Can / Am EMTP News

Voice of the Canadian / American EMTP User Group

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Salford FORTRAN Compilers

Compiled TACS for F77 Salford survived with minimal damage the massive modifications that permit F95. Verification was completed March 24th following careful study of DC-22d, which demonstrated differences beginning at time 200 msec. But nothing more than unexplainable differences of roundoff error were noted. Gaps (TRSA, XLA) and (TRSB, XLB) close one time step later, affecting printed output beginning at step 4500. But no other switching differs, and the solutions are very close (e.g., only two lines of the PRINTER PLOT differ, and these by just a single column).

Switching within JMARTI SETUP is yet another computation that is susceptible to roundoff error, it should be noted. The fitting process is full of inequality checks. If these are at or on the border line one time, they may be over the line at some later time, for some unexplainable reason. If some inequality tests differently for some mode, the fitting of that mode will be different. This was observed for that 2-phase Bonfanti cable in the 2nd subcase of DCNEW-6 using Watcom ATP around March 20th. Fortunately, after careful comparison involving all four compilers that are being used in Portland, two (Salford and Mingw32) continued to provide the same old solution whereas Watcom and Lahey provided a new one having different order. It is hoped that either is equally good for engineering purposes. Yet, recall that stability was a concern for that cable (see story in the July, 1994, issue). To document the first significant difference, compare Watcom line 1339 with the corresponding Mingw32 line:

```
Number of poles  NPOLE = 11  ...   NZERO = 10
Number of poles  NPOLE = 13  ...   NZERO = 12
```

Final disposition of the F95 compiler from Salford still was being discussed around the end of April. As F95 Lahey was proven to be both cheap and effective, Masahiro Kan of Toshiba Corporation in Japan began to doubt the long-term usefulness of F95 Salford. He wrote: *"I think Lahey F95 will be enough for supporting F95 ATP, and I will invest*

my money for Linux/Lahey F95 next time." Of course, your Editor approved of the Linux alternative. On April 15th, he wrote: *"I agree, and much less money, too. But just remember my offer to buy the F95 Salford compiler from you at half price. This offer remains. If you are not using the compiler much, or at all, I would. While I would not pay another dollar to the Salford factory, I would be happy to pay you half the cost of the experiment provided I end up with the compiler. Not only could I use the F95 Salford compiler productively for ATP development, I could, without bothering you, debug that mixed-mode aliasing that I have put in the program."* On April 28th, Mr. Kan responded: *"I got permission from JAUG secretaries. They wrote it will be best to give away Salford FTN95 to you. It will be a pleasure for Salford FTN95 to be used by you for syntax checking of your great F95 ATP :-) That was our conclusion. ... About the cost sharing, I propose 6 ATP Rule Books. Purchase price: 138000 JYen (about 1380 USD). Rulebooks: 6 books are 600 USD"*

Fortran 95 from Lahey Computer

An illegal subscript of a dynamically-allocated vector is not always appropriately prevented by the Lahey F95 compiler, it was discovered. This frightening conclusion was reached by BPA's Dr. Tsu-huei Liu and your Editor after several days of debugging of DC-60, which involves SEMLYEN SETUP. Yes, ATP code involved an error. Selective DOUBLE PRECISION is used in MAIN26 for ZIFT, and the length was inadequate. But how was the programmer to know? In previous testing, attempted use of a vector prior to an ALLOCATE of it had been properly prevented at execution time. There generally was some error message that made sense, and pointed to the problem. Not so for the DC-60 problem, as finally diagnosed around 10:00 on August 18th. First, there was peculiar alternation of correct and incomplete solutions. Without fail, they would alternate. When execution died, according to Lahey this was in TFLUSH with a complaint about the incompatibility of I/O unit zero: *"formatted I/O statement can not be executed for a unit connected ..."* But the location could not be found, and the addition of diagnostic WRITE (*,*) messages caused the error to move. Worse than that, it was observed that the .DBG file contained different diagnostic information if it was deleted prior to execution rather than being left over from the preceding execution. Nothing made sense. The additional WRITE (*,*) themselves seemed to end execution for no obvious reason. Without much hope, diagnostic was added until location of the last output was known within a few clearly-legal lines of code. Fortuitously, the error message changed to something believable just then: a complaint about an access violation. Suddenly, your Editor remembered the unclear offset subscripts in MAIN26. As a shot in the dark, 200K was added to the size of each of the two dynamically-allocated vectors, and this made execution consistently normal. Finally, the offset was removed from the normal vector without effect. Conclusion: overflow of exceptional DOUBLE PRECISION vector ZIFT was the hidden cause of confusing messages and behavior. It does appear that illegal subscripts are to be avoided like the plague. Fortunately, this is more a problem for program developers than it is for program users, and developers now have been forcefully alerted to the problem.

A 550-MHz Pentium III-based PC from Northwest Micro was provided to Dr. Liu on August 14th. This was because her *old* 200-MHz Pentium Pro-based PC had a broken fan, and BPA's computer establishment no longer repairs PCs that are 3 years old or older. The same 128 Mbytes and Windows NT 4.0 are involved, but the disk is much bigger: 13 GBytes. In theory, the change should have been welcome. But in practice, it was painful and time-consuming. Initially (for a couple of days) there was a problem with low resolution: 600 x 800 pixels according to Display (under Settings --> Control Panel within the Start menu). That was improved to 768 x 1024, but at the expense of the Iomega Zip drive, which was incompatible with the output card (according to the explanation provided). Since the new computer had no partitioned disk, D:\ needed to be changed to C:\ wherever it was found in .BAT or .DAT files. A few directory names required change, if the same name had been used on more than one disk (e.g., DISLIN).

DISLIN graphics provided the most serious problem --- not for GNU Mingw32 ATP, but for Lahey ATP. This was documented in E-mail to the factory dated August 21st. The DISLIN author himself, Dr. Helmut Michels, provided the advice that enabled DISLIN graphics beginning the following day. Your Editor had complained that reinstallation did not solve the problem. Dr. Michels explained why: *"You have forgotten to copy the DISLIN license file ... Note that you also have to define the environment variable DISLIN again and to add the DISLIN\WIN directory to the PATH environment. ... I have attached your DISLIN license file in case you have lost it."* Conclusion: there is no problem porting DISLIN to another computer as long as one understands critical details, which are minimal. Your Editor and Dr. Liu did **not** understand because the installation program that had been used last year was interactive, so it did its work without summarizing the details. About licensing, it should be explained that each interested user must purchase his own for $150, if interested. Whereas DISLIN for GNU Mingw32 ATP is free, this is **not** the case for Lahey ATP. Just as in the days of Geograph (prior to free Salford graphics in 1990), each user must pay if he wants to see screen graphics. For this reason, use is expected to be severely limited. Yet, it should be explained that payment was easier than expected. In E-mail dated December 8th, Doris Waltinger surprisingly encouraged a personal check: *"We would prefer your payment by check, we often receive personal checks from America, it will cause us no trouble."*

Directory \DISLINL is being used for DISLIN graphics for Lahey, and \DISLING is being used for

DISLIN graphics of GNU Mingw32. This separates the two, allowing operation of either one or the other. What can **not** be separated are the associated DISLIN and PATH environment variables. The Mingw32 definitions were left in AUTOEXEC.BAT, so will be the default choice. The Lahey alternatives are handled within RUNTP.BAT as used in \LAHEY. Prior to execution, the Lahey alternatives are SET; and upon completion of execution, the Mingw32 alternatives are restored.

F95 ALLOCATE of ATP Tables

"Supporting programs are not yet participating in the FORTRAN 95 (F95) ALLOCATE revolution." Thus began a paragraph in the preceding issue. The statement was true when written, and reasoning behind the decision seemed valid enough at the time. But then, suddenly, the 38-conductor limit of CABLE PARAMETERS (CP) was challenged in a big way by Ashok Parsotam in New Zealand. In response, Dr. Liu expanded total storage from the usual 240K words for List 31 to 1750K words in order to allow 103 coupled conductors. No longer is storage negligible. The increase of 1510K words is just over 6 Mbytes. No question, it really would be nice to save these 6 Mbytes of virtual memory. That was thinking during early days of review of the July newsletter. Now, fewer than seven days later (on July 1st), complete success can be reported. Both CP and CABLE CONSTANTS (CC) now use F95 ALLOCATE for all significant storage. Not only have the 6 Mbytes of virtual address space been saved (when not actually used, which is most of the time), the limitation to 103 coupled conductors has been removed. Now, only RAM and disk (size of the paging file) of a PC, and obscure limits within MS Windows, limit the number of conductors.

LINE CONSTANTS (LC) next was considered for possible ALLOCATE use. Although practical need is far less (a mere 240K words gives 100 conductors, with this limit having yet to be challenged), there remained the desire for flexibility comparable to that of CC and CP (see the preceding paragraph). So, work began July 1st, and was completed July 3rd. Included was a change to the translator, to distinguish between F95 and F77 LOGIC records of VARDIM. Success was less than total, it should be explained, because of a structural problem. For CC and CP, all vectors and matrices were programmed to use the working space of a single COMMON block. For LC, such sharing is only true for the matrices. Vectors were handled separately (for faster execution and more compact code, each vector was given its own COMMON block), so were not as easily included in the F95 revolution. Yes, the work could have been done, and still might be done at some later time. But benefits seem marginal, and it is difficult to justify all the associated changes that would result. So, all matrices were converted to ALLOCATE storage whereas all vectors were left unchanged. About dimensioning, the 4th data field (columns 25-32) of the 4th data card is used to supply the maximum number of phases. If left blank, a default value of 100 will be assumed. This is to establish the maximum, as input data for VARDIM. But what about execution? Whereas F77 ATP simply used nearly all available space (e.g., giving 100 conductors for 240K words of space), the F95 code will read a user-declared limit from the LC card as illustrated by the Lahey version of DC-60. If the user supplies no such limiting value, then the old limit of 100 will be assumed. So, for example, *"Limit = 100"* now is seen as part of interpretation near the beginning of the 2nd subcase of DC-52. Compare this with *"Limit = 98"* for F77 ATP, with the difference explained by the need of F77 ATP to offset the LC storage so as not to disturb storage of the LMFS phasor solution. I.e., F77 ATP has less than the full 240K words to store LC tables, so is forced to reduce the limit. Happily, F95 ATP removes this conflict.

