the top cover latches. There remains just two more to remove, they are located on the outside left and right rear corners of the PEB. Now hold down on the center of the PEB (area where the circuit cards plugged into the PEB, called the system bus), and slide the outer housing (sides and front), away from the main PEB assembly.

Observe locations of the large transformer and the regulator card mounted to the left of the transformer from back to front. Note the routing of the floppy/hard disk power cable, as well as where three unregulated DC voltages and ground enter the system bus , (identified with brown, yellow, black, and green wires attached, just to right of the transformer).

Carefully remove the regulator card, by first disconnecting the three snap on connectors that connect to the card, and with a long phillips screw-driver remove the two screws that hold the plastic mounting bracket. Four screws must then be removed from the circuit card to free up the bracket for use later to support the new PC power supply safely. Remove four nuts that hold the PEB transformer to the base. As you lift the transformer pull each spade lug connector from it's connection in the PEB. NOTE: If you are chicken, mark and diagram all wires and connection first, just in case you find a reason to try to put this back together the way it was. You will probably have to cut several wire-ties in order to remove the transformer since TI while assembling tried to tidy up thins.

If you want and feel confident as a good experienced hardware constructor, you may want to remove the system bus board so you can remove the four wires attached, and clean the holes properly as well as do a good job soldering the new wires from the PC power supply into these four eyeletts. These four holes could give you problems if attention is not given to wire dressing and proper soldering. GROUND is all around each hole!!! The BLK hole is ground however.

cont. next page

CLASSIFIED ADS

Wanted: TI-99/8 computer.
Call 703-415-3964 or write:
Chris Pratt
801 15th St., South Apt. #605
Arlington, VA 22202-5008
with information.

For Sale: TI-99/4A Consoles
Black & Silver -- \$15.00
Beige -- \$20.00
Speech Synthesizer -- \$15.00
TE II Module -- \$5.00
TI Modem 300bps -- \$8.00
John Drennen: 216-755-7550

For Sale: RAVE 99 PE-BOX2
Brand New! Will transfer warranty.
Maurice Villano: 814-238-0396

Classified ads may be placed by any member of the West Penn 99'er User's Group free of charge. Please send ads directly to the editor or give to Mickey at the meetings. The normal deadline for submission applies.

--WP♦

Best Buys / Mar. '91

* 2400 Baud modems (again!--
Whether you are ready to upgrade from 300 or 1200 or are going to purchase your first modem, this 2400 bps external fully Hayes compatible modem from T-NET Communications Corp. might be for you. They sell for \$79.95 + shipping + 3% for credit card orders. To order call toll free: 1-800-826-6336.

* TI software (games) --
Comprodine released several new programs for the TI. My favorite was a game called "BACKSTEINE" (bok'stin.y) it immediately caught my eye as I passed their booth. The game is so similar to the game Arkaniod for other computers that I had to keep looking for an IBM clone or special video card hooked up to the TI console, but to my pleasure the game is for the TI-99/4A. I bought this one right away!

Best Buys are the editors choice for products that are compatible with the TI and are based upon the editor's personal experiences with the products listed in this column. Items are selected on the basis of quality, price, and performance. Suggested vendors are sometimes included either because they are the only ones who carry the product, or because of outstanding customer support from the vendor.

--WP♦

module library box; Gary Taylor - demonstration of TI's Compact Computer 40, TI's Hex Bus peripherals, and Mechatronics Hex Bus Drive; and lots more.

This should give you a good idea of the kinds of things available each May just from the annual Lima Fair (called *T.I. Multi User Group Conference*, for some unknown reason). Each of these six-hour tapes use cameras on the tutor while cutting into the screen electronically when something is being shown. These tapes get better and better each year, and the editing techniques are superb. Although I haven't been able to attend the last two years, I felt I got a big part of the fair sent to me. I know a lot of other homebound TI acquaintances feel the same. It's no real substitute for being at the fair, of course, but it's a great second best. The TI experts are at your beck and call in your home any time you want them.

In addition to all these fair tapes, there are numerous "single theme" jobs also available. Don Alexander of Macon, Georgia for example, does a fine job with the Geneve. I think this one is better for someone who has used the Geneve for awhile, though. I hope someone eventually does a truly step-by-step basic tutorial of the Geneve, maybe even a full six hours. It is sorely needed.

Charlie has also done theme tapes, such as MBX (where he steps through all the MBX modules) and UNRELEASED (where he plays and discusses all the delightful unreleased TI modules). I found both these tapes fascinating, particularly the UNRELEASED, as I could load them onto my SUPERCART or my GENEVE. Charlie's FUNNELWEB 4.2 DEMO is a classic. The viewer is taken through every step of the FWB configuration process that (for some strange reason) frightened so many people. Though the tape is similar to Charlie's tutorials in the BITS, BYTES & PIXELS newsletter he edits for Lima, it is far more extensive and much clearer, as you can see and hear everything being done live. I can't imagine anyone not being able to perform FWB magic after viewing this tape.

