
Can / Am EMTP News

Voice of the Canadian / American EMTP User Group

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Vol. 03 - 3 ; July , 2003

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Fortran 95 from Lahey Computer

Variable-dimensioning of most of the pocket calculator was confirmed March 7th when standard test cases of all 4 PC-based versions finally were reconciled. The story is

mostly about F95, since most of the variable-dimensioning is limited to F95 versions (presently, just Lahey ATP). Yes, the input buffer CIDEAL is universal, but this is an isolated exception. The storage of the compiler output remains fixed at 200 for all F77 ATP versions.

Old CIDEAL(202) was moved from fixed-dimension BLKCOM to variably-dimensioned LABCOM on February 25th as the first step of the work. As originally conceived, vector CIDEAL stored IDEAL TRANSFORMER requests between the time they were read as branch data and the time they were stored as Type-18 sources (the input of overlay 5). This was as first described in the April, 1994, issue. For ideal Xformers, 200 cells seemed like a lot, and everyone was happy for a while.

Several years later, your Editor began writing his pocket calculator, and CIDEAL then also was used for input to it. Actually, this was by accident rather than design. It was done only because the Salford version 2.66 compiler (or associated DOS extender DBOS) handled virtual scratch files imperfectly. The existing use could not be expanded without minor corruption of the storage, it was found. Yet, for a while the pocket calculator represented no great burden to CIDEAL, either. There was plenty of PCVP use (e.g., the July, 2002, issue describes the need for 5000 \$PARAMETER variables as used by Prof. Juan Martinez), but each block could be processed one at a time; there was no need for accumulation, fortunately.

Finally, the pocket calculator was connected to TACS (see TACS POCKET CALCULATOR in the July, 2001, issue) to allow much faster evaluation of supplemental variables. This is when storage demands became serious. After all, TACS data might well involve many hundreds or even thousands of supplemental variables (e.g., see mention

of Adeoti Taiwo Adediran's use at Texas A&M University in the July, 2001, issue). These **did** accumulate. Push finally came to shove in E-mail from Orlando Hevia of UTN in Santa Fe, Argentina. On February 21st, he wrote: *"I received a complaint from a user (the same one who discovered the problem with Device 69 of TACS, he is with Prof. Juan Martinez in Barcelona): ... Halt in GUTS2A. Too many TACS supplemental variables for use of TACS POCKET CALCULATOR (TPC) Is it possible to expand this limit?"*

So, as a first step, your Editor decided to variably-dimension CIDEAL using a special, optional, new CARDS declaration within LISTSIZE data. Changes were substantial: 16 UTPF segments plus the translator (initially, just Salford) were modified over a two day period. For standard test cases, the dimension initially was held at 202, which represented just over 4K more words for LABCOM. Take simple DC-6 as an illustration. Prior to the change, *"Total size of LABCOM tables = 230090 INTEGER words."* After the change, this number became 234130. The difference is exactly $80 * 202 / 4 = 4040$ 4-byte words. LSIZ31 is the name of the new variable that stores the size of CIDEAL, and it has been appended to the right of the other list sizes in the heading. I.e., although not yet read as List 31 would be from input data cards, the new limit appears in the 132-column heading as if it were List 31. Hence the name.

Variable-dimensioning of most of the pocket calculator itself occurred next. Although fewer UTPF segments were involved (RFUNL1, SUBR1, OVER2, GUTS2A, POCKET, TSTACS, and TACSUP), changes were more demanding; and changes to the translators (particularly the F95 translator for Lahey) were substantial. LSIZ32 is the name of the new variable that stores the length that previously was fixed at 200 or 202 (in some places), and it is read from a new optional 4th card of VARDIM input in LISTSIZE* The key word here is *optional*. Old (February 2003) LISTSIZE and NEW LIST SIZES data should continue to be honored forever. After years of struggle against overflow of the original 3 cards, a 4th card of list sizes for the simulation overlays finally has been added to handle Lists 31, 32, etc. (here the *etc.* is for future expansion) . Of course, for F77 versions, LSIZ32 is hardwired at value 200 since EQUIVALENCES to the expanded VOLTBC in BLKCOM are fixed. But for F95, LSIZ32 is arbitrary.

Overflow of List 32 is illustrated by a new 6th subcase of DC-18, which was added March 9th. Yet, since only F95 allows the dynamic control of List 32, there will be no rejection using any F77 ATP version. Of course, NEW LIST SIZES is used in data to effect the artificial reduction (to 20). As explained on comments: *"For F77, the size of tables of the pocket calculator remains fixed at 200. For F77, this data demonstrates that any attempt to restrict List 31 is ignored."*

Advice about the overflow of lists 27 and higher had been mishandled for years prior to correction on March 12th. This was when advice about the new Lists 31 and 32 was added. The previous use of List 31 to indicate LWORK, the offset for most supporting programs (see the April, 1999, issue), then was changed from 31 to 41 in VECRSV, VECISV, and SUBR29. Rather than an exceptional extra list (the former situation), LWORK now is positioned to allow expansion through additional unused data fields on the optional 4th data card of VARDIM .

News from Outside USA & Canada

"U.M. for dummies" was mentioned in the April issue. In his pre-publication review dated February 16th, Orlando Hevia explained the cultural dependence of such a title. It *"would be poor here. ... In general, Argentines (and may be all Latins) want not to be seen as dummies ... The titles of books are translated to 'xxx is easy', or 'learn xxx in n days' where n is the number of chapters of the book."* So, your Editor might explain that the *"for dummies"* title is a joke. As mentioned in the January and April, 1996, issues, IDG Books successfully markets a series of *"for dummies"* books. Such titles are a novelty, and they attract attention (important for any commercial publisher) .

The SARS (Severe Acute Respiratory Syndrome) epidemic in and around Hong Kong, China, has caused postponement of IPST 2003, the Fifth International Conference on Power Systems Transients. This unhappy news was spread by the EEUG list server on April 14th. Laszlo Priklér, an Organizing Committee member, wrote: *"Currently, the committees are discussing a new schedule for IPST 2003. The decision will be made by the end of April ... Since the conference is postponed, IPST 2003 would like to accept extra papers. ... The new authors' schedule is as follows : ... Deadline for final manuscripts ... June 30, 2003."* In comparison, notice how nicely the Internet avoids such problems of public health as well as complications of recent terrorism. So SARS represents more bad news for the American airline industry, which already has been pushed to the brink of bankruptcy by terrorism. Flying no longer is as appealing as it once was. But the Internet is more appealing than ever, and it makes travel less necessary for ATP. That is the good news.

"Estonia makes its mark with cutting-edge Kazaa software" is the title of a *Washington Times* story dated May 5th. Recall Kazaa was mentioned in the April issue, and lawyers of the American music industry have been working strenuously. But they seem to remain frustrated: *"A U.S. court recently tried to force the programmers to give depositions in a copyright lawsuit filed by the entertainment industry. But a Tallinn judge said they didn't have to comply because the request was vague."* Tallinn seems to be a major city in Estonia. Once again, American courts have different opinions than French courts

(remember Yahoo), etc. The legal defense of Kazaa is brilliant. So Kazaa has brought fame to Estonia, an independent state of just 1.4 million inhabitants; and *"most Estonians are proud that their countrymen have provoked such a global fuss."* Yes, it is better advertising than Bill G could purchase: *"This Baltic state, once known more for pulp and paper exports, has leapfrogged older technologies with investment help from nearby Finland, the home of Nokia Corp."* The role of Sweden, too, should be acknowledged: *"When Swedish software developer Niklas Zennstrom cast about for help in writing the Kazaa file-sharing software, colleagues raised eyebrows when he chose three youths from little-known Estonia."*

More about the Internet and E-mail

Yahoo seemed no less responsive to spam than MS Hotmail (see April issue), it must be stated. Presumably all of the big, free mailbox providers are plagued by the same Nigerian 419-fraud spam, and they all are doing their best to control it. During the morning of February 7th, three comparable messages arrived from three different services (Latinmail, Yahoo, and Weedmail), and your Editor rapidly sent copies to the 3 abuse @ addresses. This was around 06:00 AM. Yahoo responded that afternoon, at 13:50: *"In this particular case, we have taken appropriate action against the Yahoo! account in question ..."* However, Yahoo did not explain what *appropriate* meant: *"Yahoo! is unable to disclose the action taken on another user's account with a third party."* Furthermore, contact seems to be with a number rather than a first name and an initial (e.g., Hotmail's Ruby S.). The message from *"Yahoo! Customer Care"* is signed *"33767916"*

SMS (short messaging service) of wireless phones was introduced in the July, 2002, issue. Well, an AP news story found at the CNN Web site has title *"R ur txt msgs :(or OK?"* Dated February 13th, this mentions abbreviations such as G2G for *"got to go."* In the title of the story, the R replaces *are*, the ur indicates *your*, etc. Needless to say, some linguists are alarmed *"that the proliferation of text messaging ... will enforce sloppy, undisciplined habits among American youths."* Growth of SMS certainly has been explosive: *"In June 2001, wireless phone users sent 30 million text messages in the United States ... By June 2002, that number had increased to nearly 1 billion."*

Instant messaging (IM) was introduced in the October, 1999, issue. At the time, AOL was way ahead, and others such as Microsoft and Yahoo were scrambling to catch up. Well, 3 or 4 years later, that prediction by AOL (*"would be used just as much as e-mail and Web browsers are today"*) seems to have come true. However, AOL has not yet been enriched as a result. *"AOL aims to cash in on Instant Messenger success"* is the title of a *Washington Post* story dated March 3rd. It begins with a summary of financial problems: It seems AOL *"can do little right these days. Its*

core subscriber base is shrinking, its users are being swamped with junk e-mail, and its financial woes have forced ... top officials to resign. Yet in one area, America Online Inc. continues to enjoy spectacular success: It is the leading purveyor of instant messaging, the world's most popular electronic communications tool. The only problem is, the service is free and no one has figured out how to make much money from it. Every day, about 2.3 billion instant messages are sent around the world via America Online, eclipsing e-mail as the favored way for people to communicate with family, friends and co-workers." About the need to improve profits: *"AOL has begun trying to sell specialized versions of IM to businesses. For example, it has a revenue-sharing partnership with a cell phone company, Nextel Communications Inc., to offer instant messaging to its customers ..."* But what is the advantage of IM? It might be preferred over E-mail in the business world because IM escapes monitoring by management: *"IM is surging from the 'bottom up,' as employees download software from AOL or its rivals onto desktop computers and send messages without supervision from their company's computer administrators."* But how does IM differ from E-mail? Rather than batch-mode, IM is interactive. It *"resembles a phone call, with two parties chatting at once."* Another advantage seems to be avoidance of competition: *"As e-mail in-boxes get jammed with junk e-mail, IM has become the most reliable way to ensure that an electronic message receives priority attention."*

"Yahoo! launches premium multimedia service" is the title of an AP story found at the CNN Web site. Dated March 18th, this documents how Yahoo is trying to improve its Internet access in exchange for badly-needed money: *"Yahoo ... launched a subscription service Monday that features video and audio from the NCAA basketball tournament, ... The Weather Channel and other sources ... The cost of Yahoo Platinum will be \$9.95 a month."* It is not obvious what can be sold successfully: *"In recent months, Yahoo has countered a drop-off in advertising revenue by charging for some services, including advanced e-mail, video games and Web hosting. At the same time, Yahoo and other content providers are trying to attract broadband customers who tend to spend more time -- and money -- online."* A competitor is said to be *"Real Networks' SuperPass service, which includes live audio from more than 2,400 Major League Baseball games as well as news from CNN."*

"Nigerian 419 fraud moves to Yugoslavia?" This is the way your Editor began his complaint to an abuse @ address on April 2nd. Except that West Africans allegedly have been replaced by Yugoslavians, the greedy appeal is comparable: *"I am the son of Mickhail Miyanovic, one of the people indicted at the Hague War Crimes Tribunal ... Before the indictment, ... my father had kept ... about 300 million u.s.a Dollars ... They have been shipped under diplomatic immunity to a country in europe. They will then have to be paid into off shore accounts. The money is nolonger in Yugoslavia. Can you help? Are you capable /*

independent enough of handling large volume of funds? Are you trustworthy? I have been asked to offer you 25%. Will that be ok? NOTE: Please reply to me through my private email address:(mickhailmiyanovic@zwallet.com)." The poor English remains characteristic, but there are differences. Note the terminating request for use of an alternative mailbox. Presumably this allows continued reception of replies after the source of the spam has been closed by the Internet provider. The response from abuse@maktoob.com was received later that same day, and it was interesting: *"Thank you ... If you are complaining about 'Nigerian Money Scam' related emails, we have already terminated numerous email accounts used for this purpose, and have already implemented sophisticated content filtering to put a stop to this. Maktoob has anti-spam measures and does not have any open relays, and we do not tolerate any spam that we can control and that originates from our network."* Once again, note that the "From:" address may not be meaningful. About relays, Maktoob explained as part of a second class of spam: *"If you are complaining about marty_plader or porn related spam from Maktoob, kindly note that all such email does not originate from Maktoob.com networks, but originates from general open relays on the internet. All referenced addresses that are related to Maktoob.com are invalid and bogus, and have been forged into the headers of the emails. To help stop such spam, please contact the networks that appear in the headers, which you can identify from the IP addresses found in the headers."* Conclusion: the spam war continues, and it is not clear to your Editor who is winning.