Remember why the creation of ATP table sizes at execution time is so important: really big data cases of practical consequence leave many program tables little used. That is, really big cases are not big in everything. Just as for ESTIMATE ACTUAL TABLE SIZES (EATS) as explained in the April, 1999, issue, there is enormous saving if actual rather than limiting tables sizes can be used. Note carefully that F99 ALLOCATE does not do away with the need for EATS. It is fine to create storage on demand, but how does the user know what to demand? EATS provides the answer. It was not an accident that Masahiro Kan and dynamic memory allocation were mentioned in the opening paragraph about EATS 18 months ago. EATS is good for use with F77, but is even better for use with F95. This **was** understood a year and a half ago.

Use of two or more COMMON blocks for a single storage function was a strength of any F77 ATP version that enjoyed ordered COMMON blocks. For example, for Salford EMTP, see the explanation of expanded L23TOT in the October, 1998, newsletter. Well, this capability of using more storage at no extra cost has been lost in the switch to F95 unless and/or until any developer can demonstrate otherwise.

The effect on compiled TACS is worth explaining. Recall offset subscripts were mentioned at the time of this innovation (see the January, 1997, issue). Compiled TACS removed some (a substantial fraction) of the offset subscripting. Well, this is a fixed-sum game. If the user won before, he can not win now. Alternatively, in general, if he did not win before, he will win now. Yet, the issue of subscripts is not big. The construction and compilation of the dedicated TACS model was the breakthrough. Merely removing a few more subscripts will not affect speed greatly. How much faster can greased lightning be? About subscript values, they become smaller, positive numbers, of course. Using F95, they have natural size, so are easier for the human mind to comprehend.

Several TACS vectors remain multiple rather than single. This aspect is believed to date to Dube rather than Eifrig, however. A good example is the TACS source vector UD1, which stores pentuplets of parameters associated with each TACS source. These are not a problem, it should be explained, so are not being replaced by single vectors of F95. The offsets are largely constant rather than variable (e.g., J+4 rather than NDX2+J, so are removed by the compiler, and are not reflected in either execution speed or program size. There should be no adverse effect on the efficiency of virtual memory management, either. In effect, this is *"storage by component"* as advocated by your Editor during the late '70s. This is what Dr. Vladimir Brandwajn used for his Type-59 S.M. around the end of 1983. From the bottom of page NIAB-36 of Vol. XIV of EMTP Memorandum: *"Vladimir also has been working like a madman on his variable dimensioning."* This was working at BPA as a DCG contractor, producing changes for the update of Section V-K dated 18 November 1983.

Vector XTCS of TACS was by far the most difficult, requiring a full week to convert. Even though done by itself, 19 UTPF segments required change, and selective trouble was associated with two things: 1) dimension changes (e.g., DC-18b); and 2) Table dumping and restoring of DC-48b. Temporarily, each subcase will close the storage of preceding use (if any), and will open its own new storage. Although not necessary, this procedure is safest, and will be used until the conversion has been completed. About table dumping, this was the Turbo part of the Schultz revolution (see the July and October, 1993, issues). Of course, if one former vector is being replaced by many smaller, new ones, logic must change. This is a disadvantage of the F95 reform, with new TACSIN and TACOUT providing support for Robert Schultz's RUNIN and RUNOUT. Work with XTCS finally was completed successfully on February 10th.

KARG is the index used to store parameters of supplemental variables and devices. A special problem existed because an appended minus sign was used to indicate the latter (a device). With offset subscripts, the index was always positive. But not so after the offset was removed. Zero values were found, and of course it is impossible to append a sign to these. So, details of TACS programming have changed once again (this time, February 13th).

RELATIVE TACS DIMENSIONS (RTD) no longer is being honored by F95 ATP beginning February 22nd. The reason is not a secret: it is inefficient and confusing to allocate relatively when absolute allocation is arbitrary. Relative allocation only made sense for F77, where the total working space for TACS was confined to List 19. For F95, this List 19 limit no longer exists. The user can have as large tables as he wants using ABSOLUTE TACS DIMENSIONS (ATD). If the F95 user attempts to use RTD, an error termination will result.

The value of List 19 in case-summary statistics at the end of a .LIS file changed February 23rd when actual counting of dynamically-opened storage replaced former logic. This is for the actual value, not the limiting value (the latter, if seen, remains unchanged). For example, the old DC-1 value of 4783 has increased to 4814. Why the small difference? Probably the old counting was imprecise. New counting, done along with the storage creation, should be exact.

Use of ABSOLUTE TACS DIMENSIONS (ATD) remains voluntary, however, if only for reasons of historical continuity. For example, many standard test cases do not involve ATD, and there is a desire to avoid unnecessary change. So, the value in VARDIM data is not without continuing value. It continues to be used to establish the sizes of TACS tables when the more powerful and better ATD is not used. It does not actually dimension old COMMON block SPTACS, however. Regardless of what the user specifies for List 19, VARDIM output that creates SPTACS will be limited to a fixed 11 words.

List 25 of the Universal Machine (U.M.) was the first ATP storage to be converted from F77 to F95. This was stated in the first paragraph of the story in the April newsletter. Yet, that was only the first and easier half of the F95 revolution. The second and more difficult half, which consisted of removal of the variable dimensioning, involved some 45 arguments of U.M. CALL statements --- work that was completed February 26th. This work involved a fundamental structural difference from TACS, which was variably-dimensioned using the more-efficient but invasive offset subscripting. In the case of Prof. Hian Lauw's U.M., maximum execution speed seemed less important, so the easier use of arguments of CALL statements was allowed. Well, using F95, these arguments disappear. The only change in .LIS file output should be the size of List-25 working space. A few words have been saved because half-word boundaries (4-byte INTEGERs vs. 8-byte REALs) no longer must be avoided. To illustrate using DCNEW-2, old and new interpretations of the first U.M. data card are:

```
U.M. data begins.   List-25 allocation = 342.
U.M. data begins.   List-25 allocation = 349.
```

Of course, the same change will be seen in case-summary statistics at the end of the .LIS file.

Dynamic memory allocation for TACS or the U.M. will occur if and only if the modeling in question is required by the data being used. This is a fundamental superiority of the F95 implementation: if no such modeling is being used, the associated space for tables (burden on virtual memory of MS Windows) does not exist, so involves no price. March 3rd, the storage for Type-58 and Type-59 S.M. models was treated comparably. How much more there will be remains to be seen. But the idea is simple enough: for any table that is not almost always used, making its creation dependent on the data should save both execution time and virtual memory.

The Type-59 S.M. was found to have minor, isolated labeling problems that were corrected March 3rd. This began with the 3rd subcase of DC-26 which displayed List 16 size of 7449 cells even though Type-59 modeling was not being used. There also were non-zero values of saturation in the *"Critical level ..."* printout of DC-53 (2nd and 3rd subcases) and DCNEW-11 (2nd subcase). In all cases, the trouble was found to be lack of Type-59 initialization after previous use. This was discovered using Lahey because F95 initialized the storage automatically, producing a minor difference that was easily noticed. To correct for F77, two segments (SUBR5 and SMDATA) were changed. A final improvement was the assignment of List 11 for cases that do involve a phasor solution but no Type-59 S.M. and no simulation. Previously, -9999 was being reported in case-summary statistics (e.g., the 1st subcase of DC-10) whereas now zero is.

Offset subscripts of node renumbering are variables IOFKOL and IOFKOR for vectors KOLUM and KORDER as used by BPA's John Walker some 35 years ago. One of the two also is used for the connectivity display (if IDOUBL = 1). This subscripting dates to the "M16." days of 1976 ("M18." was January, 1977 according to *EMTP Memorandum* page PICA-1), but were successfully eliminated on February 29th. The effect is to exclude the optional, alternative use of a region of LABCOM as requested by KBURRO = 0. Used with compilers and linkers that allowed overlaying and ordered COMMON blocks, this original program logic is being excluded from use with F95. Is anyone bothered? If so, why?

The phasor solution that followed renumbering also used offset subscripts: variables IOFGND and IOFBND for vectors GND and BND, respectively. After success with renumbering (preceding paragraph), this second half of improvement prior to the time-step loop was made. March 1st, validation of the changes to five UTPF segments showed no change to any test case.

List 28 allocates numeric storage RRTACS for MODELS --- the second of two vectors. Recall the CHARACTER*1 CSTO storage of List 15 was completed long ago (December 4th and 5th). Floating-point RRTACS was more complicated because it was used by author Laurent Dube for both real storage RSTO and integer storage ISTO (an EQUIVALENCE statement connected all three). There also was special initialization: RNULL for reals and INULL for integers. The first attempt to separate RSTO from ISTO was made at the time CSTO was handled, and this was imperfect: a few test cases had minor problems. Months later, when your Editor returned to the problem on March 24th, he succeeded. Storage is handled as as one would expect, with Lahey F95 ATP relying two separate numeric vectors (Salford F95 ATP will alias the two). Several changes to the F95 translator were required to do this, however. About F77, ATP FORTRAN remains unchanged except for cosmetic differences.

The October, 1999, issue mentioned use of special IZGR1 value 65456 to choose user-defined limits of program tables rather than absolute program limits. Note that this choice has no meaning for F95. For F95, there are no program limits. The only limits are user-defined. These will always be used, for any IZGR1 value. The change to SUBR29 was made March 27th. As a result, relocation of IZGR1 (see preceding newsletter) is not an issue.

Removal of SPTACS was completed April 3rd after several days of work. As mentioned previously, SPTACS once provided working space for TACS, but the vector storage was removed weeks ago. Various scalars and one short vector JRESID occupied the first 29 cells, however, and these constituted a continuing nuisance. Following substantial modification to both the translator and several UTPF segments, the job finally is complete. Operation for F77 should be unchanged whereas details of F95 use are fundamentally improved because LABCOM once again can be employed in place of individual COMMON blocks. This not only affects TAPSAV (segmented to include new TAPSIN in an effort to speed optimized Lahey compilation, which was slow), but also MEMLOC within SPYTABLE. The end result is that LABCOM can be used for F95 in almost the same way it is used for F77. Only ordering (necessity that all USE precede IMPLICIT) has changed, and the F95 translator handles this.