To get more information about these tapes (and/or join the Lima Group by mail which I would HIGHLY recommend), contact Charles Good, PO Box 647, Venedocia, OH 45894.

~ ~ ~ ~ ~

ANOTHER GOLDEN GOODIE

There is another great video now available to TI owners: the full-length LOGO video done by Eunice Spooner (RFD 1, Box 3720, Webb Road, Waterville, ME 04901). It is wonderful! It also comes with a disk full of lots of the items she demos and a hardcopy listing of the items and footage for easy tape locations.

Eunice is a certified elementary teacher and it is obvious on this tape. She's terrific: kind, patient, step-by-step logical, no panic; and she makes everything seem easy and fun. Which it is, if you do the things she suggests.

I always liked LOGO. Then I put it away for a long time. After viewing this tape and trying her programs, I discovered I LOGO.

If you own LOGO, get this package instantly. At \$10 it is a total steal. And it is used as a fund raiser to support the only ALL KIDS TI USER GROUP IN THE WORLD! If you don't own LOGO, buy it instantly. (It's on sale everywhere CHEAP! I paid \$119 for my first and recently bought an unboxed one for \$15.) But, new or used, pick one up for this video/disk set alone. You'll rediscover the joys of computing and the real fun (and learning, which is why it is fun) of your remarkable 4a.

Don't delay.

[If you use NEW-AGE/99 please put me on your exchange list.]

--WP♦

W-AGE/99 * NEW-AGE/
99 * NEW-AGE/99 * N
EW-AGE/99 * NEW-AGE
/99 * NEW-AGE/99 *

* by JACK SUGHRUE, Box 459, East Douglas, MA 01516 *

#13

the VCR CONNECTION

I think one of the most exciting things to happen in our 99 world is the advent of tutorial and conference videos.

Almost everyone has a VCR, the ownership of which can now open new worlds to 99 and Geneve users. Now that VCRs are coming down in price, more and more groups and individuals are using this tool to enhance their computer activities and share their computer knowledge.

The unquestioned master of this new genre is Dr. Charles Good of the Lima, Ohio, group. Videos have been around for some time and made their first TI existence about five or six years ago at the Chicago Fair. Some of the big-wiggies were interviewed and some screens were shown of different pieces of software. This amateur tape circulated for a year or so around lots of user groups. We (then still in the millions, it seemed) watched transfixed as new and exciting things were explained and shown to us.

Then drought.

Well, even though there were some other videos around here and there, the drought really ended when Charlie took up the cause with a vengeance. Not only does the Lima group make a monthly tape of the demos of their meetings, but they have amassed a vast TI tape library. I have on my desk (all from Lima) the following: NEVER RELEASED OFFICIAL TI MODULES, TI MULTI-USER GROUP CONFERENCE 1988, CONFERENCE 1989 (2 tapes), CONFERENCE 1990 (3 tapes), MBX REQUIRED GAMES, FUNNELWEB v4.2 DEMO, and DON ALEXANDER'S GENEVE SOFTWARE DEMO. These 10 tapes run about 50 hours! They are filled with all sorts of people demonstrating (or discussing or teaching) all sorts of TI things. I'll list a few.

Karl Romstedt - friendly general loader and label printing software in XB with assembly routines; Harold Hoyt - useful applications of Steve Karesek's SUPER BASIC; Irvin Hott - using ALSAVE to imbed assembly code with an XB program; Bill Hudson - an assembly language prescan for XB; Multiplan Tutorial - presented by Great Lakes Computer Group; PLUS! - demonstrated by Jack Sughrue; Geneve - demonstrated by Edu Comp; Horizon Ramdisk - discussed by Bud Mills; Home Control 99 - demonstrated by Paul Wheeler; The Future of User Groups - discussion led by Charles Good and Dave Szippel of the Lima Group; A Blind Person Using the TI - demonstrated by Irwin Hott; NUTS & BOLTS - demonstrated by Jim Peterson; GENE III - demonstrated by Dick Berry; Output to a VCR - shown by John Perkins; 1000 WORDS - author Norman Rokke demonstrates this Artist/text conversion file; Barry Traver - contents of Genial Traveler and linking XB to assembly via CALL LINK; Chris Bobbitt - recent and future releases from Asgard; Andy Frueh - music programming on the 4a; Ron Markus - the DIJIT AVPC 80-column card; Jim Horn - services on COMPUSERVE; Martin Smoley - TI BASE tutorial; Paul Scheidemantle - converting from one Artist format to another and tips and tricks; Steve Karasek - SUPERBASIC 2.0; Karl Romstedt - Panorama, a new artist program; Milo Tsukroff - MX-DOS v3.0 an icon/joystick based program loader with disk management features; Beery Miller - future software for the Geneve; Jim Peterson - using Don Shorock's Kana Filer that speaks and writes (with TELL) Japanese and drills vocabulary; Bruce Harrison - secrets of assembly language programming to make TI music; Gary Bowser - Rambo review

WEST PENN 99'ERS CLUB INFORMATION

NEXT MEETING DATE

MARCH 19, 1991

!!!NEW MEETING LOCATION!!!!