Comcast seems to be the latest name for what previously was AT&T Broadband. In turn, recall that AT&T Broadband was AT&T@home not that long ago (see the January, 2002, issue). The giant cable provider seems to be passed from one financier to another as performance continues to disappoint. Colorful advertising in the mail no longer mentions AT&T anywhere, and it comes from the East Coast (Philadelphia, Pennsylvania). The latest pitch is \$20/month for 3 months. Yet, this price has an asterisk after it, and there is a **lot** of small print that presumably would raise the price for your Editor. For example, *"offer may not include equipment charges"* (presumably a cable modem, plus who knows what else). Also, the price is *"after service activation"* (there is no mention of what activation might cost). Furthermore, the discounted Internet offer seems to be guaranteed only for existing cable TV subscribers : *"rates and availability ... vary for non-Comcast cable subscribers."* Finally, security seems to be a concern. Protection is prominently advertised: *"Order now and get a free McAfee personal firewall."* Supposedly worth \$30, this is *"yours free for one year."* Conclusion cable access to the Internet remains relatively expensive in Portland. Beyond the basic rate of \$40 to \$43 per month, there are plenty of additional hidden charges. Finally, upload speed remains slow compared with download speed (*"Maximum upload speed: 128K bps"*). Not much seems to have changed during recent years. The more the company name changes, the more the service seems to remain the same.

Connecting to www.comcast.com revealed the following under *"Press Room | Corporate info"* on May 5th. The headquarters is in Philadelphia, and employees number 60K. *"On November 18, 2002, Comcast and AT&T Broadband merged to form the new Comcast Corporation."* Comcast Cable is said to be the *"largest U. S. cable company serving more than 21 million customers in 41 states; 38 million homes passed; more than 6.3 million digital video customers; more than 3.3 million high-speed data customers ..."* There also is QVC : *"Comcast owns 57% of QVC, the world's leading electronic retailer,"* which is said to employ 11K. That statistic about *homes passed* is interesting. If 21 out of 38 potential customers already have purchased at present rates, there would not seem to be much incentive to lower rates.

Netzero (see Tom Field's mention in the October, 2000, issue) provided an interesting response to one of your Editor's complaints about spam of the *"Nigerian 419 fraud"* type. As mentioned in the January and April issues, a copy of spam is being forwarded to the abuse @ address of the sender. Well, April 26th, the sender appeared to be gulfbng1@netzero.net so your Editor sent a copy to Netzero. The reply from its Security & Abuse Dept. was enlightening. Once again, counterfeit E-mail addresses seem to be involved: *"The unsolicited mail you reported was not sent from a NetZero account or through the NetZero service. Instead, this message was forged to look as though it came from NetZero -- a tactic often employed by spammers. We encourage you to complain to the abuse team of the appropriate domain. For detailed information on headers and spam-fighting tools we recommend the Spam-L FAQ (<http://www.claws-and-paws.com/spam-l/?from=old-faq>)."*

"Most unwanted bulk e-mail, or spam, is sent under forged names and addresses, making it hard to track down the real senders." This statement appears early in a story on the subject in the *New York Times*. Dated May 5th, this is entitled *"Finding solution to secret world of spam."* Lawmakers in the nation's capitol are more interested than ever because the problem seems to be growing: *"At a three-day forum that just ended here on spam, sponsored by the Federal Trade Commission, there was a consensus that spam was increasing rapidly this year."* But what can be done? How much can and should the law be changed? Major philosophical differences exist among the various opponents of spam. Consider the purists: *"There are some who argue that an e-mail box is inherently more private than a postal mailbox and that nearly any marketing pitch that has not been clearly requested by the recipient should be banned. This view, as popular among some of the Internet elite as it is detested by the marketing industry, has few backers in Congress or state legislatures. But it has led some longtime anti-spam activists to oppose legislation ... because it would have the effect of legitimizing some unsolicited e-mail."*

Saturday, May 17th, the remote BPA post office mishandled seven E-mail messages that your Editor had attempted to send to others. Usually when BPA mishandles outgoing mail, there is simply an unknowable, extra delay. From Dr. Liu's PC, it usually appears that the messages have been sent whereas in fact they are being held hostage in some remote BPA post office. While annoying, this mistreatment did have the advantage of requiring no extra work. Behavior May 17th was new, and worse. Messages were mailed slowly, and in damaged form, it would seem. All 7 messages bounced. Sent between 10:56 and 12:45, the notifications of rejection were received between 11:42 and 13:32. The first of these was a message to Dr. Liu at home, using her Juno address, and the rejection message read: *"Your message did not reach some or all of the intended recipients. ... The recipient could not be processed due to congestion in the message transfer service The MTS-ID of the original message is: c=US; a=; p=BPA; ..."* Not good. Your Editor was forced to resend the messages manually the following day, one at a time. Are there any other good reasons to stop relying upon BPA for connection to the Internet?

European EMTP User Group (EEUG)

EEUG News is the newsletter of EEUG, and it might in the future be prepared by some European university under contract with EEUG. Members were informed of this initiative March 11th, in E-mail from Laszlo Prikler, who previously did such work. About the past : *"Till 2001 (except in 1999), the editorial work was part of the contract between my private enterprise ... and EEUG. No such contract was made after this date and Editors were unable to publish any new issue in 2002 in their free time on a voluntary basis because of their permanent overload."* About the future : *"The EEUG Executive Board herewith invites proposals from European member and non-member universities to be contracted for this job. EEUG would make a contract with the interested University and pay a lump sum fee after completing the editorial work of each issue."* So, others would handle details, but EEUG would retain editorial oversight: *"The contents of each issue will be agreed with the EEUG, before starting ... Any modification of the layout of the EEUG News requires approval ..."* The announcement ended : *"If any of you, or a group of graduate students are interested in your school for this paid work, please contact Prof. Dr. Mustafa Kizilcay, Editor of EEUG News (kizilcay@eeug.org)."*

The loading time of a Web page can be reduced by better programming, and such improvement is being sold commercially by polite, low-key junk mail. This is the conclusion that your Editor has drawn from E-mail dated April 29th. From belinda@webslimmer.com (said to be Belinda Alexandra), this had title *"analysis of your site"* (in this case, EEUG's). The summary advertising pitch is this: *"If a page doesn't load in 8 seconds, you'll lose 1/3 of your visitors."* For a typical commercial operation, this might be

true. In any case, Belinda's personalized pitch is this: *"I visited your website www.emtp.org just now. ... I am a little bit regretful for the load speed of your site, whose pages open somewhat slowly. I even manage to make an analysis of your site using the web optimization service provided by a leading company."* There followed a table, of which the following is the most important part :

	Current	Optimized
Total Size of Homepage :	602	391
Loading Time in seconds :	0.2	0.1

Conclusion : relatively speaking, size and loading time could be reduced significantly (35%) by optimization. On the other hand, who cares? Obviously not broadband users! That *"loading time"* of the final row is at 56 Kbits/sec (the common limit of a standard telephone line), and 1/5 of a second should not be a problem for anyone. To your Editor, Belinda's analysis seems to vindicate Prof. Mustafa Kizilcay's Web design. A fifth of a second is nothing compared with the allegedly-fatal threshold of 8 seconds.

Watcom ATP for MS Windows

The new free Watcom compilers (see the January, 2002, issue) finally are being considered for ATP. This is yet another initiative of Orlando Hevia of UTN in Santa Fe, Argentina. In E-mail dated April 26th, he reported : *"I obtained the Open Watcom compilers. I compiled a small FORTRAN program ... With some initial help from you, and Watcom ATP files, I can help you to maintain Watcom ATP. The Watcom compiler now has the same price as the Mingw32 compiler. Of course, no DISLIN library is available."* Your Editor responded on April 30th: *"The real question is this: has anything improved enough for us to update? You should be able to answer this question. OK, let me send you what has been tested the last time we performed a Watcom translation. This was about a month ago."* About price : *"For us it make no difference unless the new somehow is better than the old. It may well be. We might hope for faster execution. ... Next, I plan to send you the Watcom files."*

Compilation was not a problem, but linking failed to produce an executable program. E-mail dated May 6th included linker output that showed 7 unsatisfied externals. The final 4 of these had names that began with VEC_\$ about which your Editor wrote two days later : *"These names belong to H-P (long gone), and they are for vector operations. Robert Schultz wrote corresponding code for Watcom ... Since we do not find it in source code, we assume that it comes from old object files :*

02/13/1995 04:02p 538 damax.obj

01/06/1995 02:04p 509 veclib.obj ...

I will append copies for you. This should solve 4 of the 7 problems." Two of the 3 remaining externals --- KBHIT and GETCH --- dated to interactive operation that no longer is supported. On May 14th, your Editor wrote: *"What I found was this : Several subroutines are not used. In WATMODS.FOR, I have removed ... Execution using DC-*

6 remains normal. So, why not remove these 5 routines, and see what the result is. One step at a time." Finally, Mr. Hevia reported satisfaction of missing external CLOCK: "I replaced clock by gettim. The times look believable. But Watcom ATP is slow compared with Mingw32."

/TR is the qualification of Watcom compilation that came from Robert Schultz of the New York City area. As explained in the January issue, this made Watcom ATP more user-friendly by documenting the program location at which execution might be interrupted by some error. According to Mr. Hevia, removal of /TR substantially sped simulation of new Watcom ATP. May 21st, he reported: "it was the cause of slow Watcom ATP. Without the /TR, the speed is bigger, but Mingw32 wins by a head." More than a head (horse racing lingo), the victory looks convincing to your Editor. Mr. Hevia included standardized tests (compare with such output of SPEEDUP as explained in the October, 1999, issue). First, times spent in the dT loop :

#	File name	Watcom sec	GNU sec	% Gain
1.	BENCH1.DAT	4.214	3.778	11.54
2.	BENCH22E.DAT	2.416	2.310	4.59
3.	BENCH47.DAT	2.014	1.740	15.75
4.	BENCHN18.DAT	1.612	1.628	-0.98

Unfortunately, Mr. Hevia's PC really is too fast for the data. Nearly one decimal digit of precision has been lost, and Watcom won by just a nose on the shortest of the 4 simulations. In 1999, the times for a 200-MHz Pentium Pro PC varied from 15.198 to 25.555 seconds. Look at times now (above), as produced by Mr. Hevia's 2.4-GHz Pentium 4. For accuracy of timing, simulations really should be extended. Remember Moore's Law (the July, 2002, issue).