News from Outside USA and Canada

The Middle East, and possible need for a user group to support ATP use there, was mentioned in the April issue. That story now is being continued following semi-public E-mail from the Fargo list server on May 17th. In this, Dr. Moustafa Eissa of Helwan University in Egypt explained: *"We would like to establish a user group in the Middle East with headquarters in Cairo-Egypt … titled Middle East Users Group (MEUG). The users group is mainly dedicated to the Arab World to deliver the experience of the EMTP in Arabic language. What are the main procedures that we have to follow to establish such a group in order to be a 'licenced group'?"* Later than same day, your Editor explained: *"Readers should be advised that substantial writing already has occurred about this subject. For example, the following is most of my last message, on March 14th. Note that it asks several questions. Answers to these have not yet been received, however, as far as can be recalled or determined (a search this morning). Note that the message also calls for public discussion. About this latter item, the time would seem to have arrived. Let public discussion of the MEUG idea begin."* Look for a continuation in the next issue.

Deletion of street addresses of license records was mentioned in the July, 1997, newsletter. As explained on July 17th in your Editor's E-mail to Masahiro Kan of Toshiba Corporation in Japan: *"Since then, a separate*

country column has been added, as well as a second separate column for just the city, state or province (typically abbreviated for Americans, such as OR for Oregon), and postal code if any. Tsu-huei just showed me. The Can/Am user group ***does*** *now have a way of retaining the mailing address while at the same time making it impractical for mass advertising."*

A new moderated, English-language list server of EEUG is described in a separate story. Supported by JAUG and the Can/Am user groups, this is expected to replace the Fargo list server for global, English-language service.

ICEE 2000 indicates the International Conference on Electrical Engineering for the year 2000, which is to be held in Kitakyushu, Japan, the week of July 24-28. At least eight papers are known to be concerned with ATP, according to EEUG Chairman Mustafa Kizilcay, whose message dated July 18th began: *"Because of my preparation of presentations for the ICEE 2000 conference ..."* The following day, Dr. Hiroshi Arita of Hitachi Ltd. in Japan explained: *"I will attend ... ICEE2K ... JAUG submitted the attached paper to this conference. I send you the paper's file (Icee2k-JAUG.doc)."* About the attachment, your Editor observed: *"I am glad to have a published, English-language reference to the GIFU switch,"* which was inspired by the departed Prof Yoshihiro Murai.

More about the Internet and E-mail

"Surge arrester catalogues in PDF format" can be found at *"ABB's website (www.abb.com). These contain all relevant data which you can print."* Neil Fitzgerald of London Electricity in England provided this good news in semi-public E-mail of the Fargo list server dated May 16th in response to a request for data. It would seem that the Internet has drastically simplified some data acquisition.

The prevention of trivial questions is an increasingly-important reason for moderation of list servers. Laszlo Prikler of T.U. Budapest wrote this privately on June 17th. Among his numerous proposed rules was: *"No very basic questions (how to be licensed, where can I find ATP, Rule Book on the Net, etc.)."* Previously, your Editor had mentioned only stupid questions, or contributions such as the recent epidemic of "add my name to the list" messages. About the latter, the beginning could be traced to an innocent and simple enough question by Russell Patterson of TVA in Chattanooga. On June 13th, he asked: *"Anyone have a good TACS tutorial?"* The next step also was innocent enough. Xuzhu Dong of Virginia Tech responded: *"Hi, Russ, Can I share with you if you got the information below."* The *below* was a copy of the original request, of course. Even the third step was acceptable, although it bore the seed of trouble. The following day, Kent Smith of Florida Power Corporation stated: *"If a tutorial is available I would also be interested."* Note the *if*. The fourth step, from Mike at mmlf@magma.ca ignored the *if* and simply stated: *"Let 'em add my name to the list of those interested in a good tutorial."* This was the start of the stampede. Even your Editor's sarcastic skepticism (*"What list? What TACS tutorial? All I can recall is the original request for a TACS tutorial. I have yet to receive any encouragement about the existence of anything more."*) failed to halt the requests. Responding privately to Prof. Prikler, your Editor observed: *"Some moderator should be able to handle simple matters, thereby sparing the much larger audience of subscribers. I believe this is one of the great advantages of moderation, and a reason for having plenty (I originally proposed 1 to 2 dozen). With a good set of moderators, the burden on the mailing machine should be reduced substantially. Most recently, we have that stupidity about 'add my name to the list.' As the number of subscribers grows, the filter for simple and stupid questions should become increasingly busy and important."*

.COM is by far the most valuable ending of a domain name, but that does not mean that alternatives are without value. The most expensive .ORG was mentioned in a story posted at *The Register* on May 10th. It seems that **engineering.org** recently was purchased for $199K by *"New York-based organization The American Society of Mechanical Engineers, also owners of* ***mechanical.org****"* So larger IEEE might rent space from ASME ?

Sale of electronic books and documents is the new business of **www.iuniverse.com** and **mightywords.com** Unlike conventional book stores including Amazon and B&N (see the January and July, 1999, issues), there is no conventional publisher as a supplier. Instead, authors deal directly with the Web site. From the first of the two sites mentioned, as acquired June 1st: *"iUniverse.com is creating a new publishing industry where authors are partners. We harness new technology, the power of the Internet, and great strategic partners ... By doing this we are changing the economics of publishing."* Yes, indeed, without either snail mail or conventional publishing companies, authors have been empowered and the business has changed fundamentally. From MightyWords.com : *"Now you can quickly download original fiction, research, speeches, how-to guides, individual book chapters and novellas from respected authors, educators and professionals. ... Add yourself to the ranks ... If you've already got a masterpiece, posting it here takes about 10 minutes. You list it, set your price, upload your file and wait for your royalty checks to arrive each quarter."* Adobe PDF files seem to be the assumed format. If I were a conventional publisher, I would worry. Not only is there the just-described delivery by the Internet, there also soon should be paper printing on demand at conventional book stores. This according to Clark Howard a month or two earlier. Of course, producing paper probably is not much of a problem, with modern laser printers. But what will the cover and binding look like? Will the result be a book that a collector will want to preserve for a lifetime?

Privacy of computer data is the latest attraction of Sealand, *"seven miles off the coast of southern England."* Not only is there to be privacy protection against other individuals and companies, but also (and perhaps most importantly) against all normal governments. This according to a June 7th story by Simon McGregor-Wood that was found at the *ABC News* Web site. *"A group of American Internet entrepreneurs" is behind the venture named Havenco, which "promises prospective clients complete security for their computer files and freedom from the laws and regulations of any government."* About ancient history, *"Sealand started life during World War II as a gun platform ... After the war it was taken over by retired British Army Major Roy Bates who declared independence from Britain in 1968."* Then there was the war of independence by Sealand's owner: *"On one occasion he was forced to defend Sealand's sovereignty, firing warning shots across the bow of a Royal Navy gunboat attempting to retake Sealand. Britain eventually washed its hands clean of the incident, declaring the land was outside its jurisdiction."* So what is the recent change? *"Earnest American computer technicians have flocked to Sealand's shores, preparing to install millions of dollars worth of computer equipment designed for clients who want their transactions and e-mail free from outside interference and investigation. Customers will buy servers or space on servers housed deep within the support legs of the former military bunker's platform."* About geography, Sealand has the appearance of an off-shore oil drilling platform.

Cable modems have been mentioned several times, beginning in the January, 1996, issue. The dominant advantage is much higher speed of data transmission, of course. This from the cable television supplier of the neighborhood (typically only one; a local monopoly). What about the telephone company? What competitive product does it offer? Well, first there was ISDN, as used by Masahiro Kan at home in Japan (see the April, 1997, issue). But ISDN was an intermediate step: much faster than a normal voice telephone line, but not close to the speed of a cable modem. During recent months, DSL is the name of service being pushed by American telephone companies in direct competition with cable modems (recall that AT&T@Home had mentioned DSL as summarized in the April newsletter). But what is DSL, and how great is it? *"DSL Becomes More Accessible; How and why more people are qualifying for DSL"* is the title of a story by Andy Fin in the June, 2000 (Volume 10, Number 6) issue of *Computer Bits* magazine. Whereas once this free publication was available only on paper, today it can be accessed by connection to **www.computerbits.com** Supposedly DSL indicates *Digital Subscriber Line*, although this can and will be forgotten as quickly as the supposed meaning of ISDN. More significant is cost and performance which, according to Clark Howard, should be comparable to a cable modem. These are directly-competing services, and which might be best for any potential customer probably depends on many details that can not be discussed here. For example, not every telephone user has access to DSL because distance is critical. Andy Fin has an entire section entitled *"Do You Qualify for DSL?"* The amazing answer is: ahead of time, it is entirely possible that no one knows! *"Qualifying means that there is hardware in the telephone company's central office ('CO' in ISP lingo) capable of bringing you DSL ... Qualifying also means that your home or business is within a certain proximity to the CO. ... There are often several COs in a city. The answers you get from different ISPs can be inconsistent, if not discouraging. One ISP may say they don't serve your area. ... One ISP may not have a relationship with the telephone company, or Competitive Local Exchange Carrier (CLEC) that has a presence in your CO, but another ISP could. There's also a possibility that your distance could preclude you from the services that one ISP offers, but still keep you eligible for others. ... The rules and relationships between service levels and distance can get blurry when different ISPs have different distance requirements for their respective services. Many ISPs like you to be no more than 18,000 feet from the Central Office to qualify for SDSL, and no more than 15,000 for ADSL. These numbers have slowly gotten bigger over the last couple of years, as different DSL offerings get introduced and tested by consumer guinea pigs."* A resource recommended by author Fin is **www.dslreports.com** which *"features customer recommendations and horror stories about DSL and ISPs. It has amazing regional information, fantastic DSL FAQs, and plenty of forums for Q&A."*

Hotmail customers number 68 million. This according to a story of *The Register* posted July 2nd. Author John Lettice explains that *"a bogus email sent out to Hotmail users claims they'll be cut off if they don't prove they're using their accounts. In order to do so, all they've got to do is forward the email to other Hotmail users."* So, nothing more serious than a simple hoax seems to be involved, and damage totaled no more than a lot of spam for Hotmail. About an element of truth, *"the message ... claims the service has too many customers."* As for possible disconnection, this was not unreasonable: *"Hotmail itself does this after 90 days"* of disuse.

www.greatdomains.com is a seller of Internet domain names. Your Editor knows because he automatically was connected on July 9th following an attempt to reach nonexistent site **www.mutualfundsonline.com** Under the headline is one line of explanation: *"Buy and sell domain names, Web sites, and Internet-based businesses using the Internet's #1 reseller."* The market is huge: *"1,061,310 names listed for sale."* Included is a search engine, and the search can be limited by price. The pull-down menu begins with *"$0-1000"* and ends with *"$1,000,000 and up."* The only problem would seem to be price. Who would want to pay one million dollars for mutualfundsonline.com or $100 million dollars for onewindowshopping.com?