NORTH HUNTINGDON TOWN HOUSE
CENTER HIGHWAY & BROWNTOWN RD
OLD RT 30 NEAR IRWIN, PA

Call one of the officers, or the PUG BBS for location.

LIST OF WEST PENN OFFICERS FOR 1991

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LIBRARIAN:	Bob Sadusky	412-863-5672
NEWSLETTER EDITOR:	Chris Pratt	703-415-3964

GENERAL ITINERARY OF THE CLUB'S MEETING

6:45 P.M.	DOORS OPEN
7:00 P.M.	GENERAL MEETING
7:45 P.M.	DEMOS & NEW INFO
8:45 P.M.	TI BASE SIG
8:45 P.M.	PAGE PRO SIG
11:00 P.M.	DOORS CLOSE

2MEETING HIGHLIGHTS FOR THIS MONTH

- * LATEST T.I. NEWS AND SOFTWARE DISCOUNTS
- * ADVENTURE HINTS II, BY LYNN GARDNER
- * SLIDING BLOCK PUZZLES II, BY NORM ROKKE
- * ARTIST CATALOGER DEMO BY MICKEY SCHMITT
- * FONTS AND BORDERS I DEMO BY MIKE SEALY
- * FONTS AND BORDERS II DEMO BY MIKE SEALY

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From the Editor...

I have moved!!! My new address is:
801 15th St., South Apt. #605
Arlington, VA 22202-5008

Everything is going very well with the newsletter (as you can probably see). I have developed a system for getting the newsletter put out that seems to be working very well. I have also become more familiar with my system and this months newsletter was finished in record time!

I wish to thank everyone who has submitted articles for publication and I hope you will keep them coming, at the same time I wish to encourage everyone else to submit articles, reviews, classified ads, or simply ideas. I am trying to make this newsletter the best it can be, and it will be even better when you contribute some of your own experiences. Please submit articles to my new address, which is listed above.

I have been greatly encouraged by the feedback I have been getting from you, the readers of this publication. Many of whom are not from the Pittsburgh area. This makes me even more proud, because I know that people all over the country (if not the world) are benefitting from the efforts that go into this newsletter.

There has definitely not been a lack of information to distribute via the newsletter in the first part of 1991! From what I have seen I know this will continue and 1991 will prove to be a very exciting year for the TI community.

CDP

--WP♦



West Penn 99'ers



Supporting the TI-99/4A Home Computer

Established 1985

ISSUE #66

February 1991

FOR THE RECORD

by: Frank Zic

The February meeting started at 7:15PM. First, as usual, Mickey gave thanks to Paul Brock for bringing in the nicely decorated cup cakes. Next thanks to Joe Ekl for the copies of comprehensive hints to TI-Writer. Next Joe showed us his compact version of a complete TI unit. This one was an accordion paper type. Seriously, he next said that he hoped to bring in his true new unit for the March meeting. We're all looking forward to seeing it since he and Rob did such a nice job on their first production.

Last reminder, dues payment must be made. Lynn gave a favorable Treasurers report. Our big expense is the newsletter. Bob gave the library report which included 4 disks of TI-Base tutorials, a Canadian Christmas disk and several new games. The equipment inventory was in good order. Mike next gave us a report, hot off the plane, on the West Fiest in California. It was nice but somewhat smaller than expected. The Boston Faire is on April 6. Lima, a must, is on May 18. Chris Pratt notified us that there will not be a Manners Fiest this year in Washington D.C.

Chris has a new address: **801 15th St., S. Apt 605 Arlington Va. 22202-5008 and (703) 415-3964**. Chris plans to attend our March meeting. (Ed. Note--I'll be at the PUG meeting, not West Penn <sigh>).

Paul Brock submitted pictures and printing forms to the Page-Pro contest. Nice work, Paul. Mickey, as usual, pointed out specific things that might be of interest in the Micropendium. She also said that her new article, "Getting The Most From Your Users Group" is still in development. Any helpful comments would be acceptable. She next read 4 letters received from user groups that said they appreciate receiving our West Penn, TI newsletter. John W. submitted a large bound volumn of all our newsletters written from #1 thru Dec. 1990 (#64). Nice work as usual, John. Gary mentioned that the new 3 1/2 in. disk drives offer 2.8 Megs of storage (Ed. Note--"Oh wow!). I suggested that we send any excess copies of our newsletters to any of the local schools that are using the TI computer. This may spark new memberships. Next month or two, Judy and Ralph will try bulk mailing. Last, but not least, a nice raffle was once again held. Come join us next month when a number of interesting demo's will be shown.

May the good 4's be with you.