Starting and stopping of Watcom ATP remain slow compared with Mingw32 ATP. For production use, this is less important than simulation speed, but it nonetheless remains a disadvantage for Watcom. Consider total job times :

#	File name	Watcom sec	GNU sec	% Gain
1.	BENCH1.DAT	5.019	3.844	30.57
2.	BENCH22E.DAT	3.017	2.325	29.76
3.	BENCH47.DAT	2.801	1.775	57.80
4.	BENCHN18.DAT	2.398	1.653	45.07

Mr. Hevia seemed disappointed ("I am not sure Watcom deserves more time"), but your Editor was not unhappy. May 21st, he wrote: "Remember, GNU ATP, too, was slower for a while. Squeezing speed from a compiler seems to be the last thing that writers are worried about. So, even if Watcom ATP is slow today, that merely means that the average user might not have interest today. Tomorrow, who knows?" So your Editor recommends continued use.

Possible free DISLIN graphics for batch-mode plotting might convince BPA to switch from its existing old Watcom compilers to the new ones. May 21st, Mr. Hevia raised the subject: "But what about DISLIN? OK, the users now have a collection of plotting programs, but batch mode ATP plots are more direct: from factory to home." Your Editor agreed : "It would be nice if Dr. Michels, the DISLIN

author, might make DISLIN free for the new, free Watcom compiler as he did for GNU. If you ever hear anything, let me know. I have no such news thus far. Maybe one free version is enough for Dr. Michels." But it seems that there already is more than one. Mr. Hevia had the last word: "There are Borland and LCC free versions (both free C compilers)."

News About TACS and MODELS

A Type-27 TACS source is defined by MODELS as first explained to others in E-mail of the EEUG list server dated January 17th. This was two days after a message by Guilherme Sarcinelli Luz of Furnas in Rio de Janeiro, Brazil, asked: "3) Is it possible to await an improvement in TACS to read a variable that comes from MODELS without need to pass it through the network, just as MODELS already can read variables from TACS?" Your Editor was receptive immediately, with the new Type-27 TACS source being the result. Note similarity to the new Type-69 supplemental device. Neither offers new modeling. Instead, each is a convenience for TACS users; each saves dummy nodes of the electric network. Not only is data clearer conceptually, simulation should be faster. For an illustration, see the 4th and 6th subcases of DC-30. One Type-27 TACS source was added to each of these data sets on January 17th.

MODELS BEFORE TACS (MBT) is a new optional request that has meaning (i.e., consequence) if and only if data involves both TACS and MODELS. The request can be added to any data, but it will have an effect only if both TACS and MODELS are being used. The effect, of course, is to have the computation of MODELS precede that of TACS at any given time instant T. Recall, the coexistence of TACS and MODELS in the same data case was announced in the July, 1995, issue. At that time, after discussing the matter with your Editor, BPA contractor Laurent Dube decided that the computation of TACS should precede that of MODELS. Of course, Dube had provided for TACS input to MODELS (e.g., see the 4th subcase of DC-30), so it made sense that a TACS signal should be fresh at the instant of its use. However, if information is to flow in the reverse direction (from MODELS to TACS), then the 1995 decision is less than logical. The MBT request is your Editor's attempt to correct this bias, with operation demonstrated by the 4th subcase of DC-30 beginning January 17th. The interested reader is encouraged to compare results both with and without the MBT request. The solutions differ, of course. With your Editor's addition of the Type-27 TACS source, information can flow in both directions. As a result, there is no right answer. One alternative for control system modeling must be favored by being last, and as a result, the other alternative necessarily is penalized by being first. It is a zero sum game. There is no free lunch.

"KILL = 189. Duplicate TACS names ..." is an error message that was restored by means of a change to GUTS2B on February 3rd. Standard test cases were unaffected. Why restoration was necessary no longer is remembered. For some reason, your Editor wanted to bypass the trap on 16 October 1997, when the protection was commented out. A warning message remained for each pair of duplicate names, however (it is not as though the user was completely unprotected). Anyway, late in January, your Editor noticed one of these warnings following a mistake that he had made with data. He then decided that restoration of the trap would make sense. Any user who has any reason to believe otherwise is asked to submit simple data that supports his position.

Mingw32 ATP has replaced Watcom ATP for that burdensome simulation at UPC in Barcelona, Spain. This is for Prof. Juan Martinez and students as mentioned in the July, 2002, issue. Elsewhere in the present issue, the reader should find mention of a conflict between dynamic \$DISABLE and a \$PARAMETER block. Following correction for Prof. Martinez, your Editor inquired about the desired translation. Your Editor had offered an updated copy of Watcom ATP, but Prof. Martinez replied as follows on February 19th: *"Rather than the Watcom version, we want the Mingw32 version prepared for compiling and/or linking external routines. We have developed during the last three months several routines using TACS or MODELS. Both options are very (very) useful to expand capabilities and above all to speed up the simulations."* Two days later, user-supplied source code was mentioned: *"In the end, there was no choice. Our cases were using the computer for so many hours that we had to reduce the time. Since both TACS and MODELS were very important in our cases, the best way to achieve a time reduction was to compile. And we have used compiled routines with both TACS and MODELS."*

Web Surfing & Publishing at Home

Your Editor's use of BPA's connection to the Web ended March 26th following an inquiry by the BPA computer police. It seems that BPA had summarily outlawed all non-essential use as part of its contribution to the War on Terror, and your Editor had not paid attention (specifically, had not changed his Web surfing habits). So, an alternative to BPA suddenly was needed. The remainder of this story summarizes the adaptation, which includes a significant expansion of computer capability at home. ATP documentation should be improved as a result.

A small computer shop exists some six blocks down the street, as your Editor has known for years. After talking with Comcast (see mention elsewhere), your Editor's next stop was Bits N' Bytes Computer Systems. This was to inquire about the cheaper telephone alternative to cable. As your Editor had guessed, a faster modem (56 Kbit/sec) was

recommended. What your Editor had not anticipated was this: for \$99, he could purchase a used, 133-MHz Pentium-based PC that included the 56K modem, Windows 98, 32 Mbytes of RAM, a floppy disk, a CD reader, and two 850-Mbyte hard disks. The extra memory is important because it would allow support for the F95 Lahey compiler (never before used at home because that 1996 PC from Szymanski had only 16 Mbytes, which Lahey said was inadequate). Suddenly, your Editor owns two 133-MHz Pentium-based PCs. He now is using both Win95 and Win98.

Repetitive blinking of the hard disk light of your Editor's Win 95 PC was mentioned in the October, 1995, issue. Well, this Win 98 PC demonstrates less such behavior. With no user-initiated process running, blinking of the hard disk light is infrequent --- maybe an average of once every ten seconds or so.

Initial Internet access is being provided by *Pacifier* as recommended by the computer shop. Your Editor's problem was simple. Looking in the Yellow Pages of the telephone book, there were dozens of choices. Which ones were reasonable? Your Editor had no idea, and did not want to learn experimentally. So, he followed the advice of the computer shop. Besides, the name *Pacifier* was not new. The April, 1994, issue has a paragraph that mentioned this pioneer in Vancouver, Washington. Well, nine years later, many details have changed. The former *Pacifier Computers* has become *Pacifier Online*, and local numbers for modems are provided in 13 distinct cities including Portland and Seattle. Today, there seem to be more locations in Oregon than in Washington. Whereas nine years ago the top speed mentioned was 14400, today all modems are 56 Kbits / sec or faster. Service should be good, and economics seem reasonable, although not the cheapest. *"Standard IP (SLIP/PPP)"* service of 14 hours / week is priced at \$125 / year. But your Editor was not sure that he wanted a year, so for \$40 he purchased an average limit of 2 hours/day for 3 months. After 3 months, the situation will be re-evaluated.

The telephone line was provided by the monopoly regional telephone company. Using its original name *U.S. West*, this *Baby Bell*, a descendant of *Ma Bell*, had for years acquired a bad reputation for service. The easiest way to solve this problem seemed to be a change of name --- to Qwest. So, your Editor now rents a standard voice telephone line from Qwest. However, readers are advised not to try to telephone. Except for rare times when your Editor might telephone some other number, the line should be connected to your Editor's computer. An incoming telephone call typically will not be answered.

The decision to use a telephone line rather than cable was based on an erroneous assumption. Your Editor had reasoned that the installation of cable would have been more disruptive. After all, a workman with a drill and a saw would require access to your Editor's living space. On the other hand, telephone wiring already existed, so Qwest

should have been able to provide the service without entering. That was the theory. The practice was quite different. After the initial Qwest installation failed quickly (no dial tone), investigation by the local maintenance guy, Alex, revealed excitation of the telephone wires by the power wires. Yes, a small transformer had for years been supplying 6-8 volts until it was removed by Alex. Then, eventually (6 days later), Qwest reconnected the circuit, and operation has been flawless ever since.

A 20-inch color IBM monitor was your Editor's next major acquisition from that computer shop. Used, this was acquired for \$189 on April 29th. Most important was free assistance delivering the monster (two persons are needed to carry it up stairs). Your Editor's new monitor provides another good reason not to do ATP documentation at BPA. The view should be better at home. Size is comparable (in PPOC-2, Dr. Liu has a 21-inch monitor, but at Dittmer she has been provided with a 19-inch display), and lighting should be much better. The chair also should be better.

Other great purchases from that computer shop include a keyboard for \$10 and a mouse for \$1. This was after your Editor decided to set up his new PC as an independent installation in a different room. Not only does this make easier the backup of files, it avoids an encumbering cable to a distant telephone jack.

WordPerfect 2002 for \$20? This was your Editor's discovery May 17th as he searched the Web for a cheap source. What a difference 13 years make. The April, 1990, issue began with an explanation of the new WP 5.1 program that then had been acquired : *"The user group's new software was not expensive, it should be emphasized. WordPerfect Version 5.1 was purchased locally for \$199 whereas the fonts were purchased by telephone and VISA card for \$100 ..."* Today, fonts are part of the product, and it costs 1/10 as much! Not only that, in fact it is the Corel suite of programs, named Office 2002, that today can be purchased for \$20 from **Softwareoutlets.com** Included are : *"WordPerfect® 10, Quattro® Pro 10, Corel® Presentations™ 10, CorelCENTRAL™ 10, Paradox® 10, Language Module, Microsoft® Visual Basic® for Applications, ..."* About impact on the PC : *"16 MB RAM (32 MB recommended), 150 MB hard disk space (250 MB typical install), CD-ROM drive."* So, this is the plan for future Rule Book writing. More than your Editor's Web surfing is expected to leave BPA.

Question : Will your Editor tolerate 56 Kbit/sec for 90 days? After using broadband for years at BPA, your Editor suddenly appreciates how the loading of some Web pages has been slowed by graphics. The 56K baud seems fine for most file transmission; even 9600 baud was (recall that report about use of HyperTerminal in the October, 1996, issue). Unfortunately, many Web pages load slowly because of graphics. As this issue is being readied for pre-publication review on May 23rd, your Editor continues to think hard about the cable alternative. He does not like the

price, and objects to the monopoly; but he is envious. In addition to the issue of speed of transmission, there is the delay of connection. Pacifier always has been available. However, compared with Agora, the connection is slow. Whereas Agora typically might have required 30 seconds, Pacifier typically requires between 1 and 2 minutes. The dialing and verifying phases are only half of the problem; the final *"logging on to network"* phase is the longest. Maybe that was an advantage of Agora : no network ! Anyway, a cable modem would provide a permanent connection (as long as the PC is running), of course.

Brain - Damaged MS Windows

More evidence of the incompatibility of MS Word with itself resulted from recent discussion of the ambiguity of a Type-91 TACS source (see mention elsewhere). Francisco Javier Peñaloza Sánchez had attached a 197-Kbyte MS Word file of explanation (1 of 13 files in a 140-Kbyte archive), but your Editor was unable to view this at home. In E-mail dated April 23rd, he wrote: *"As I had suspected, Word 7 failed to open your .doc file. More precisely, it opened it as text. Yet, either this way or using LIST, I could read the text."* The response later that same day was: *"By the way, I saved the original file in Word 6.0 format and it is 7.3 MB, and 14.8 MB in RTF format !!!"* Yes, bloatware is as bloatware does.