Auction site eBay was mentioned in the April, 1999, issue. A continuing problem (fatal flaw?) is inability to

know who participants are. Consider the second paragraph of a short story posted at *The Register* on July 14th: *"eBay says Braxton Anderson, under his own name and various aliases, has been using foul and abusive language on its site. CNN reports that eBay has terminated 40 to 45 of Anderson's accounts to try and stop him but he is still rejoining under different identities."* Unable to stop the guy itself, *"eBay has asked a federal judge to bar"* this *"Chicago man from its web site."*

Long-distance telephone calls using the Internet were mentioned in the January, 2000, issue. In E-mail dated July 18th, Tom Field of FREEP fame explained how he uses his notebook computer together with free Internet service: *"The communications itself is amazing. I have a new notebook that I bought $1000 cheaper than it was 6 months ago. It has a built in microphone which makes voice communications extremely easy. I sit in front of it like I am doing now, I go to a free chat site on something like bluelight, I have someone meet me there at a specific time, I am alerted by a buddy page when they are online, I set up a private room and they enter, then I select 'voice chat' with the mouse, push down the button, and talk. When I release it, they can talk back to me. It doesn't require any fancy software or setup. I can't even see where the microphone is, but apparently it works without having to bend over with good clarity."*

Free E-mail from Juno is powerful. When mentioned in the October, 1997, issue, it certainly was not, but there then was no reason to mention limitations because everyone understood them. Originally, attachments were not allowed, and messages were seriously limited in size, as your Editor has been mentioning to others for years. Even non-free services often were limited (for AOL, see mention of a 1150000-byte limit in the April, 1996, issue). But BPA's Dr. Tsu-huei Liu has since corrected your Editor about Juno, and the good news was quickly relayed to Tom Field of FREEP on July 17th: *"Around the start of this year, she switched to 'Juno Web Internet.' Using either this newer free service or the original [it is hard to remember which, and when, at this late date], there seemed to be no serious limit. In fact, she once attached TPBIG.ZIP (1.3 Mbytes or more, depending on version) and sent it to someone. All for free. Amazing."* Of course, interested readers can check **www.juno.com** Like Yahoo, Juno is much more than free E-mail.

"Internet fraud is sky high, according to Gartner, and Web companies are picking up the tab." Thus begins a story of *The Register* that was posted July 19th. It continues: *"A survey of 160 companies confirmed many people's fears by saying that fraud over the Internet is 12 times higher than traditional retailer sales."* If this is the next generation of retailing, it looks costly and dangerous to your Editor. Whereas *"traditional retailers pay credit card discount rates of 1.5 per cent plus 30 cents a transaction ..., online retailers on the other hand pay a higher rate of 2.5 per cent plus the 30 cents. According to Gartner, they also have to pick up the cost of Net gateways and fraud detection -- another 50 cents a transaction."*

Google is the name of a search engine that was recommended by FREEP's Tom Field in E-mail dated July 18th. Four days later, your Editor investigated, and was amazed by the official story (next): *"Google Inc. focuses exclusively on delivering the best search experience on the World Wide Web. ... The company delivers its services through its own public site, www.google.com, and by licensing its search services to commercial sites. Google, which is headquartered in Mountain View, Calif., was founded in 1998 by two Stanford Ph.D. students ... The privately held company announced in June 1999 that it had secured $25 million in equity funding ..."* Advertising claims that the March 19th issue of *Time* magazine stated: *"It was love at first search ... Google does only one thing -- search -- and does it spectacularly."*

Eastman Kodak might be another victim of the home computer and Internet revolution. A Morningstar (M*) story dated July 21st is entitled *"Kodak meets estimates but still faces uncertain future."* Author David Kathman explains why: *"The major concern is Kodak's ability to adapt to the growing popularity of digital photography, which doesn't use film. Kodak was slow at first to make the leap to digital, for fear of cannibalizing its film sales."* This sounds a little bit like IBM and minicomputers during the '70s, eh? I.e., a conflict of interest. Recall digital cameras, including one from the film giant Kodak, were briefly mentioned in the July, 1997, issue. Now, more than 3 years later, Kodak has read the handwriting on the wall: *"over the past couple of years it has aggressively pursued the digital market. Digital imaging now accounts for 20% of Kodak's revenue, but the company hopes to make that number 50% by 2005. However, Kodak still trails Sony SNE in the digital-camera market, and growth in Kodak's digital division was lower than expected this quarter. The division is losing money and is not expected to turn a profit for at least a year or two. Kodak's ability to quickly make its digital division profitable and grab market share is the key to the company's future."*

"Stephen King offers serial novel over Internet" is the title of a CNN news story dated July 24th. This really is a continuation of the mention in the July issue, with a twist: no longer is a conventional publisher involved. As CNN explained: *"King on Monday is offering up the first two installments of his new serial novel online, asking readers to pony up a buck for each copy they download from his Web site, www.stephenking.com If the honor system works, the episodes will continue. It could be a scary venture for publishers, who were eliminated from the process ..."* Explaining the slang, a buck is a dollar, and *to pony up* means *to pay*. That same day, *The Register* provided more interesting background, such as this detail of the offer: *"If more than 75 per cent of the people who read the offerings pay, King will reward them by publishing more."* On an associated Web page, author King is said to

have encouraged his followers: *"My friends, we have a chance to become Big Publishing's worst nightmare."* King's latest offering is *"The Plant,"* which is advertised as *"a funny yet gruesome tale of a vampire vine that takes over the offices of a publishing house in the early 1980s."* About that S&S experiment during March (*"Riding the Bullet"*), King should be pleased: *"Despite computer enthusiasts distributing pirated copies on the Web for free, it still sold around half a million electronic copies over the Net, making King around $450,000."* For later details (the story continues to change) and an interesting biography of King's difficult younger years, see **www.stephenking.com** (consulted July 29th).

Free E-mail from Kmart retail stores? This is what FREEP's Tom Field indicated in a message dated July 18th. But first, E-mail and computer sales: *"The pay providers are now teaming up with computer companies to sell their services as package deals with the computers. I have seen computer companies with both CompuServe and AOL service as part of the purchase agreements."* But more interesting is the free service: *"I have started using the Kmart site. You can get a CD at the register in any Kmart free or go to http://www.bluelight.com/ and click the upper left hand corner to download the software. An advantage to this one is that they have local numbers in most US cities. Another, netzero at http://netzero.net/ , says they will have free Internet to Canada soon and currently supports the US. Some others are ... There are a lot of free Internet providers around the world and the US now. It looks like the future is headed to free Internet for now. Most of these providers also have free email."*

Elementary HTML education is what made Victoria Ring famous. She *"began her first business on the internet in 1995 and sold it in 1998. She ... started with absolutely no knowledge about the internet and built an online business ..."* This is part of the biographical information that accompanies **www.victoriaring.com** In addition to other practical advice, there is a free HTML tutorial that was mentioned by Laszlo Prikler on July 25th. One also can purchase a workbook: *"If you are a teacher or educator, order Victoria's new workbook to train students in your area -- the same one used to train 100's of students around the world and at The Ohio State University."*

"The Acronym Finder" at **www.acronymfinder.com** is a free service that is copyrighted by Mountain Data Systems (MDS). Acronyms always have been a problem, and always will be. As one moves from one field or forum or country to another, acronyms change. Of course, since words change from one language to another, so do acronyms. Sometimes the letters are the same, but the order has changed (e.g., the English AIDS and French SIDA). To show just how useless a standard list might be for non-standard, technical terms, your Editor began with ATP. Almost instantly, MDS provided the answer: *"Your search for ATP returned 59 definitions."* Among the early alternatives, which are listed alphabetically, are numbers 2) Ambient Temperature and Pressure, 7) Approved Test Procedure, and 8) Army Training Program. On the other hand, a search for EMTP revealed no alternatives!

Rush Limbaugh, host of the most listened to talk radio program in the universe, finally has a Web site. Of course, following the naming model of most others, this can be found at **www.rushlimbaugh.com** as your Editor first observed around August 10th. This should be interesting to watch. Initially, there seems to be little more than a summary of the daily show (including audio), minimal advertising for Rush's newsletter (*The Limbaugh Letter*), and a real-time connection to the broadcast itself.

"Emulex Stock Tanks After Hoax" is the headline of Reuters story dated August 25th. This was found at *Wired News* the day after. The Internet is involved because its speed was critical to the deception: *"A press release, which appeared on Web-based news dissemination service Internet Wire, said the company's chief executive had resigned and Emulex (EMLX) had been forced to restate 1998 and 1999 earnings, as well as revise the fourth quarter to a loss from a gain. The news was picked up by Bloomberg and Dow Jones news wires, which use Internet Wire as a source of news. Shares dove, and were down 48-1/16 at 65 when they were halted for trade at about 10:30 a.m. EDT."* Three days later, the staff of Indexfunds.com provided more details in a story entitled *"Bogus press release causes Emulex stock plunge."* About magnitude: *"In one of the most dramatic hoaxes in stock market history, a bogus press release caused the market value ... to temporarily lose $2 billion on Friday."* This loss was *"60% in a matter of minutes ... By midmorning, Emulex stock had plunged to $45 after originally opening on Nasdaq at $110.69 Friday morning ... During its wild ride, Emulex stock ranged between $43 and $130 Friday."* So how might authors of the hoax have profited? *"Shortly before the fake release was posted, there was an inexplicable surge in Emulex put options trading. Buyers of the defensive put options could have cashed in on their Emulex options when the price plunged after the false news was publicized. The SEC, FBI, National Association of Securities Dealers, and the U.S. Attorney's office in New York have all opened investigations ..."* Meanwhile, various electronic news media are embarrassed. A managing editor of Dow Jones News Services is quoted as saying: *"I'm not pleased we published this at all."*

European EMTP User Group (EEUG)

"Inaugural message of EEUG list server" was the *"Subject:"* of your Editor's message having *"Sent:"* date Monday, July 24, 2000 11:38 AM. EEUG Chairman Mustafa Kizilcay had given the honor of the first message from **atp-emtp-l@listserv.gmd.de** to your Editor, and this was it. The headline of this 6714-byte E-mail was: *"JAUG and Can/Am user groups support new list server of EEUG."* The opening paragraph follows:

The text now being written should be mailed by a list server that is operated by EEUG (the European EMTP User Group). By mutual agreement among EEUG, JAUG (the Japanese ATP User Group), and the Can/Am EMTP User Group, this new service soon should provide a secure alternative to historically-insecure operation of the Fargo list server (operated by Prof. Bruce Mork of Michigan Tech in Houghton). Of course, the October newsletter should provide more details.