"End of the line for Windows?" This is the intriguing title of a column by John Dvorak that was found at www.pcmag.com (the Web site of PC Magazine). Dated April 1st, this begins: *"Microsoft is making a lot of noise about the next version of Windows. ... The upcoming Windows is code-named Longhorn ..."* An MS spokesman *"hints that Longhorn will be written from scratch. Nobody believes this, of course, but can you imagine if it were true? The product wouldn't come out until 2010 --- if then. I doubt that building an OS from scratch is even possible nowadays, so Microsoft will be lifting whatever it can. The problem is that if you piece together odds and ends, the inner workings of the OS can't be fully understood."* Hence the conclusion that security will continue to be a problem: *"You can't make something secure when you don't know how it works."*

EMTP Newsletter or EMTP News

The average reader has no easy access to past issues of the first newsletter dedicated to EMTP. This is a reference to *EMTP Newsletter* as first published by Prof. Hermann Dommel of UBC (the University of British Columbia) in Vancouver, B.C., Canada, beginning in July of 1979.

The publication began as a newsletter, but it evolved into a journal (typically 100 pages per issue by 1990) that was published by the Leuven EMTP Center (LEC) in

Leuven, Belgium. The name change occurred at the end of 1987, as Prof. Dommel was disassociated from the publication (at the time, he had been a co-Editor). Prof. Dommel wanted to keep the name *EMTP Newsletter* for his own possible use, so Prof. Daniel Van Dommelen of LEC agreed to drop the *letter*. Once commerce-conflicted Prof. Dommel was out of the way (see STEER01), ATP news appeared in volume beginning with the March, 1988, issue. All was well for several years as LEC prospered. But then, late in 1992, the LEC Steering Committee discovered inconsistencies in LEC finances (among other things), and Prof. Daniel Van Dommelen and LEC Manager Guido Empeureur seemed unwilling or unable to account for substantial sums of money. As described in the July and October, 1993, issues of the Can/Am newsletter, LEC was shut down at the end of 1993. Unfortunately, *EMTP News* died along with LEC.

Orlando Hevia of UTN in Santa Fe, Argentina, already has done such work (scanning). In E-mail dated April 10th, he wrote: *"I recall a paper by Prof. Riedel about zig-zag transformers. I have a paper copy, and it is yellow with age ... I scanned it, and it now is available in PDF format from the EEUG site. Prof. Riedel agreed, with one condition: that I send him the Spanish translation."* Mr. Hevia seems ready: *"I have hardware and software to scan paper copies to PDF format; and more important, I have time, too."* The following day, your Editor's enthusiasm was dampened by the potential legal problem: *"I see two problems: 1) lack of permission; and 2) possible lack of a quality paper copy (so scanning is good). Anyway, I like your idea. I wrote the story because I believe we all should think about this, and discuss it. But I continue to worry about legal permission."* Is there any alternative to an attempt to obtain the approval of individual authors one at a time? What would be done if an author could not be located? The thinking continues.

The problem of access again was raised on February 25th when E-mail having *"Subject: Paper search"* was received by the user group via its canam@ mailbox. This inquiry was from Francoise Vancaster of the Interlibrary loan department of *Bibliothèque des Sciences exactes* at *Université catholique de Louvain* in Louvain-la-Neuve, Belgium. She was looking for a particular paper that appeared on pages 28-40 of the 1983 issue. Your Editor responded as follows a day later: *"That is the good news: we have a paper copy somewhere. But the bad news is that this paper pre-dates publishing that relies on computers. I do not have a PDF copy, for example."* It should be explained that Louvain is the French name (Leuven is the Dutch name) of the ancient city, so Louvain-la-Neuve means *New Leuven*, in effect. Some decades ago, the nearly 600-year-old university split due to linguistic antagonisms. The French-speaking half was expelled to a new campus not that far away. Of course, in his response, your Editor mentioned LEC: *"the journal that you seek was published within the Electrical Engineering building of K.U. Leuven, adjacent to the 16th-century chateau*

d'Arenberg a Heverlee. Those people ... must have kept a paper copy. ... I probably should write something about your request for our own newsletter ... Except for the potential legal problem, I would like to scan paper copies of 'EMTP Newsletter' and 'EMTP News' optically, and make bit maps available on the Internet. I have had this ambition for many years."

New EEUG List Server

Partial (in fact, nearly empty) E-mail messages from the Web form were yet another unforeseen complication that first was observed on February 2nd. After the boiler-plate line ("Below is the result ..."), there were just 2 lines prior to the ending separator line (a string of minus signs):

Form submission date and time: Monday ...
Name: xxxxxxxx

For publication, the real "Name:" has been hidden for security reasons. Of course, the message was shown to Laszlo Prikler, who seemed as mystified as your Editor. On February 4th, Prof. Prikler wrote the following about the just-shown name: *"This is the login name for Can/Am users of the EEUG secure Web site. I wonder why someone tried to use it as his/her own name."* Finally, your Editor observed: *"Yes, it almost looks as though the person forgot where he was, and started to give his password. My only question was this: why would the Web form submit incomplete information? I thought Mustafa required that every data field be filled. Strange."*

A change of E-mail address without the knowledge of the user? This seemed to represent another strange variation of that story about the detrimental complications of aliases. For background, read the paragraph about Daniel Durbak's trouble with aliases at PTI in Schenectady, New York, as summarized in the July, 2002, issue. Mr. Durbak knew his current address, but not his old, registered address. The reverse of this seems to have occurred at Dow Chemical in Houston, Texas. Bill Veerkamp knew his old address, but not his new (current) address! He told the story this way in E-mail dated February 13th: *"We discovered that my registered list server e-mail address ... was just an alias, and that unbeknownst to me, Dow changed my actual e-mail address to ... Well, when I finally tried to post a message to the list server today, my message was rejected. I have submitted a new electronic license with my new e-mail address and mailed the hard copy via snail mail today."* About disconnection of the old after the new subscription becomes effective, your Editor was skeptical. On February 14th, he wrote: *"I do not have the power. Furthermore, neither do you, if I have understood the reason for your rejected posting. Normally I inform a user how to de-subscribe using SIGNOFF. But I have to believe that this would fail for you. Maybe I will need to write to Michael especially about you."* As for informing others, your Editor reasoned: *"Time for another paragraph with your name in a future newsletter. PTI is not alone; and if PTI and Dow are playing such games, a lot of other companies may not*

be far behind. This could be a big problem, all right. The old problem was simple, and user caused: a user would switch from one online service to another. That was clear. The new problem is insidious." About the rejected message, your Editor proposed special service: *"Send me your contribution and I will post it for you."*

IEEE Explore is the name of a Web-based search engine for IEEE papers. This was learned from IEEE member Laszlo Prikler in E-mail dated March 26th. A subscriber in Turkey had attempted to ask for a copy of an IEEE paper using the EEUG list server: *"My question is not related with ATP, but could anyone help me for obtaining the paper entitled ... (especially in PDF format)." There is a rule prohibiting such requests, and Prof. Prikler was no more tolerant than your Editor would have been. Yet, he chose a more general reason for rejection: "ATP relevance is required. Your posting can not be approved."* About alternative ways to obtain a copy: *"1) Visit the library of your University. 2) Visit IEEE Explore (<http://ieeexplore.ieee.org>)." About PDF format, Prof. Prikler advised: "I do not think that such an old paper would be available in PDF format. My search for author H. Akagi resulted 114 hits in IEEEExplore. The latest one dates to 1988." This was among moderators. Your Editor commented privately to Prof. Prikler about changing times: *"How soft life has become. In the old days, there was only paper, and even photocopy was expensive and poor. Today, researchers want copies free of charge and at the speed of electricity (fast)!"**

Nearly 3 years after replacement of the Fargo list server by the EEUG list server, some subscribers seem not to have noticed the change. Dated April 2nd, consider this E-mail to canam@emtp.org from a theimo.com mailbox: *"My email address changed recently and I do not have any success thus far to become part of the list server again. I forwarded an email to bamork@mtu.edu and I went through the licensing process with the new email address, but so far no success. Do you have any suggestions?"* Can/Am Co-Chairman Tsu-huei Liu did, the following morning. She wrote: *"bamork@mtu.edu is not the place to process an ATP license application ... re-license by visiting the website www.emtp.org ..."*

Monte Carlo (STATISTICS)

KIZILCAY F-DEPENDENT modeling (KFD) did not participate in ATP table dumping or restoring prior to additions to TABLES, HANNFD, and SUBTS2 on November 16th. This was another discovery following that initial report of overflow by Ricardo Tenorio of ABB in Vasteras, Sweden (see first mention in the January issue). Success first was demonstrated using disk file KF2.DAT However, as a variation of KF4.DAT, this, too, was proprietary data, so was unavailable to others. In order to document continuing correct operation, your Editor

constructed a new, artificial, 4th subcase of DC-48. This was November 27th. The data used here is the same as will be found in the 7th subcase of DC-23. Step size $dT = 100$ usec is plenty big, so there is no question of instability caused by roundoff error (although roundoff error might be significant). A switch was added in series with the voltage source, and the associated mean and standard deviation were arbitrarily selected to give a nice distribution of 4 energizations. The source angle was rotated so that the voltage upon closure is small. I.e., the closures are artificially soft, intentionally, so the base case plot has no big spike at 4 msec.

ATP Licensing Problems

Z Systems Inc. of Winnipeg, Manitoba, Canada, seemed to inquire about details of .PL4 files. The initial message from George Wai on March 21st had *"Subject: EMTP protocol."* He asked: *"I am trying to find the latest EMTP file protocol. Could you help me? If not, can you connect me with anybody who is up to date with the most current revised version of the file format."* The following day, your Editor responded: *"Input data file? Output signal file? We do not use the word 'protocol' for any of our documents. ... The word 'format' we certainly do use. There are many input data formats and several output file formats. None of this is available to the general (unlicensed) public, however. I note that you do not mention that you are an ATP-licensed user. ... You write EMTP rather than ATP or ATP-EMTP (Prof. Mork's invention of a decade or more ago). You must realize that commercial EMTP is licensed by EPRI in Palo Alto, California. ATP developers have nothing to do with this product."* About location, your Editor observed: *"Historically, Winnipeg is a suspicious location for inquiries about ATP because of proximity to EMTDC. It is not obvious to me how independent Z Systems Inc. is from EMTDC. I have connected to your Website and I see explicit mention of EMTDC."* March 24th, Mr. Wei clarified: *"we are an independent company with business ties to the HVDC Research Centre. Our 'post analysis' program LiveWire can be used as a complimentary tool to PSCAD. ... we are experiencing a growing need by users for LiveWire to read in EMTP output files. It is for this reason that I have contacted you. We have seen other public software programs that can read in both EMTDC and EMTP files and we would like to also incorporate the same ability. Is there anybody I can contact regarding details on how we can accomplish this?"* Your Editor was not very helpful. The following day, he wrote more about location: *"It remains to be seen how independent. I could not locate any information about company ownership at your Website. Neither could I locate any information about exceptional licensing that you might have performed. The real test would be how you behave, not what you claim to be."* About proposed compatibility: *"We could think about it. But I doubt that we would think*

very hard. Why should ATP users and developers be interested? We understand that your company wants to make money, but that provides absolutely no motivation for us. ... Unless you can imagine how the average ATP user would be helped, why waste your time?"

Comings and Goings

Salon seems to be another prominent loser among Internet businesses. While not a big fan, your Editor did occasionally read Salon (e.g., *Salon News* is mentioned in the April, 2000, issue). Well, the tombstone for Salon is being carved. "Web magazine facing failure" is the title of a *New York Times* story dated February 14th. "The Salon Media Group, the online magazine publisher, warned today that it might not survive beyond this month ... Things are so bad, Salon said, that it stopped paying the rent for its headquarters in December, prompting the landlord to issue a demand last month for a \$200,000 payment." Salon is yet another technical success, but a business failure. Time seems to have run out on the experiment : "The company said it lost \$1.2 million during the final three months of 2002, bringing its cumulative deficit to \$81 million. Unable to drum up enough advertising to pay the bills, Salon started charging subscriptions to read some of its stories in 2001. The company began charging fees for all its content late last month as part of its last-ditch survival effort. As of Dec. 31, Salon's site had 47,300 subscribers."

"Adam Osborne, pioneer of the portable PC, dies at 64" is the title of a story in the *New York Times* dated March 26th. This obituary summarizes how "a British technical writer ... became one of Silicon Valley's legends by introducing the first portable personal computer in 1981 ..." Born in Thailand, Dr. Osborne died in India, where he had grown up, following "a series of strokes in the last decade." About history: "The Osborne 1 computer, which was introduced at the West Coast Computer Faire in June 1981, was a 24-pound luggable machine that came with a large library of essential software, including a word processor, spreadsheet, database and programming languages. At the time, it was a startling innovation in an industry that was dominated by a do-it-yourself hobbyist culture." Remember, readers, this preceded the IBM PC (see the October, 2001, issue). This was revolutionary : "The machine created a sensation in the rapidly growing PC marketplace, even though it came with a cramped five-inch display screen. ... The Osborne Computer Corporation in Hayward, Calif., became synonymous with the Silicon Valley tradition of hypergrowth defined by companies like Apple Computer and Atari. Orders for the Osborne 1 totaled 8,000 in 1981 and jumped to 110,000 in 1982. At one point, the company said that it had a 25-month backlog of orders." So what went wrong? The enduring lesson has to do with not

announcing improvement too quickly : "In 1982, Dr. Osborne ... prematurely announced the second-generation Osborne, called the Executive. When the company encountered manufacturing difficulties, it found itself drowning in inventory as customers deferred purchases of the original machine in expectation of the new one. The computer maker became an iconic symbol of Silicon Valley's boom-and-bust economy on Sept. 13, 1983, when it declared bankruptcy ..." Yet, Osborne had other problems, too: "Several industry experts have said the company's collapse had as much to do with its failure to jump quickly to a 16-bit microprocessor and I.B.M. compatibility." Curiously, Osborne was not a computer scientist by training: "Dr. Osborne moved to England as a teenager and received a degree in chemical engineering ... He later received a doctorate in chemical engineering at the University of Delaware and took a job with Shell Oil in California. In the mid-1970's he became a computer hobbyist and began self-publishing on computing. In 1979, he sold his small publishing company to McGraw-Hill and used the money along with venture capital to found Osborne Computer in 1980." What a story. Of course, Delaware is an American state.

Gerard-Andre Capolino, last mentioned in the April, 2000, issue, remains at the University of Picardie in Amiens, France. However, organizational responsibilities have changed once again. E-mail from him dated April 26th ended with an indication that he is "Vice-chairman of the IEEE France Section, Chairman of the Chapter IAS/IES/PELS." Your Editor wondered how this could be, considering Prof. Capolino's previously-documented responsibilities as Dean. The answer seems simple: Prof. Capolino has passed the burden of being Dean to someone else, and now has "too many responsibilities in IEEE and also in different French National Institutions." Dr. Humberto Henao (see the April, 2000, issue) also was mentioned. Dr. Henao continues to be "the main user and expert in the group."

Power Company Politics and Religion

"OMB rates BPA" is the title of a SPECIAL REPORT in the February 7th issue of BPA's *Hot Issues* newsletter. Here OMB indicates the Office of Management and Budget of the executive branch of the federal government, so the rating should contain what the White House of George Bush wants. BPA's very first explanatory sentence must seem ominous to BPA supporters : OMB "sees agency as moderately effective ..." Might BPA really be sold? This is a half-century old idea of Republicans that dates to the Eisenhower administration (see the July, 1999, issue). The assessment of OMB is quoted by BPA as follows : "Bonneville's score is reduced because the program does not make a unique contribution to addressing a problem in the industry, and its power allocations, by law made on a preference basis to a special class of customers, are not optimally designed. Developing power rates and customer

allocations under its legal requirements often takes years and is an inefficient (it does not offer power to bidders) and burdensome process. ... The generation and transmission of power is a well-developed technology. This function could be performed under contract or through non-federal ownership of transmission lines and generation capacity at the dams."

Additional borrowing of money by BPA has been severely criticized by Y2K Republican Presidential candidate (loser to George Bush) John McCain, Chairman of the powerful Senate Commerce Committee. According to BPA's *Hot Issues* newsletter dated February 14th, Sen. John McCain *"called for a 'top-to-bottom' financial and management audit of BPA."* According to BPA, in *"a statement distributed by Taxpayers for Common Sense and Friends of the Earth,"* Sen. McCain stated: *"it seemed pretty extreme to add \$700 million to its \$3.75 billion in current borrowing authority ... The more I've learned, the more I realized that Bonneville has a terrible record of fiscal accountability and is facing a financial crisis of its own making."* Perhaps, for persons who do not blame God for their troubles (see the October, 1996, issue). Nonetheless, BPA's artificial economics are expected to continue this year : *"Congress approved an omnibus spending package ... It includes a \$700 million increase in BPA borrowing authority. The bill is expected to be signed by the president."*

Before leaving Dittmer, BPA's Dr. Tsu-huei Liu, along with her temporary crew, was forced to move within Dittmer. This was between the afternoon of April 30th (when all possessions needed to be packed in boxes) and the beginning of May 5th (when boxes could be unpacked once again). Changes include the connection of a blue cable to the 486-based PC, which previously was an island. Big Brother now is watching this PC, too?

Publishing Programs and Viewers

Weaknesses of spelling checkers last were discussed in the July, 1999, issue. Your Editor remains convinced of usefulness, although caution certainly is required. Finally, your Editor noted a formal study that documents the problem. An *Associated Press* story that was found at the Web site of *ABC News* has title: *"Study: spell-check can make writing worse."* Dated March 14th, the summary conclusion is: *"Spell-check software often worsens good writing because writers rely on it too much."* The study came from the University of Pittsburgh, and it seems to document the problem of psychological intimidation that victimized Dan Quayle during his term as American Vice President (1989-1993). Remember *"potatoe"* with the extraneous final letter? Prof. Dennis Galletta explained that *"spell-checking software is so sophisticated that some have come to trust it too thoroughly."* He is quoted as saying: *"It's not a software problem, it's a behavior*

problem." In Dan Quayle's case, he trusted the answer that had been given to him by a teacher at a public school.

Creation of the Adobe PDF-formatted copy of the April issue required substantial work. March 2nd, your Editor wrote to Prof. Prikler: *"Incidentally, I believe the newsletter is ready to be published. Unfortunately, I am 5 miles away from the 90-MHz Pentium that supports Adobe Distiller. It may take a day or two to figure what to do with the PS file."* Prof. Prikler offered assistance, so, your Editor sent his PostScript (PS) output of MS Word, and a PDF version was created. Unfortunately, it was substantially larger than for previous issues. March 4th, your Editor documented the unwanted growth: *"Not good. MS Outlook shows that your message has an attachment 'APR03.PDF (230 KB)' ... From years past, I note :*

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03/13/2000 04:26a 158,188 APR00.PDF
02/21/2001 06:15a 158,551 apr01.pdf
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To keep the file small while at the same time making a minor correction, I think I probably should make a trip to PPOC-2 (where the P90 has remained)."

Laszlo Prikler's searchable archive of Can/Am newsletters (see the April issue) will **not** be made available to the general public. Following Prof. Prikler's mention of the possibility in list server mail dated April 23rd, your Editor wrote to express his disinclination : *"Why help the commercial competition by making searches of our newsletters easier for them? We already have given them the information. If they have trouble remembering it, or finding items in our numerous publications, that is their problem."* About Prof. Prikler's creation, the list server had explained : *"Besides the new apr03.pdf, the file ALL_INDEXED.ZIP (9.3 MB) is also new ... This larger file includes all issues of EMTP News from Sept'88 to Jan'03 and the corresponding index files for the 'Search' tool of Adobe Acrobat Reader."* After Prof. Prikler had agreed to keep his searchable archive unavailable to the general public, your Editor had the final word on April 24th : *"I think this makes sense. It adds value to ATP licensing at no cost to us."*

The sad story about Adobe Acrobat Distiller continues. For the April issue, more than 6 weeks of delay resulted from inability to log the BPA computer in. Finally, the job was passed to EEUG, and Laszlo Prikler announced availability in list server mail dated April 22nd. Not mentioned by Prof. Prikler is the excessive file size (note the input file is identically the same size as a year ago) :

```
04/10/2003 07:29a 152,064 apr03.doc
04/22/2003 05:54p 236,506 APR03.pdf
```

It would seem that newer is not necessarily better. As your Editor observed to Prof. Prikler a day later: *"Bruce Mork once used the term 'bloatware' to describe some Windows programs, and here we see that the term applies to program output as well as the program itself."* The output certainly is bloated, and for no obviously good reason. Certainly Prof. Prikler tried hard enough: *"I tried several options like e-book, press, print quality of PDF,*

thumbnails included or not, all fonts embedded or not, but the file size was almost around 230K."

Rotating Machinery Modeling

Troubled starting of an induction motor, modeled as a Type-3 U. M. with prediction, is the subject of new subcases 3, 4, and 5 of BENCHMARK DCNEW-1. The additions were made April 18th using data from Gabor Furst of suburban Vancouver, B.C., Canada. In E-mail dated April 8th, Mr. Furst wrote about the problem (divergence of the iteration for speed on step 3): *"This is not a new problem, a number of people including G. Corwin Alexander found the same thing. It was reported recently by Ilkka Leikkonen. I talked to Hian Lauw about it when he called perhaps two years ago. Finally, Juan Martinez made similar comments when I saw him at the IPST meeting in Hungary."* So, subcase 3 illustrates the KILL = 91 error termination on step 3 whereas subcase 4 shows that a switch to compensation (the only change) solves the problem, and leads to a perfectly smooth acceleration to the steady state. Finally, subcase 5 documents Mr. Furst's discovery that prediction can be used provided a simple modification is made. Comment cards document the details.

A stub line that is independent of time step was the inspiration of your Editor as the isolation of U.M. compensation was discussed with Gabor Furst of suburban Vancouver, B.C., Canada. Stub lines have more than one disadvantage, and Mr. Furst had mentioned perspective of BPA's EMTP Theory Book: *"It continues to say that such stub lines create their own problems without specifying what such problems might be."* Your Editor responded as follows on April 20th: *"This is believable. It is hard to be specific without reference to particular data. Dependence on dT is a nuisance at best. But we might think about automating the scaling. Dr. Olav Einarsson of ASEA Research suggested such assistance during the mid-to-late '80s, but that may have been limited to series R-L-C, for damping. We were not thinking of stub lines at that time. But why not? The user would supply his data for a particular dT, which would be declared. ATP would scale the data appropriately if DELTAT disagreed with the declared step size. Why not? It would be easy. The simple addition of 'Stub line ...' ... on the 1st phase would be an easy and unmistakable flag. Of course, the action taken would be to make the line length proportional to dT. ... It would be the user's responsibility to pick the right length for the declared time step (50 microsec). All ATP would do is scale this length for any other time step."* Two days later the required changes were made in INDIST. For an illustration of use, see the new 6th subcase of DCNEW-1, which was added April 23rd. There are some restrictions as mentioned on comment cards. As originally received from Gabor Furst, dT was equal to 5 usec, and each of the two stub lines (one for each of 2 parallel induction motors) has a

travel time of 6 usec. Yet, dT was increased by a factor of 40 (dT = 0.2 msec) without difficulty, and without much change to the transients of energization.

Roundoff error of the U.M. was altered May 15th when variables SROOT2 and SROOT3 (the square roots of 2 and 3, respectively) were removed. Since Hian Lauw's original installation more than two decades ago, these constants have been standardized in non-U.M. code. It made no sense for the U.M. to continue to use slightly different values, so the two U.M. variables were replaced by the standard values assigned in SUBR1. The following UTPF segments were affected: UMDECK, UMDATA, UMRENU, UMRNU3, and SOLVUM. Standard test cases affected were : DC-35, DCNEW-1, DCNEW-2, NEW-9, NEW-10, NEW-12, NEW-16, 18, and 20.