End of insertion. Next, there was a short summary of the experimental mailing of July 9th (for more information, see a separate story). There also was mention of *"a subsequent, much-smaller experiment involving just 60 addresses during the late morning of Tuesday, July 18th. If you received either message, consider it part of history. If you did not receive a copy, do not be concerned. Once EEUG offered its service, this writer quickly abandoned his own experimentation. ..."* About the future, your Editor predicted (next paragraph):

Long term (e.g., 2 months from now), it is expected that the new EEUG mailing machine will have replaced the Fargo list server for information of both program developers and at least three user groups. The cooperation of JAUG, EEUG, and Can/Am user group is insured by mutual agreement, of course; and it is expected that other user groups simply will follow this lead (for reasons that need not concern us here, this writer predicted that competition would be difficult). But before then, all subscribers will have changed. There will be an abrupt discontinuity as the present, huge, insecure list is replaced by a smaller, secure one. Today, most subscribers are Prof. Mork's (acknowledgment: recent REVIEW of the Fargo list server was taken as the starting point of the mailing list that today is being used). But soon, there will be complete re-subscription, with each user group being responsible for its own members. By far the biggest problem is expected over here in North America, where licenses now number close to 2000. Can/Am-licensed subscribers are advised to pay close attention to future mail from this EEUG list server. Specifically, the average Can/Am-licensed subscriber most likely will need to submit one piece of paper (a revised licensing form) by snail mail. But final details still are being studied by EEUG Internet experts. Do not send any paper yet. Instead, "stay tuned" (radio-speak).

Use by ordinary subscribers began August 10th --- by accident, from what your Editor could see. This was while both the Chairman and the Deputy Chairman of EEUG were unavailable for a controlling response. As your Editor explained in his own message "4)" later that same day: *"Thus far, BPA has received 30 or more non-private replies to my list server message '3)' some 29 hours ago. Since the previous two messages had no such replies, it is worth commenting on the difference. Yes, EEUG's new service seems to be operating. But I am not sure the average subscriber is supposed to know this yet. Moderation* ***is*** *involved, but I am not sure moderators yet have been given final rules for their operation. Some moderator or moderators must be approving, although I have no idea which ones. Do we not want public accountability of who has approved? Until a moderator has specific orders to begin, I would suggest caution. For example, one rule of moderation to which all seemed to agree was a prohibition on advertising, and that would include the advertising line for free E-mail at the bottom of some messages (I recall seeing one involving Hotmail). Another rule that might be missing from a first draft of moderator rules was this: do not disclose ATP secrets (e.g., .PL4 file structure, or ATP source code) without explicit permission."*

Inability of MS Outlook 98 to handle some messages normally provided a conclusion to your Editor's message "4)" (see preceding paragraph). The following paragraph summarizes the problem, for which no one yet has suggested a satisfying solution:

About the message from The Czech Republic (Jiri Novotny of some HV laboratory ...), display in MS Outlook 98 as used at BPA is troubled. This is not the first time such trouble has been seen, and it is important to understand why. I recall the same problem has been seen in the past with mail from Dr. Hans Hoidalen in Norway. I suspect that non-English characters somehow have been inserted since Outlook 98 issues the error message: *"This message uses a character set that is not supported by the Internet Service. To view the original message content, open the attached message. If the text doesn't display correctly, save the attachment to disk, and then open it using a viewer that can display the original character set."* In fact, there is no trouble with the display, but such use is a pain. Extra mouse clicking is required --- first to see the message, and second to exit the message (the **Esc** key does not work). If any reader has ideas how to avoid this complication, please share the insight with others.

Advertising should be removed by moderators prior to publication. The single line that is appended by Hotmail or Yahoo was much on the minds of planners as this rule first was adopted. Since then, thinking has been generalized. There is a more general need for editing. The first public mention would seem to be by EEUG's Deputy Chairman Prikler, on August 13th. He explained that Tom Field of FREEP had asked about the treatment of an *"advertisement or comments of a personal nature."* Prof. Prikler explained: *"Auto-attached advertising will be eliminated by the moderators, and the message will be posted this way. Handling of 'comments of a personal nature' will depend on the nature of the comments. Moderators are just working on the 'Rules for Moderation.' When it is finished, it will be publicly available on the ATP related web sites."*

Legal disclaimers are subject to the same treatment (i.e., destruction) as advertising, users are forewarned. Probably by now most readers have received such appendages, so an illustration should not be necessary. Nonetheless, to be sure

there is no misunderstanding, consider the bottom of a message from the former Commonwealth Edison in Chicago. Dated August 10th, this warns: *"This E-mail and any of its attachments may contain Unicom proprietary information, which is privileged, confidential, or subject to copyright belonging to the Unicom family of Companies. This E-mail is intended solely for the use of the individual or entity to which it is addressed. If you are not the intended recipient of this E-mail, you are hereby notified that any dissemination, distribution, copying, or action taken in relation to the contents of and attachments to this E-mail is strictly prohibited and may be unlawful. If you have received this E-mail in error, please notify the sender immediately and permanently delete the original and any copy of this E-mail and any printout. Thank You."* Company lawyers no doubt convinced management that this would be a great idea, and the addition no doubt occurs automatically, out of the control of the E-mail author. As deregulation of the electric utility industry proceeds, lawyers might outnumber engineers, so we can expect to see such nonsense with increasing frequency. Well, the EEUG list server does not accept the responsibility of knowing what company lawyers might prefer. Subscribers are forewarned that such disclaimers will be ignored by moderators, and will be removed prior to the publication of accompanying material. This assumes that the information to be published is believed to be public, and appropriate for revelation to others. By submitting a message to the EEUG list server, a subscriber gives up his right to confidentiality. If any subscriber is unhappy with this arrangement, he is advised to de-subscribe immediately, and to obtain his ATP information elsewhere. Anyway, as a practical matter, it must be observed that moderation should protect against inadvertent disclosure far more effectively than any such appended legal disclaimer ever could. If material really is confidential, it should be so marked, and should be addressed to some specific individual. As such, it would be a personal message, so should be blocked by moderators (a current rule). This should be a whole lot safer than the Fargo list server of years past.

Desubscription from the new EEUG list server first was requested by Jaspal Singh at the University of Wyoming. His E-mail on August 9th was short and direct: *"Please let me know how to unsubscribe..."* Curiously, what was trivial for the Fargo list server (see Prof. Bruce Mork's mention of SIGNOFF in the October, 1991, issue) was more involved for the EEUG list server. After more than one person suggested an attempt to use the Fargo medicine, EEUG Deputy Chairman Prikler clarified details on August 13th: *"Sending a 'message' with 'unsubscribe ATP-EMTP-L' will have no such effect for sure. At this moment the subscriber list is maintained manually by the owner(s) of the ATP-EMTP-L. So if … wishes to unsubscribe he/she should contact the Can/Am user group."* But why the Can/Am user group? A search of Can/Am records showed no trace of the guy. There was one license in the sparsely-populated state of Wyoming, but this dates to July of 1991, and is believed to belong to a professor who has not been heard from in years. Anyway, the Can/Am user group denied responsibility, since it never knew the guy, and was not responsible for his subscription. To conclude, this was just one more sign of the need for security (coming soon).

"Me Too Epidemic" was the subject of private E-mail from Kurt LaFrance, who wrote from mtu.edu on August 9th. Your Editor was not the only one to be surprised by the many messages that did nothing other than confirm reception. Mr. LaFrance wrote: *"Upon opening my mailbox this evening, I had a dozen or so messages from the ATP list. ... Perhaps there should be a policy that the list be used for dissemination of ATP related information and messages only pertaining to a few members (in this case the list operators) should be sent privately? I fear that in the future useful information may become lost in deluges of 'me too' messages."* In his reply the following day, your Editor emphatically concurred: *"Like the prohibition on advertising, moderators should prevent precisely the sort of trivial communication that was observed yesterday. This is my objection to anonymous moderation: from this distance, I have no idea who is responsible for allowing the flood of messages through."*

News About TACS and MODELS

TACS evaluation of X**Y with negative X and Y not an integer was mentioned in the April, 1997, issue. Recall that Lionel Orama, now a professor in Puerto Rico, had observed the difference between Salford ATP and Linux ATP when base X was negative and Y = 2. More than 3 years later, your Editor tripped over the same problem, and decided to add protection June 16th. The new logic will continue to use library function ** if base X is not negative. But for negative X, the case of non-integer Y should be trapped as follows: *"=== Halt in TACSUP. Salford DBOS chokes on X**Y for negative X and non-integer Y."* That is the first of two lines. The second will identify the supplemental variable/device number I and time T as well as values X and Y. As for multiplication, this will be used if and only if X is negative and Y = 2. So, users still are advised to replace X**2 by X * X in their data. For non-negative X, this should be more efficient. On the other hand, the necessity for such change has been largely removed.