\$PARAMETER and PCVP Loop

\$ENABLE is paired with \$DISABLE to delete a block of data. In theory, these should be insensitive to case. But while testing the BUENO data from CFE (see mention elsewhere), \$disable (note lower case) was used by your Editor, and found to work whereas the following \$enable (again, lower case) was **not** recognized. May 2nd, CIMAGE and OVER1 were changed to correct this problem as well as a comparable one with some other key words (more than just disable/enable had previously required upper case). Logic is not yet perfect, but it is improved. Why two subroutines rather than just one? Because Prof. Juan Martinez, not the user, might create the data. This would be internally, during execution of a PCVP loop as illustrated by the 1st subcase of DCNEW-2. Many standard test cases have used \$ENABLE for many years, but all were upper case prior to modification of the 3rd subcase of DCNEW-9 on May 3rd. It is this one subcase that now serves to confirm the changes to OVER1 (applicable to external data). Using old code (without the change to OVER1), new DCN9.LIS does not change much. Mike Albert's freeware FC compares 3 lines of the new with 2 for the old. But details are important. An old program will result in an *"Input data exhausted!"* message. Of course, this is wrong.

Required uniqueness of parameter names within 6 characters can be found in the 12th and 13th subcases of DCNEW-25 as first mentioned in the April, 2002, issue. That 12th subcase clearly demonstrates the discovery of Prof. Juan Martinez: trouble using variables BLOCK_A1 and BLOCK_A2 (not different through the first 6 bytes). Unfortunately, this illustration might give the user a false sense of security. For this data, ATP **does** detect trouble, and an error termination (KILL = 4) was the result. But could the user rely on such automatic detection and termination? Apparently not. May 2nd, your Editor received an illustration to the contrary from Ricardo Tenorio of ABB in Vasteras, Sweden. Eventually (on the

third serious try, days later), your Editor left code for error detection within MATDAT. As work ends May 11th, DCNEW-25 has been modified by the addition of a new 17th subcase, which is a simplification of Mr. Tenorio's data. In E-mail dated May 5th, he summarized the original data: *"I've tried to simplify the case as far as I could. The case involves an EDM module designed to apply generic faults, i.e 1-ph, 2-ph & 3-ph, to a named bus."* Output of the 12th subcase has been changed, of course. In place of the former irrelevant KILL = 4 error message, one now reads the following relevant complaint: *"Duplicate name found in MATDAT. ... This is within a \$PARAMETER block. The 1st 6 bytes of 2 variable names are the same. ..."* Curiously, the biggest complication for standard test cases was with EATS as tested using RUNEATS.BAT. As explained on comment cards, the two uses --- BLOCK_11 and BLOCK_12 --- needed to be removed. So these two lines have been commented. The 17th subcase thus is a quite artificial.

Type - 91 or 93 TACS Source

UNIQUE TACS SWITCH (UTS) is a new, optional request that will prevent use of a Type-91 (for switch current) or Type-93 (for switch status) TACS source that is not uniquely defined. The story is old, having begun more than a quarter of a century ago when Laurent Dube decided to allow the specification of a switch using just one of its two 6-character terminal node names. When switches were searched to satisfy the connection, the first switch that was found (in order of data input) was accepted, and any second or later switch that might have touched the same node was ignored. Herein lies the possible ambiguity that finally is being addressed seriously for the first time.

For a small data case, there seldom was ambiguity about the desired switch. Even a large data case that was assembled manually as a single file typically was not a problem. But that was back during the '70s, when each node having unknown voltage was limited to a single switch. Generalization of switch logic came with the "M32." version of 1982 (see the August, 1982, issue of *EMTP Newsletter*), and this stressed Dube's assumption considerably. Suddenly, any node was allowed to have an arbitrary number of connected switches. Yet another challenging development was data modularization and sorting by class (see the November, 1983, issue of *EMTP Newsletter*). Data modularization (\$INCLUDE, or more recently, \$INSERT) might obscure the location of data, and "/"-cards to sort data certainly endangered the assumption that the first switch would be the desired switch. How many users understood the rules of "/"-card sorting well enough to be sure about the final order of switches? Finally, Dr. Hans Hoidalén (first mentioned in the July, 1992, issue) created ATPDraw to assemble ATP data, and this used "/"-card sorting extensively. Together with the associated graphics and icons, ATPDraw further obscured the order of switches.

The average user probably had no idea, and did not much care, either, about such details. Yet, whether the user realized it or not, the danger of switch mis-identification was very real.

The 6-character switch name could be used in place of a terminal node name, and this would remove ambiguity in the specification of an associated switch. This extension (component naming) dates to the early years of ATP (i.e., to the mid-'80s), and it certainly would solve the potential problem with Type-91 or 93 TACS sources. For illustrations of the reference to a switch by name, see DCNEW-21 or DCNEW-25 (search for SWT0). But how many users who assemble ATP data bother to name their switches? Not many, your Editor guesses. So, whereas switch naming might be a solution, it is a solution that is little used. It is believed to provide somewhat academic, rather than practical, protection.

Ambiguity of switch specification always will be signaled by means of a new warning message that began April 28th. As an illustration, consider Robert Meredith's DCNEW-15. There are 4 such new warning messages in the .LIS file, with the following being the last: *"Warning. A Type-91 or 93 TACS source is not unique. The A6 name SPRBRC is used by 2 or more switches. Row numbers ... follow: 3 16 19 22 25."* Otherwise, program output is unchanged. I.e., ATP remains compatible with the old, ambiguous data of years past (almost always the goal of both program developers and users). Among all standard test cases, only DCNEW-15 was found to be changed by addition of the new warning message. The new UTS declaration is mentioned on a comment card of the data, but otherwise is not used. To be continued.

Secrets of ATP Modeling

Possible secrecy of some ATP modeling was discussed in both list server and private E-mail dated February 13th and 14th. This was at the end of a discussion about arc modeling. Secrecy became an issue when Laszlo Prikler observed : *"The secondary arc model published in the above paper is not public. Prof. Kizilcay holds the proprietary rights to it. It would be nice to figure out a kind of 'technology' to support sharing of data files with proprietary information. Maybe we could have a new /SECRET request card in the ATP-file followed by a \$INCLUDE call that refers to a password-protected ZIP file of the model code inside. Of course, this is just a very early thought at present. But I am confident that having such a feature would encourage many of our friends working in industry to share their model with others."*

Orlando Hevia responded with a summary of existing installation-dependent alternatives that are available to any user. This was after Dr. Keith Walshe had mentioned TACS devices as a way to keep secrets : *"If the user*

compiles ATP (Mingw or Linux versions), he now has the possibility to share 'secret' models as objects (files .o), as libraries (files .a), using foreign subroutines or functions in MODELS, type 69 devices in TACS, type 28 sources in TACS, USRFUN or ANALYT sources in ATP, non-linear elements with USERNL, plus DLL libraries if he knows how to use them."

Laszlo Prikler responded by emphasizing the difference between a program developer and a program user: *"I have been the user of ATP-EMTP for more than 16 years, but none of the above 'tricks' would help me a lot if someone wished to share his 'secrets' with me, or if I wished to share my secrets with others. Playing with object and library files or USRFUN and ANALYT might be simple for Mr. Hevia, who maintains the MingW32 ATP on a day-to-day basis. Unfortunately, program developers necessarily have a different perspective from ordinary users. ... What is simple for him, could be very, very complicated for the rest (~99%) of the users."*

TCSC (Thyristor-Controlled Series Capacitor) is the acronym associated with secret ATP modeling one decade ago. It provides an interesting illustration of practical problems associated with industrial secrets as mentioned in the preceding discussion. Early TCSC secrets belonged to G.E. in Schenectady, New York, and no ATP developer ever was trusted with keeping them. The interested reader can find references in newsletters between 1992 and 1994 by searching for TCSC. Secrets were in code, and only G.E. had this. Whether secrets could have been buried in data never was learned. The missing code did not satisfy any standard ATP interface, either, it should be explained. TCSC modeling had been especially installed in ATP by G.E. at EPRI expense as summarized in the January, 1993, issue. Neither BPA's Dr. Tsu-huei Liu nor your Editor were involved in making this decision (see mention of BPA's William Mittelstadt). Whatever happened to G.E. TCSC modeling, anyway? Nothing has been heard on the subject since the mid-'90s. Note that final mention in the January, 1996, issue: *"That secret TCSC modeling ... appears to be increasingly irrelevant to the average ATP user outside of G.E. Who wants to simulate without knowledge of either the physical or the mathematical modeling that is being used? Why management at BPA ever agreed to this secrecy seems increasingly myopic, as time passes."* The frustration of your Editor should be evident. That first case of secret ATP modeling might not have been satisfactory for anyone.

TACS Definition of Series R-L-C

The new illustrative data in DC-38 includes extensive comments that begin with the following summary: *"The 3 disconnected cases are: 1) Series R-L with L fixed; R is ramped to a limiting value; 2) Series R-L with R fixed; L is ramped to a limiting value; and 3) Series R-C with R fixed; C is stepped (cut in half)." Color screen plotting*

demonstrates that results are believable. As an illustration, consider the first alternative, which ramps resistance R. A Type-91 compensation-based solution is compared with the TACS CONTROL solution, and the two curves lie almost on top of each other. Using Salford VGA graphics, one must look hard to find a red pixel (belonging to the first, covered curve). Also, this common curve becomes almost indistinguishable from the asymptote for time in excess of 15 seconds (the end of ramping). Graphically, results are nice and smooth and believable.

But what is the right answer --- exactly? What theory should be followed, and why? What associated variables or history should change along with the parameters of a series R-L-C branch? These were your Editor's questions of Mr. Hevia in E-mail dated December 27th: *"What should happen to the state variables (inductor current and capacitor voltage) during a change? Frankly, I do not know the answer. I really can not pursue differences unless we can agree on what should be done. Do we want to conserve state variables? Alternatively, do we want to conserve energy storage?"* Mr. Hevia's response later that same day follows: *"It is an interesting question. What if you have a real life variable capacitor (as used in a radio set), or inductor (like the devices used to vary light intensity or speed of a small motor)? About capacitance, we speak all the time about stored charge being $q = C * v$ and device current $i = dq/dt = C * dv/dt$. But when C changes with time, this should be $i = d(C*v)/dt = v * dC/dt + C * dv/dt$. But, what variable is more correct to conserve? It is a subject to think about."* Today, we simply are using formulas that were adopted and tested during the '80s for the SERIES command of SPY. At that time, variation seemed smooth enough, results were believable, and your Editor did not have time to think much about details. But today, in retirement, with more leisure, your Editor is more concerned. What could and should we want, and why?

TACS initial conditions for control signals are being ignored beginning December 29th, it should be explained. Prior to this modification, the TACS control signals were used on every time step, and that included step number 0 at time T = zero. But this represented a potential conflict with the parameter values on the associated series R-L-C branch cards. Believing that the R-L-C branch card is the more visible and obvious data, your Editor decided that values of the branch cards should be used as the simulation begins. TACS signals first will be considered on the first time step, at time T = dT. As a consequence, the user need be concerned about the associated TACS initial conditions only if he wants continuity at time zero (e.g., for plotting a control signal that includes time zero).

Rule Book in PDF Format

"ATP Rule Book in PDF format" was the "Subject:" of E-mail to list server moderators and one or two other

persons on May 7th. From Laszlo Prikler, this message sanely considered the subject that later would offer false hope to many. The story is long.