"We have the TACS tutorial now" was the exciting beginning of the final paragraph of an undated cover letter from Tom Field of Southern Company Services (SCS) in Birmingham, Alabama. This was explanation that accompanied his Express Mail envelope of ATP license applications for 8 SCS employees, which arrived in West Linn on August 28th. About ATP licensing, your Editor notes extraordinary thoroughness: *"We had each of them read the license before they came. We required each of them to fill out a personal license for home use and another one with the operating company name ... We went over the license again with them at the beginning of*

the course. Finally, we discussed the license one last time at the end of the course." Back to the occasion, about which Mr. Field reported: *"I just finished teaching the course on ATP. Reuben Burch taught the course with me. All of the participants were employees."* About TACS, Mr. Field clarified: *"We have to come to an agreement on how we will distribute it to other licensed ATP users. Nearly all of the work was written at home by Reuben and myself over the past few months. We covered the basics of the program and then advanced applications. We have written what appears to be an ATP User's Guide. We have referenced the ATP Rule Book and the EMTP Theory Book throughout the material. We supplemented this with additional theory in some places as well as data sheets, real world values, etc. Hopefully we will have another course in a few months for another group of ... employees. We will refine the material we have, correct mistakes, etc., before then."*

Line and Cable Constants

103 coupled conductors of CABLE PARAMETERS were mentioned in the preceding issue. Yet, while this solved the problem of creation of a Pi-circuit, it was not adequate for simulation using such branches. As a result, LISTSIZE.103 was modified to include FGH dimensioning (the 400 coupled coils that inspired LISTSIZE.FGH were mentioned in the October, 1998, issue). The dimensioning is accomplished for Mingw32 ATP using VARDI103.BAT as created by BPA's Dr. Tsu-huei Liu on June 26th. About logistics of his study, Ashok Parsotam explained the following in a message that same day: *"Yes, I am using nominal Pi-circuits to calculate the steady state (phasor solution) value of likely magnitude of longitudinal induction and Ground Potential Rise (GPR) in auxiliary services such as Fire Protection Pipe, coaxial communications cable (this is a leaky coax for radio communications inside the tunnel) and railway tracks due to a single-phase-to-earth fault in a power cable inside an 8-km-long and 3-m-diameter underground tunnel. Due to proximity of 110-kV and 33-kV cables to non-power-supply metallic services in a confined space or common corridor, the induction and GPR hazards to people and equipment had to be carefully analysed. In the final model, I should have at least an 86-conductor, mutually-coupled, nominal Pi-circuit; and depending on cable sheath cross-bonding joints in 110-kV and 220-kV circuits, I would have between 6 and 18 Pi-sections."*

The units of printed output were not always obvious for CABLE PARAMETERS (CP), as pointed out in E-mail dated June 18th. Ashok Parsotam of Vector Ltd. in Auckland, New Zealand, wrote: *"I feel the impedance output in the .LIS file would be much better if you could state the units of impedance (Ohm/m, etc.) for the following items: Earth impedance ZE; Conductor internal impedance ZC; Total impedance [Zc]; and Total admittance [Yc]. ... It does not state units and you have to take a very close look at the results to realise that units are in ohm/m or mho/m."* Sure, why not? There is no shortage of space (the price is right), so the improvement was made by BPA's Dr. Tsu-huei Liu on June 29th.

A cosmetic error of CP output was removed by BPA's Dr. Tsu-huei Liu on July 3rd. The concern began with several lines of DC-27 printout that involved labeling *"Outer-surface length(M) ; ..."* The following number sometimes (not always) was zero in F95 Lahey ATP output and nonzero in F77 Salford ATP output. Surprisingly, the F95 Lahey answer was right! The F77 answer was not because the nonzero number in question had been left over (retained within COMMON) from a preceding subcase. Yes, initialization (zeroing) could have been added, but it seemed more logical and also better to delete output of a variable that is not being used (output only has meaning for an arbitrary cross-section conductor, if IDATA = 0). So, the two outputs became equal after the differing lines were suppressed by the introduction of S.N. 6829 within OLPRE (see the line having BPA00JUL for a UTPF ident). Not only was the *"Outer-surface"* line omitted, so was the extraneous output operation preceding it, at S. N. 145). Curiously, this output was mishandled, resulting in a repeated *"DC resistance (ohm/m) ; ..."* line about which no one previously had complained. Well, the unwanted repetition is gone now (e.g., from DC-27 output).

Brain - Damaged MS Windows

The European Union (once called Common Market) is pursuing MS. Recall the possibility has been known for a long time (see the April issue). Well, a story by CNNfn (CNN financial news) dated August 3rd is entitled *"EU opens Microsoft case; Microsoft faces antitrust complaint for abusing power in operating systems."* From London, the abstract summarizes: *"Opening the latest legal salvo against Microsoft Corp., the European Commission launched an antitrust case against the company Thursday charging that the U.S. software maker abused its dominant position in PC operating systems software."* This is serious business for two reasons. First, EU represents a huge market --- bigger than the American market. Second, the EU action goes where Janet R's American action did not. About the latter, the EU complaint objects to MS *"for allegedly abusing its dominant position in the market for personal computer operating systems software by leveraging this power into the market for server software."* Note carefully: no Internet browser here. Sun had lodged the original complaint, claiming that MS *"had breached antitrust rules, by engaging in discriminatory licensing and by refusing to supply essential information about its Windows operating system."*

Trouble pasting within a WP 7 document first was noted by BPA's Dr. Tsu-huei Liu late in August, so she called the appropriate Corel telephone number for free advice. In a

note to your Editor dated August 30th, she summarized: *"There is an 'NT Enable patch' for WP Suite 7 (cost $9.95) which includes the fix for copy/paste."* It seems this is yet another illustration of how Bill G makes life difficult for competitors by not revealing the internal workings of his operating systems. Usually WP 7 pasting does work, but not always. Why it took BPA several years to discover the problem is not known. In any case, BPA will not purchase the patch because WP Office 2000 (see mention elsewhere) *"should arrive soon,"* according to Dr. Liu's note.

Corrections to This Newsletter

The January newsletter contains 1979 rather than the correct 1989. A sentence should end *"… (before Salford use began in late 1989)."* Thanks to BPA's Dr. Tsu-huei Liu for pointing out this error around August 9th.

Jiles - Atherton Hysteresis Model

The Jiles-Atherton model for hysteresis (see preceding issue) was explained by Demetrios Tziouvaras of Schweitzer Engineering Laboratories. Dated March 14th, this stated: *"The first time I became aware of this model was a few years back when I chaired a working group at the Power System Relaying Committee of IEEE on 'Mathematical Models for Current, Voltage, and Coupling Capacitor Voltage Transformers' [1]. In this paper we looked at different mathematical models that are used to represent the nonlinear behavior of the magnetic core of instrument transformers. The dynamic response and performance of high-speed protective relays depends to a large degree on the transient signals produced by instrument transformers, and these signals depend on the overall transient response of the instrument transformers and the type of transients generated by the power system. ... The Jiles - Atherton model accounts for the following nonlinear effects: initial permeability, saturation of magnetization, hysteresis (including coercivity and remanence), and dynamic core losses. The model is based on current physical theories of magnetic domains in ferromagnetic materials [2-3]. The major drawback of the model is that it requires parameters that in my opinion are not easily obtained, or known to the users of ATP program and to engineers in the power industry in general."*

Wary of the data trap, your Editor responded the next day as follows: *"This time, before providing another model for use in ATP, let's investigate how unavailable required data really is. Who now has any, and to whom is it available? Do we have another case where a manufacturer has the data but refuses to share it with others including IEEE PES working groups and/or committees? Recall that famous problem with missing Xq" as used for 1976 IEEE PES SSR modeling. GIGO."* Unfortunately, the question remains unanswered. But Anthony Carroll of Southern Company Services made what seemed to be an important distinction about device size: *"Perhaps it may be useful in relay modeling, but probably not for power transformer modeling. If you do use it for relay modeling, you would probably measure a couple of typical transformers on your system and get the rest of the data from the manufacturer ..."* Of course, this bears similarity to experience with the NDSU models (data is available for relatively-small power distribution transformers, but not yet for much-larger power transmission transformers). About Jiles-Atherton data, your Editor summarized on March 16th: *"I have yet to receive a favorable report about availability. This is not a good sign."*

Trapezoidal Rule Oscillations

Diodes were considered after multi-phase lumped elements, with subcase 5 of DCNEW-30 having just one. This was added May 24th without difficulty. Basic circuit parameter values are comparable to those used by Prof. Ned Mohan's VDOUBLER.DAT (part of *"Computer Exercises for Power Electronics Education,"* January 1990). Of course, only half of Mohan's full-wave circuit is wanted, and snubber circuits and damping resistors are omitted for illustration. Thanks to ISZC and also the omission of artificially-short time constants (associated with snubber circuits and damping resistors), a much larger time step can be used. For illustration, dT = 400 usec is assumed (compare with Mohan's 50 usec). This is subcase 5: half-wave rectification. Subcase 6 restores the missing negative half, making full-wave. Subcase 7 is 3-phase, but half wave (so 3 diodes); and finally, subcase 8 is 3-phase and full-wave (so 6 diodes). Each subcase uses batch-mode graphics of CALCOMP PLOT to show many curves, with all demonstrating perfect switching as first revealed in the January, 1996, newsletter.

Need for resynchronization of time steps was not appreciated in 1995 (see mention of this term in the January, 1996, issue). Recently, while thinking about distributed lines, one possible reason suddenly was understood: the existing storage of past history of List 8 assumes uniform spacing. Unless we resynchronize following interpolation and the subsequent half step (averaging of a full step), List 8 logic would require drastic change. In 1995, presumably this detail was not seen because use was limited to series R-L-C elements. Today, with a broader perspective, more has been learned (E-mail to Prof. Kizilcay dated May 20th). But do we plan to resynchronize time? No decision has yet been made. Yes, logic of List 8 storage and usage would be simplified. But loss of the detail of signals at discontinuities would result, and linear interpolation of all history points would be required every time the simulation time changed by other than dT (twice for the adjustment cycle of each switching). Are we willing to pay this price, and lose resolution of switching in the process? It might be simpler and better to

reprogram List 8 storage to allow variable dT. The change certainly would lighten the storage burden for trapped charge (2 points would be adequate for any length of time).

Monte Carlo (STATISTICS)

.PL4 file output of Monte Carlo simulation was the request of Dr Keith Walshe, Chairman of the Australian user group. In semi-public E-mail of the Fargo list server dated May 8th, he asked: *"3. Is the PL4 file just the last case or can I have each case to a sequentially named PL4 file."* The following day, your Editor explained that .PL4 file output of energizations then was not possible: *"The STATISTICS feature is about a quarter of a century old. Back in those early days, it would have been unthinkable to save all .PL4 files. No one could afford the space. Originally, even the base case .PL4 file was not being saved. Then, a little over 5 years ago, Prof. Mustafa Kizilcay of FH Osnabruck in Germany requested optional retention (see comments in DC-48). More recent PCVP use allows the retention of all .PL4 files. Would the same naming scheme, with limitation to 999, be acceptable for STATISTICS data cases? If so, maybe the time has come for such an extension."*

Concatenation of all .PL4 signals of a Monte Carlo simulation is the new, compromise alternative that was implemented July 20th. Because your Editor received no response to his question of the preceding paragraph, he showed little enthusiasm for such significant modification. But he did experiment with a simple patch: the addition of 4 lines to OVER12. If output frequency IPLOT is given special value 54321, every time step of every energization will be outputted to the single, normal .PL4 file. This was tested using just the 1st subcase of DC-24, and it seemed to work correctly. Formatted output is strongly recommended, with both wide08 and 10E8.0 tested successfully. Using LIST on the result, it is easy to see the discontinuity between successive energizations. But would a special marker line that includes the energization number be appreciated? This would allow immediate, unambiguous location of the start of any particular energization number.