A PDF copy of the Rule Book was mentioned inconspicuously in the October, 2002, newsletter, it will be recalled (see writing about that ATP short course in Argentina). Eventually, discussion using the EEUG list server turned to this. First there was a question about the Rule Book in general (paper copy). Then, in a contribution to the list server that never was published (it had other problems), some subscriber had asked about a PDF copy. May 5th, Orlando Hevia reminded moderators of the Argentine creation: *"CAUE has a scanned Rule Book in PDF format. The Rule Book is dated 1987-1995, and includes some chapters from LEC."*

About the Argentine Rule Book files, Laszlo Prikler observed to moderators: *"Unfortunately the quality is not very good and chapters updated by EEUG during the last 10 years are not included in this PDF collection. So I am not sure if it would be practical to make it available on the EEUG secure site in its present format. ... If EEUG Executive Board supports the idea and gets Can/Am approval, I am ready to upload these files to the EEUG secure server. Please advise."* Of course, your Editor approved in theory, although he had some reservations: As for the scanned Rule Book being *"a good alternative to printer paper"* (Mr. Hevia's assertion), your Editor wrote: *"For distribution on a CD, I agree. For distribution on floppy disks, it would be hopeless. For distribution via the Internet, this might be useful if one has a very strong connection."* About agreeing to distribution via secure storage on the Internet: *"This was unthinkable 6 years ago, when last we considered the idea (remember Tom Field and FREEP). Maybe today, with broadband, it is possible. Using CD, it should be practical enough. Anyway, yes, I agree. I can not imagine what an objection would be."*

About total size, Mr. Hevia wrote: *"I am ready to send the files, a total of 67 MB (a small part of a CD, space is not a problem now)."* Your Editor responded privately: *"Yes, storage on a CD is easy. But can you imagine downloading this from the Internet? Maybe with luck, in the middle of the night?"* Finally, Prof. Tsuyoshi Funaki at Kyoto University in Japan issued the list server mail that excited the masses. This was May 7th: *"ATP Rule Book in PDF disk file (scanned from paper rule book) was made by CAUE staff. It was divided into multiple files and stored at JAUG secured HTTP site. The URL is as follows ..."* This was followed by Orlando Hevia's directory of 49 files, the largest of which is under 4 Mbytes. Several names involve LEC (e.g., the 1539-Kbyte Rb-04a-LEC.pdf).

Unfortunately, it is not obvious how new the information is. On May 8th, Prof. Laszlo Prikler made these relevant observations to an EEUG member: *"CLAUE staff deserves all credit for this ground work and I am sure they were working very hard to optically scan all pages of the ATP*

Rule Book. But we must not forget the natural limits of this technology: it is very hard to read these PDF files on the screen and the print quality is also very bad. This is a 'cost free' alternative for those having no access to the paper copy of the Rule Book distributed by the Can/Am and EEUG user groups. Taking it 'cost free' is also misleading of course. Even if the Internet access is cost free (download time of that 60 MB is significant) printing ~1000 pages is not cost free. Direct cost is ~50 Euro + ring binder + binding + your or your secretary's personal time + frustration of your colleagues while you make unavailable the network printer for them :>) As I understand it, your main interest is to get the updated sections. No one has stated that the PDF copy ... is an updated Rule Book." Once again, beware of the free lunch (remember California and its re-regulation of electric power). To be continued.

Interactive Plotting Programs

The fate of Mustafa Kizilcay's PCPLOT was explained in E-mail dated January 6th. Recall PCPLOT was very important during the early MS-DOS years prior to Prof. Kizilcay's demonstration that the Salford compiler could support ATP (see the October, 1989, issue onward). Zhou Pei hong of the Wuhan High Voltage Research Institute in China had inquired about PCPLOT availability from EEUG, and Laszlo Prikler had responded: *"Well, WPCplot development was supported by EEUG (and was made available for EEUG members only, first in 1998). But WPCplot development was stopped after a year because PlotXY is much better. You can download PlotXY from ..."* About existing WPCplot: *"The program was not made available to the ATP community because it is not as powerful as Prof. Kizilcay's DOS-based PCPLOT was."* I.e., conversion from Turbo Pascal (which ran under real MS-DOS) to MS Windows was not easy. Prof. Prikler continued: *"I suggest PlotXY. This is fast and easy to use. The marker you need is there. You can process many .PLA files simultaneously or compare simulations with measurements (PlotXY can read comma separated ascii text files, too). If you need an even more powerful post-processor, you may consider ATP_Analyzer."* Yes, there are so many free choices for ATP plotting!

ATP Analyzer is the BPA-supported postprocessor from Pacific Engineering of Portland, Oregon. In list server mail dated February 4th, Laszlo Prikler announced availability of a new version number 3.08, and he reminded subscribers of *"so many improvements. Note for EEUG members: The new version of Analyzer will be distributed on the next release of EEUG CD-ROM. Below you can read Mr. Fortner's original announcement."* No two plotting programs are the same, and the 3rd of the 13 points by Glen Fortner certainly illustrates unique features: *"3. Create placeable Windows metafile of any print output page, including the option to add comments, data values and markers ... Comments are added when you are looking at*

the print preview, and you can put them anywhere on the page. Data values and time are picked up by clicking on the signal trace of a chart window, then you have the opportunity to edit the value-and-time text string and decide where to place that text on the print preview window. Placeable Windows metafiles can be edited on Microsoft Office and Visio and probably many other programs, inserted into word processing and spreadsheet documents, resized to any rectangular shape, and printed out with good quality at any size."

Latin American User Group

Jorge Nizovoy, Chief of Network Planning at Transener S.A. in Buenos Aires, Argentina, began his explanation of changes to ATP user organization in Latin America in the preceding issue. This story by the new CLAUE Chairman now continues :

8) The present Coordinators of other countries or regions of Latin America will continue with their functions, assuming the responsibility delegated by the CLAUE, with the support of the institutions in which they perform their professional activities.

9) For that, they were sent a Spanish version of the ATP licensing agreement used by the CLAUE (an adaptation of the CAUE formulary) to be signed, and a model letter to be posted to the CLAUE Chairman. There, the geographical area, the Coordinator's personal particulars, and the information about his company and about the legal representative who authorizes him to exercise this function will be consigned. This documentation would be received up to November 30th.

We have received documentation from Bolivia, Colombia, Ecuador, Mexico, and Peru. Work on Venezuela is still under way.

The most important news is about Mexicans, who now seem to be interested in becoming involved in the CLAUE organization with the support of CFE (the Commission Federal of Electricity)

On November 26th we had our fourth CAUE meeting of the year. I resigned as Chairman of the CAUE and Eng. Raul Bianchi Lastra, from National University of La Plata, was elected as the new Chairman. Engineers Flavio Fernandez (National University of Tucuman), Alfredo Rifaldi (Techint) and Elbio Vaillard (Santa Fe Regional Faculty of the National Technological University) were elected as Administrative Council Members.

Recently, with the help of CAUE, we have finished a document that delineates rules that are to be applied in Latin America for the granting and renovation of ATP licenses, and the delivery of ATP materials.

The ATP license of the Can/Am EMTP-ATP Users Group is the basic document we have taken into account. We also have taken advantage of some innovations from EEUG.

We have communicated to the EEUG the changes to be made to the data base of the EMTP List Server. These take into account CBUE (the new user group for Brazil)."

The "Tenth Latin-American Regional Meeting of CIGRE, internationally known as X ERLAC," was summarized by Mr. Nizovoy in E-mail dated May 29th. It seems the meeting was held on 18-22 May 2003 in Puerto Iguazu, Argentina, and was attended by 302 persons from Brazil, Argentina, Paraguay, Spain, Mexico, Uruguay, USA, Chile, Bolivia, Portugal, Venezuela, Germany and France (order based on number of attendees). There was "a CLAUE Divulcation Session, taking advantage that the X ERLAC Technical Committee President was the Chairman of the Latin American user group (CLAUE). 40 persons were present at the meeting, which is summarized by the following agenda: 1) The CLAUE Organization -- News, by Mr. Jorge Nizovoy ... 2) ATPDRAW -- The ATP is friendly, by Mr. Jorge Amon ... 3) ATP-related Internet Services, by Mr. Raul Bianchi Lastra ... 4) ATP Applications examples, by Mr. Alessandro Villa, the CLAUE Coordinator in Venezuela, from EDELCA; and 5) Spontaneous user contribution by Mr. Guilherme Sarcinelli Luz of Furnas in Rio de Janeiro, Brazil, in connection with the X ERLAC paper 14.1 ('ATPDraw program application in new models ...')."

TACS User - Supplied Source Code

This is a continuation of the story about the Type-69 TACS device as first described in the preceding issue.

An incorrect number of arguments of any Type-69 device should be prevented beginning January 9th. Too many arguments would not pose a problem for execution since any extra parameter on the right would be ignored during execution. But too few arguments would be more serious. If the user does not provide some function argument, then DEVT69 will manipulate an undefined number (not good). Yes, this could have been prevented by adding a bounding entry, but it seemed easiest and most efficient just to terminate execution upon the discovery of the first such mismatch. As this is done at data input time, simulation speed is unaffected by the protection.

Two or more constant arguments of the Type-69 supplemental device were mishandled prior to modification of GUTS2A on January 27th. Also, sometimes extra blank space was required for separation of the arguments. This was as first reported by Orlando Hevia of UTN in Santa Fe, Argentina. E-mail dated January 25th had reported the problem, which first was observed by Jacinto Martin

Arnedo at UPC in Barcelona, Spain. To demonstrate correction of the error, a 3rd user-supplied function, DEV69C, has been defined within the user-supplied SUBROUTINE DEVT69 of the UTPF. This addition has 5 arguments, and there is special printout on step 1 to confirm the five values. That 7th subcase of DC-21 has been augmented to illustrate 3 variations (new variables USERF, USERG, and USERH). These involve 3, 4, and 5 constant arguments, respectively. The first two use minimum separation of the arguments, and the 3rd illustrates additional blanks and the use of scientific notation.

User-supplied TACS sources, too, have been created. This extension occurred to your Editor October 29th, and was provided the following day. Sources involve functions, so could be handled easily within the framework for functions that already had been provided by DEVT69. A new Type-28 source provides the connection as illustrated by variable SOUR28 within the 5th subcase of DC-18. Just as the Type-69 supplemental device requires a function name, so does the Type-28 TACS source. But that is all. The source is simpler because it involves no explicit input (whereas a supplemental device always requires one or more). Use of source structure also is logical because it automatically provides starting and stopping times (data fields T-start and T-stop of columns 61-80 of any source card). Finally, for really voluminous data, an advantage to a Type-28 source (rather than an equivalent supplemental variable) is this: a source reduces the burden on Ma Ren-ming's famous ordering of supplemental variables and devices (see mention in the July, 2001, issue). To summarize, sources are a particularly simple class of TACS variable. If the user wants to code one of his own, it makes more sense to handle it directly within the TACS source framework (as a Type-28 source) rather than indirectly within the supplemental device framework (as a Type-69 TACS device).

Miscellaneous Intel PC Information

"Dell saying bye to floppy disk drives" is the title of a Reuters story found at the CNN Web site. Posted February 7th, this summarized: "Dell Computer said goodbye to the past on Thursday when it announced it would stop making floppy disk drives standard equipment on its higher end desktop personal computers. ... Dell, the No. 2 personal computer maker, said floppy drives had been overtaken by technologies offering greater storage capacity ..." A Dell spokesman justified flash memory, portable hard drives, and other alternative portable storage devices as follows: "You insert it right into the USB port, and your computer reads it just like it would read a floppy drive. ... you've got much more capacity -- instead of just 1.44 megabytes, at the low end you have 16 megabytes." The average reader may not know that floppy disks began as input devices for larger computers. For example, the first your Editor can recall using was part of the VAX-11/780 that BPA ordered during

1978 --- an 8-inch floppy disk drive. About smaller disks, the story explains: "The first 5.25-inch floppy drive was introduced by Shugart Associates in 1976 to be compatible with International Business Machines mainframe computers ... Sony introduced the 3.5-inch diskette in 1980, and by the early 1990s the 3.5-inch floppy, with a capacity of 1.44 megabytes, had become the standard method of data transfer in PCs." Of course, bloatware is what is killing floppies: "most programs are too large to run or store on a manageable number of floppy drives." A final section of the story is entitled "Apple leads the way." It seems the abandonment of floppy disks is old news for Macintosh users: "Apple Computer stopped putting floppy drives in Macintosh computers several years ago ..."