Computer Viruses and E-mail

Computer viruses such as ILOVEYOU (see preceding issue) are propagated by MS software because of defective design. This is the general claim of many, but what are details relevant to MS Word? Attached to E-mail dated June 22nd, Stu Cook supplied an explanation that is said to have been written by Dave Martin: *"Word is the replicating mechanism, not the macro virus. Word's macro system has three major flaws ... which allowed for easy authoring of 'virus' macros. First, any macro found in any document opened is copied into the Normal template file -- automatically, by Word, and without user notification or interaction -- the macro has been spread to a new base of operations, but would still need to be 'invoked' to actually do anything. Second, the Normal template is used as the -- of course -- template for every new document created, so any macros that have been 'harvested' by Word from other documents are contained in all new documents. The macro is now being manufactured into new files by Word. Again, it can't* ***do*** *anything other than take up disk space in all these files, unless the user activates it, but it's spreading everywhere, like a cancer. ... Third, and most importantly, Word will automatically run any macro in a document that has a certain name, such as 'AutoOpen', again, without user interaction or notification. This is how the macro* ***does*** *something, how it goes from benign to malignant. Essentially, Microsoft provides the basic replication API's for virus writers, and the means to activate them without waiting for the user to do so. All the virus author has to do, then, is write the payload(s)."*

Incoming .ZIP files continued to be destroyed by BPA's computer establishment. Your Editor advised subscribers of the Fargo list server as follows on June 20th: *"The data attached to this message is broken, as explained in the January, 1999, newsletter (see 'broken'). If anyone wants help analyzing the mysterious scaling factor, send encoded data (a .ZIP file), but named .TXT or .DOC to trick BPA's virus filter (not very smart)."* On the other hand, no copy of this contribution was received at BPA, so it is unclear how many subscribers received the advice. In any case, your Editor tried.

"Sneaky new virus format has software makers scrambling" is the title of a CNET News.com story by Stephen Shankland. Received from Stu Cook of JUST Services, and dated July 7th, this story explains that attachments to E-mail no longer are required to do the damage: *"Viruses in the email text will be increasingly common because computer systems and computer users haven't caught up with the new method."* Specifically mentioned are *"Kakworm and Bubbleboy ... small programs called scripts that reside in the body of an email message, not in the file attached to the messages. While the viruses themselves have been around since 1999, antivirus companies still are struggling to adjust to their existence. ... Symantec's Norton Antivirus software can catch Kakworm if the virus actually executes, but the software is unable to detect it earlier, the company says. ... The fact that Kakworm and Bubbleboy reside in the message itself is giving Symantec a headache. Scanning the in-box file for Kakworm in Eudora, a popular email program, can cause a major system performance drop ..."* About the need for a speedy response, Bruce Schneier of Counterpane Internet Security is quoted as follows: *"In the old days, when viruses spread by floppy disks, it was fine to update virus definitions every month or so. Now, they spread in seconds, in minutes, in hours. Once a month just doesn't fly."*

Comings and Goings

T.U. Budapest was mentioned in the preceding issue. The informative explanation of Laszlo Prikler follows, from E-mail dated June 26th: *"The official name of the university was changed at the beginning of the year. BUTE (Budapest University of Technology and Economics) is the new name. The university senate is willing to make compatible our educational structure with the requirements of industry: i.e., more economist / managers and fewer engineers. The name of the university now mirrors these changes* :>(*"* So, another historic name disappears. Sad. Yet, your Editor's reaction later that same day was encouraging: *"I can think of worse things than being grouped with economists. At least some of them try to use mathematics. The average American engineering school is just a small part of a much larger university that includes literature, language, and all kinds of other disciplines more foreign than economics."*

Dr. Hian Lauw, father of the Universal Machine (U.M.), honored program developers at BPA with a visit of about 2.5 hours on July 6th. A few words about history might be appropriate. In past newsletters, the title *"Prof."* was used, and this referred to Dr. Lauw's previous position on the faculty of Oregon State University in Corvallis. But, in fact, Dr. Lauw has had no such connection for years. The previous day, his E-mail explained that he had *"permission from my company (EPC Inc.) to use the ATP to model our product. The product name is Accusine and it is an active filter using IGBT semiconductors to reduce the Total Harmonic Distortion (THD) of the current to within 5% (IEEE 519 standard)."* Any reader having interest might begin at **www.accusine.com**

Power Company Politics and Religion

Australia and New Zealand do seem to be ahead of the USA when it comes to restructuring of (i.e., turmoil in) the electric power industry. The following explanation of an address change comes from Ashok Parsotam. In newsletters of years past, Southpower in Christchurch, New Zealand, was his employer. In E-mail dated June 18th, he explained: *"I used to work for Southpower, which was an electricity distribution company in Christchurch (South Island). Just before Christmas 1997, due to a organisational restructure, I lost my job there. Now I am working for a similar organisation in Auckland (North Island). We are called Vector Ltd. and we distribute electricity in Auckland City and surrounding region. Our network is connected to national transmission company -- Transpower at 110 kV, 33 kV and 22 kV. We step down these voltage levels to 11 kV and 415 V to supply our customers. Due to recent changes in the industry, we only provide network connection services whereby generators can supply energy to end users through our network. Before this reform, we purchased electrical energy and distributed it to our customers through our network. Now energy traders fulfill this role. At one time we were known as Mercury Energy. But the Mercury Energy brand was purchased by one energy trader, and we had find another name for our business."*

Unknown persons are spying on BPA? This was the suggestion contained in all-employee E-mail *"From: Internal Communications - KCC"* on July 27th. The short memorandum entitled *"Security Advisory"* begins: BPA *"has reason to believe that extremely sensitive listening devices may be aimed at this building. BPA is currently confronted with many sensitive regional issues and there are numerous outside groups and individuals that are interested in our internal deliberations. ... an investigation is proceeding. In the interim, it is highly recommended that all sensitive discussions and meetings be conducted in the interior of the building away from all windows. It is also suggested that window blinds be closed on floors and in areas where sensitive discussions are being held. ... It is imperative that visitors requiring escort be accompanied at all times while in the building."* Hmmm, sounds like *"Y2K cyberterror"* (see the April issue). How many times is management allowed to *cry wolf*, and still be taken seriously?

"The Shocking Truth about Electric Deregulation" is the title of a Morningstar story by Todd Porter. Dated August 25th, this provides interesting perspective from the financial sector. Author Porter begins with reference to recent disastrous news about companies that have separated themselves from their power supplies: *"The political tide against electric-power deregulation hit a crescendo this week, when President Clinton threatened to unleash the bureaucratic attack dogs of the Federal Energy Regulatory Commission on California electric generators."* Recall the start of all of this years ago (see *retail wheeling* in the January, 1995, issue). Now there is specific mention of *"San Diego Gas & Electric SDEGP"* which *"sold all its generating plants and buys its power in an hourly auction; it was supposed to pass all the savings on to consumers. Except there are no savings: Monthly rates have quadrupled. If prices don't start behaving properly, Big Daddy Bill is threatening to ... impose an extended regulatory timeout, during which prices must sit still for 90 days."* About philosophy and theory, economist Porter offers this sarcastic conclusion: *"We should all be reassured to know that about half the nation is about to follow California in the following experiment: Destroy an inefficient, but highly reliable, system for providing the most vital good of day-to-day life, and replace it with a theoretically superior system, which economists will eventually figure out."*

Stu Cook Uses Apple Macintosh

OVERLAY and APPEND are .PL4 file options that are illustrated by DC-40 and DC-49, respectively. As

the two English words apply, old plot points either are overwritten or are added to. But these are only the two extremes: retention of either none or all of the original plot points, respectively. What about a compromise somewhere in between? This was Stu Cook's great suggestion for the 4th subcase of DC-40, which repeats the simulation of a specific energization. In E-mail dated June 19th, Mr. Cook reported successful experimentation with changes to CIMAG2 and CIMAGE. He concluded: *"... we get a smooth overlap from time steps 0.0, ..., 0.0017, 0.0018, etc. through the end. The length of our new dc24b40d.pl4 is the same as the original produced in DC24, so it looks like we have done what we set out to do. Great! That little bit of tweaking of OVERLAY is now OK ..."* Of course, Mr. Cook's experimentation was for Macintosh, but the same technique should be applicable to any version, and changes were added for Salford (the UTPF) later that same day. The only problem for Salford EMTP is this: use of C-like files complicates the operation. Like VAX ATP, Mac ATP uses simpler UNFORMATTED .PL4 files. See explanation on comments within DC-40d.

LU6VRT is the size of the output buffer that ATP uses for normal printed output (the .LIS file). But details for Absoft ATP differ greatly from details for all other program versions, as will be briefly explained. First, there was the original inspiration, which came from Robert Schultz of the New York City area, as explained in the January, 1994, issue. But Mr. Schultz relied upon Salford virtual scratch files, which worked imperfectly with version 2.66 software, and which were not offered by other compiler writers. So, your Editor decided to program his own output buffer in FORTRAN, and allow the user control over the size LU6VRT. Details typically were non-standard, but the procedure generally was used for other translations --- whether or not there really was any practical need. Included was Apple Mac ATP, using the Language Systems (LS) compiler of years past. But, following a switch to Absoft, Stu Cook performed definitive experiments that showed the futility of such ATP-provided buffering. Yes, buffering was appropriate, but Absoft could provide it, and the Absoft buffering was superior to ATP buffering. The time required to dump to disk 50K lines of output of 132 bytes each was summarized in E-mail dated June 21st. First, there was determination of the need. If each WRITE statement execution outputs only a single line, 10.99 seconds are required. This is slow (i.e., the need is demonstrated). Second, using ATP-like buffering, 2.221 seconds were required to produce the same output using just ten WRITE statements (with each dumping 5K lines). Third and finally, Absoft buffering with size set at 65535 bytes required 1.878 seconds. Code for the 3rd test is just like code for the 1st except that BUFFER=65535 was added to the OPEN statement of the I/O unit being used. About all times, Mr. Cook was careful of variations: *"Some experience with running the program showed that the MacOS can interfere with the writing to disk every so often. So the largest of the pass times for each type is removed from the average to try to compensate for this."* Yes, times were averaged, and the sample size was large (10 trials). About optimum buffer size, Mr. Cook reported times of 2.27, 2.18, and 2.11 seconds for buffer sizes of 4095, 16383, and 65535 bytes, respectively. Your Editor concludes that the value LU6VRT = 32768, used for years with Salford EMTP, should be very efficient for Mac ATP, too. On the other hand, if a user is short of RAM, this shows that even 4 Kbytes (the first figure) will capture most of the possible saving.