WiFi is the name used for wireless access to the Internet, and Intel began serious public promotion of its contribution during mid-March. Suddenly, WiFi is big news. "Get ready to tune in to wireless Net" is the title of a CNN story dated March 12th. This begins: "If it's not already there, it's probably coming soon to a local coffee shop, your favorite airport, the neighborhood park, a McDonald's around the corner and maybe your home. ... wireless Internet access, known as WiFi, is one of the hottest technologies in years ... Short for wireless fidelity, WiFi does away with cables ... by broadcasting Internet connections via radio waves. Then you just tune in from your computer. ... Intel threw its weight behind WiFi on Wednesday, promising to outfit millions of laptops with Centrino chips, which contain a built-in WiFi transceiver and have a longer battery life. The move is expected to make wireless chips the standard for laptops ..." Located at the Web site of the *New York Times*, a Reuters story dated one day later provided some numbers and emphasized the international scope: "At news conferences in cities around the globe, Intel presented its new Centrino chips ... Centrino laptop users who are within 100 yards of access points called 'hot spots' will be able to surf the Internet or use corporate networks. Intel said it was working with partners like telephone network operators, hotels and airports to verify that some 10,000 hot spots are fully up to speed this year in 15 countries around the globe." But what is missing from this inspirational writing? Cost, of course. This critical ingredient was found in a *New York Times* story dated May 8th, however. Entitled "Internet access for the cost of a cup of coffee," it seems that some places charge a lot: "It remains to be seen how many users will be willing to pay the \$30 a month being charged for Wi-Fi access at places like Starbucks ..." Fortunately, there already are free alternatives in many places. "The argument in favor of free access goes roughly like this: cafes, hotels and other venues that strike up revenue-sharing partnerships with wireless carriers are perhaps taking in a nice sum now, but as competition increases, prices will fall, and the margins will narrow to the point where it makes little or no point to charge for the access. Far greater, in the long run, will be the higher revenue from increased traffic into a store ..." One expert "contends that a fee-based system cannot last in the long run."

Real-time simulation last was mentioned in the January issue. Commonly this term is used in place of *faster simulation* even though there might be nothing special about the real time barrier. Of course, real-time simulation using ATP certainly would be faster (ATP never has simulated this rapidly for meaningful data, as far as your Editor knows). Well, the latest inquiry about faster simulation comes from Prof. Juan Martinez of UPC in Barcelona, Spain. For background, see the July, 2002, issue. In E-mail dated April 23rd, Prof. Martinez wrote : *"With the last models we have produced, ... the time needed to run a medium size distribution network can be more than 1 day. ... One month ago we contacted a supercomputer center; it is supported by all universities in the Barcelona area. They offered their computers and their help for installing and using ATP. For more information about the center you can visit ... www.cesca.es/en/index.html ..."* In his response the following day, your Editor agreed that recompilation would be required. About the supercomputer promise, your Editor was skeptical: *"These people always offer the hope of much faster simulation. The problem is, they want money, and they use a different computer. Three decades later, we have yet to find a cost-effective super computer. Supercomputers always have been faster, but they also have been more expensive and inconvenient. I know of no one who ever was satisfied, for EMTP-like simulation. ... Separate compilation and linking certainly would be required. Five existing versions assume Intel hardware. Pentium has some parallel capability, but nothing like what a supercomputer would offer. A supercomputer is a different beast; it would have a different compiler. ... When I write Intel, I mean Pentium. Of course, Intel also makes supercomputers, but these require different compilers. The April newsletter mentioned this (see 'John Schaad'). ... No question, it would be interesting to know how well 'automatic parallelization' of these compilers works. Personally, I remain skeptical."* Prof. Martinez ended his message with a summary of the supercomputers available, and one of these was *"Hewlett-Packard Exemplar V2500: 16 PA8500 processors (440 MHz) ..."* About this, your Editor observed: *"Note the relatively slow processors. I am keying this message on a 550-MHz Pentium III. This always has been characteristic of supercomputers : they seem old. Intel moves faster (remember Moore's Law in the July, 2002, newsletter)."* Another possibility was *"Compaq AlphaServer HPC320: 8 nodes ES40 (4 EV68, 833 MHz, 64 KB/8 MB) ...,"* about which your Editor observed : *"This would seem to be the DEC (most recently, Compaq) alternative to Intel. I can think of no reason to prefer DEC, however. After all, DEC lost the computer war. It might have higher performance, but at a higher cost (Alpha never was cost-effective this way). Intel and AMD won."*

John Schaad of BPA in Eugene (see the April issue) has been involved with computer-related aspects of BPA's IPF (load flow) for years. In E-mail dated April 29th, he summarized principles of possible parallel computation for

such programs : *"I have been evaluating the various Clustering Software Packages ... There are basically two types of parallelizing : 1) Program Source Code re-write using Message Passing Interface (MPI) and Parallel Virtual Machine (PVM) libraries. OSCAR, ROCKS and others using batch schedulers gain the advantage of parallelizing with modified source code. These require every compute node to have the full application software installed on them, and the distribution of work is performed by the scheduler. ... 2) Existing programs with no modification, and programs whose source code has been partially optimized automatically by Fortran and C compiler parallelization routines such as the Intel and Portland Group compilers. OpenMosix, Mosix, and SCYLD are single-system image (SSI) Clustering Software Packages that have the application programs installed **only** on the Master Node, and they 'farm out' or migrate binary processes to the worker nodes in the cluster in a load-balancing fashion. MPI and PVM software will also run on SSI clusters ... perhaps the best of both worlds. ... It seems that the 2nd type may be the preferred Clustering method for our work. ... If you would like, we can set up some tests with ATP, using OpenMosix with gcc, Intel, and PGI compiler packages ..."*

Miscellaneous Small Items

That 255-byte limitation on the widexx input to POSTPROCESS PLOT FILE (PPF) was removed February 2nd in spite of Prof. Kizilcay's initial reaction, which seemed tolerant. On January 28th, he wrote: *"I think the limitation to 255 characters is not serious. Assuming the precision of data is 15 digits we can have roughly 15 channels of recorded data."* True. Yet, history teaches us that almost any program limit eventually will be exceeded by some ambitious user. In the hope of avoiding future work after details have been forgotten, your Editor devoted an hour or two of study, and was rewarded with a modification that not only permits wider files, but it permits unlimited files. More precisely, there is no obvious, explicit limit in the code --- not even the 2550-byte limit of CUNIT6 as mentioned in the preceding issue. Paging has been introduced. New logic of POSTPF will continue to read 255-byte chunks from disk as often as might be required.

UM TO TACS has been using too-large subscripts within TSHEAD for years without difficulty. This was prior to a correction above S.N. 4978 that was made January 29th. Report of the trouble, and even protection, was provided by Orlando Hevia of UTN in Santa Fe, Argentina. His E-mail dated January 24th reported: *"I found the cause of the Linux problem. I added the following change ..."* Your Editor investigated using Salford, and found the error to be universal. Then why was only Linux ATP troubled (Mingw32 ATP was not)? Presumably because the order of COMMON blocks, not

controlled during GNU ATP linking, was different. Fortunately, no reader need be concerned about past results, most likely. The bad subscript NDX1 simply was used to access a non-existent A6 name that then was rejected. The logic of UM TO TACS tries to match every TACS source to every output variable. For multiple variables, there were attempted matches after conversion of the associated indices as well as before. This is what led to the excessive subscripts. Prevention was easy enough: do not use NDX1 if it is too big.

TWO EXP SURGE FUNCTION was mentioned at the end of the January issue. While this may be *"one of the simpler extensions"* as stated, reconciliation among the different computers of interest was anything but simple. That 12th subcase of DC13.LIS changed substantially on January 13th when 4 lines that punched cards were modified at author Hevia's request. The result changed comment cards (but not the source card itself) enormously. For example, the first of the 3 changes (one for each derivation of the data): Changed lines 1376 and 1377 from:

```
C Virtual front time : 1.0000E+01 s
C Virtual half time  : 5.0000E+02 s
```

to:

```
C Virtual front time : 1.0000E-06 s
C Virtual half time  : 5.0000E-05 s
```

Prior to this change, Mingw32 ATP had produced a result that differed from Salford and Watcom ATP by a factor of 10. BPA's Dr. Tsu-huei Liu made this observation, so your Editor investigated. After tracing the discrepancy to integer truncation (originally the function INT(was used), your Editor wrote as follows on January 11th: *"I think I am going to perturb something --- either that or switch to floating point. I think this is the problem: DLOG10(TFF) involves error. It is close to 6.0, but not exactly ... I am inclined to multiply by 1.000000001 to force all compilers to give the same result. ... 1.0 + FLZERO should serve this function."* But this work was abandoned following Mr. Hevia's changes because the dependence on compiler had disappeared. Your Editor does not claim to understand why.

Parameters of an induction motor can be estimated by a simple program from Ilkka Leikkonen in Kokkola, Finland. His announcement in list server mail dated March 17th had *"Subject: Program for induction motor parameters."* It explained that *"the program calculates the resistances and inductances of the equivalent circuit of an induction motor from the 'name plate' data, such as voltage, power, slip, etc. The inductances and resistances can be used in the UM 3 model of an induction motor."* Although not as general as Gabor Furst's INDMOT (see the April, 2002, issue), Mr. Leikkonen's contribution would seem to provide independent verification for simple cases of common interest. As an Australian observed to the author and list server moderators (but not subscribers): *"I like the way you have used the proper names for the ATP variables and put them into the diagram."* One

knowledgeable moderator observed: *"I agree that it has a nice graphical display."*

Dynamic \$DISABLE was introduced in the April, 2002, issue, and since then it has been illustrated by the 14th subcase of DCNEW-25. Yet, this use was relatively simple in that the block being enabled or disabled consisted of elements of the electric network. Not envisioned at the time was a \$DISABLE block that included a \$PARAMETER block. This clearly was the need as requested in E-mail dated February 17th. Of course, the request came from Prof. Juan Martinez of UPC in Barcelona, Spain. REPLACE.DAT was the data that he contributed, and it was appended as a new 16th subcase of DCNEW-25 to demonstrate that \$PARAMETER now is allowed within a dynamic \$DISABLE block. This was February 18th, following the addition of CALL MATSTP to CIMAGE --- named because there is need to step (STP) over the storage of any inactive \$PARAMETER block.

That CIGRE source (see recent preceding issues) was improved April 26th. The preceding day, author Orlando Hevia explained his change as follows: *"I am working on a project that uses the CIGRE source with random peak and random maximum slope. I found a case where the peak, front time and maximum slope produces a mistake in output of the fitter. Solution: test for a negative coefficient and use original or initial CIGRE parameters if this is the case. I send the file ... with the correction detcig.dat which is the data that revealed the trouble."* Only subroutine VCIGRE was modified, and changes were simple enough.

"Voltage sag stochastic prediction using an electromagnetic transients program" is the title of yet another IEEE PES paper from Prof. Juan Martinez of UPC in Barcelona, Spain. Jacinto Martin-Arnedo is the co-author, and his student. In E-mail dated April 23rd, Prof. Martinez wrote that his *"paper has been recently approved for publication in IEEE Trans."* Background of this most recent work can be found in the January, 2002, issue. Elsewhere in this issue, the reader should find mention of the need for faster simulation (the stochastic prediction places a great burden on the computer).

NEW LIST SIZES (NLS) conflicted with, and was given precedence over, EATS (ESTIMATE ACTUAL TABLE SIZES) prior to February 9th when 4 UTPF segments were changed: REQUES, GUTS2B, ESTIMA, and OVER1. Of course, some of the larger data sets within standard test cases DC*.DAT involve NLS, so EATS was being ignored for these subcases when RUNEATS was used for comprehensive testing. Thus, after your Editor decided that it would be possible to allow simultaneous use of both NLS and EATS, the EATS testing was expanded. Counting logic then required improvement. For example, the new 3rd subcase of DCNEW-20 overflowed List 8, and DC-47 overflowed List 9, prior to corrections to the counting of list sizes.