Longer file names, when using the date and time to name the .PL4 file, was another improvement. June 24th, Stu Cook wrote: *"The Mac has no trouble with the extra 2 digits for the seconds value and this should avoid most if not all of the looping."* This preceded a change below S.N. 6303 of SYSDEP, which began as DOS code. But DOS limits file names to 8 bytes, and as a result, the two seconds digits were being ignored. The loop being referred to is the one that adds a minute to the time and tries again in case of a collision (if the file already exists). Since modern PCs are capable of processing many short subcases within one minute, many warning messages (*"all of the looping"*) resulted. Yes, by adding two seconds digits to the name, nearly all of the extraneous output should be removed. Far fewer if any subcases will be completed within one second than within one minute.

Routines DATIME and WALSEC were directed to separate disk files beginning June 25th, when it occurred to your Editor that this would be a good way to unify Mac ATP materials. Just as GNU Mingw32 ATP translation produces GNUMODS1 through 4, so Mac translation can produce more than one output file. For GNU, separation was required to avoid warning messages due to inconsistent subroutine arguments. For Absoft, Stu Cook determined that special compilation directives are required. The same NEW OUTPUT FILE declaration can satisfy both needs. Included June 26th was a structural advance: introduction of new SUBROUTINE DATMAC to avoid explicit, in-line content of DEKSPY.

Salford segment DEKWIN suffered from an ordering deficiency prior to correction on June 28th. As a matter of convenience, the same deck had been used by Mac ATP, and the Absoft compiler had issued warnings about variable misalignment (the old, familiar, half-word boundary problem). Stu Cook had eliminated the warnings by introducing an extra, unused, dummy INTEGER*2 KKSPAC. In E-mail the preceding day, he had marked the addition *"! CSC Mod 000627 to align COMMON"* While effective, the change really was a patch. A better solution was to order all variables so as to have non-increasing lengths. This is what was done.

Delayed IMPLICIT for Mac WALSEC resulted from a change to the translator on June 29th. Two days

earlier, Mr. Cook had observed that *"all of the variables have been explicitly typed in the declarations and the USE line must be the first in the routine."* Yes, as part of trickery of library functions to beat the Y2K problem, F90 is being used. But the new restriction on order has been seen before for MS PS. Rather than omit the IMPLICIT statement, it was easier just to delay its insertion. I.e., for WALSEC --- but only for WALSEC --- Mac translation will delay the addition of IMPLICIT until after all USE have passed. If any other subroutine later might require such special treatment, the translator should be changed again.

Elimination of the need for selective F90 was progress contained in Stu Cook's E-mail dated July 3rd: *"Having come across some interesting features of the Absoft package this weekend, I made some more changes to MACMODS to incorporate DATMAC and WALSEC and part of a new RANDM. The other part of RANDM to allow reseeding still needs to exist in a separate file due to some undetermined problem. The bottom of MACMODS now looks like this ... and the new file RESEED.FOR is ... The beginning of the MACMODS file needs to have the following lines added before the SUBROUTINE COPYI code ..."*

MS Outlook 98 Used as List Server

July 9th was the day of the first mass mailing from BPA to subscribers of the Fargo list server. An education was involved, beginning with the problem of converting a list of subscribers to a form that is acceptable to MS Outlook 98. This was easy enough in principle, using a special little utility FARGO.FTN which extracted just Internet addresses from REVIEW output. The resulting 607 lines of FARGO.OUT were pasted into the "To:" window of a new message without difficulty (powerful, these Outlook 98 windows). But twice the mailing failed (i.e., Outlook 98 refused to send the message) because of two bad addresses. No real problem, however, since Outlook 98 documented the address that it did not like, and the offending entry (noted to involve no @ sign) was removed manually. Finally, on the third try, BPA's post office accepted the message. The time was 08:57 when the waiting began. The first response was Dr. Liu's copy at 09:05 followed by James Hall's "Out of Office AutoReply" within the same minute. That was the good news: nothing unexpected for 13 minutes.

But bounced mail began arriving at 09:10 when AOL rejected 9 addresses using a single message that had *"Subject: Returned mail: Service unavailable"* (more about AOL later). One minute later, a single message from pic.melco.co.jp complained about the sender's address and two Mitsubishi Electric addresses as follows:

554 <thliu@bpa.gov>... Unbalanced "'
554 <temma@wse875.pic.melco.co.jp>... Unbalanced "'
554 <temma@wse875.pic.melco.co.jp>... Unbalanced "'

This was following *"Subject: Returned mail: Unable to deliver mail."* This rejection is mentioned specifically because the nature of the problem is not obvious. But even this error message was preferable compared with some later ones, such as *"552 Headers too large (32768 max)"* from coe.ufrj.br Why mention 32 Kbytes when the entire message including headers was less than 22 Kbytes (see later AOL explanation)? For a while, your Editor was quite confused.

Warning messages began with a bunch (11) of those now-famous 1-hour warning messages, which arrived between 10:07 and 10:21 These were part of the good news: at least BPA's mailing machine had been trying, and had not rejected the associated addresses. All 1-hour messages came from BPA, and they provided an indication of mailing duration: 14 minutes or more. But the number of messages (only 11) gave a false impression of seriousness. While 4 were for single addresses (in .AR, .KR, .TW, and .EDU), three of the messages contained the maximum of 4 addresses (not always in the same country). One of the 4-address messages also included 12 addresses having fatal errors. In all, 27 addresses were warned about after an hour. Later that same day, there were three 4-hour messages from other sites, between 13:31 and 14:14 (the time span widens to 43 minutes). These three warnings involved only a total of 4 addresses. The following day, BPA delivered nine 1-day messages between 08:59 and 09:19 --- bad news indicating that BPA's mailing machine had given up (*"Message could not be delivered for 1 day. Message will be deleted from queue."*). Yet, the total number of addresses was only 13. Finally, your Editor recalls one 4- or 5-day message from some remote site, although it can not be located at this late date (July 22nd) as this paragraph is being written. Perhaps it was inadvertently deleted.

Careful study of the AOL rejection, which was discussed with Tom Field (owner of one of the 9 rejected addresses), finally produced understanding. Your Editor's E-mail to Mr. Field and Prof. Mustafa Kizilcay (owner of another of the 9 addresses) on July 17th had *"Subject: 4th of 3 explanations: the solution."* In the preceding third of three explanations, your Editor had explained: *"When I save a copy of the outgoing message to disk using MS Outlook 98, and then look at the 21-Kbyte disk file that results, Vernon Buerg's freeware LIST shows <CR><LF>"* after each of the 607 addresses. Finally, the correct explanation of this was provided: *"True, but not conclusive. The <CR><LF> were added by 'Save as' of MS Outlook 98. To prove they were not in the message itself, I pasted from the original message to MS Notepad, and then saved the content on disk. LIST shows lines out to its 2048-byte limit. Conclusion: AOL has some limit less than the total (about 15 Kbytes, according to DIR)."* About Prof. Kizilcay, it should be explained that he had less interest because, in fact, he no longer was using the AOL address. In E-mail dated March 18th, he explained: *"It is*

correct. I dropped AOL service around March 2000." For background, see the October, 1999, issue.

About lessons learned, the need for smaller, duplicate mailings already has been documented, and this tops the list. Less obvious and satisfying is the avoidance of weekends, and particularly the middle of one. As time passes, unattended post offices of organizations are more likely to be unreachable. Late Saturday night or early Sunday morning might be the worst of all times. Enough time (more than a day) would have passed --- enough time for post offices to have crashed. On the other hand, if not within 24 hours of the resumption of normal business Monday morning, equipment might not be restarted prior to abandonment of the attempt (the 1-day messages). A third and final lesson learned might be this: always use the most current mailing list available. Your Editor's REVIEW of the Fargo list server was dated March 17th, and it seems likely that many addresses had become invalid since then. The Fargo list server is believed to have a lot of turnover as mailboxes change.

Parameter Variation Studies by PCVP

The pocket calculator refused to process a formula such as PHASE = KNT / 100. - 1.0 according to June 28th E-mail from Orlando Hevia of Universidad Tecnologica Nacional in Santa Fe, Argentina. Apparently this was the first use of division followed by subtraction, as unlikely as this might seem. Division followed by addition was correctly handled, but not division followed by subtraction prior to modification of the 5 POCKE* UTPF segments later that same day. The data case that demonstrated trouble was SALDA0.DAT

Publishing Programs and Viewers

PDF output directly from WordPerfect (WP) has been on the wish list of BPA's Dr. Tsu-huei Liu for a long time. Recall mention of equivalent Novell Envoy in the April and July, 1997, issues. Well, Novell lost the publishing war, and Corel finally has switched to Adobe PDF output. Dr. Liu's note dated August 11th explained: *"I just talked with tech support on WordPerfect at Corel. WP Office 2000* ***does*** *and can provide .PDF output directly."* Three days later, Dr. Liu filed by E-mail her official request for an upgrade ($149 is the price, according to the Web site). In case a reader does not understand the significance, it should be explained that PostScript output, which was being used with Acrobat Distiller, did not allow hyperlinks. Although the PS worked well enough for separate, small documents, it did not tolerate the dynamic transfers that seem so important and useful for computer (as opposed to paper) viewing.

PDF copies of newsletters now extend back in time through April of 1996. This follows completion on August 29th of conversion work on all available .DOC files. A few words about completeness and quality probably are in order. Newsletters prior to the second issue of 1996 are missing because they were created using WordPerfect 5.1 rather than Word. Your Editor does not yet have any easy way to create PDF equivalents of these, although there should be hope when WP 9 arrives (see preceding paragraph). About quality, copies either are perfect (exact copies of what was seen on the screen at time of completion), or are so close the average reader should not notice the difference. For each disk file that was produced, all four available printers were tested. If one showed (using Print preview) exactly 20 full pages, it was accepted without change. If not, the closest to this goal was used, and blank lines were added or removed in carefully-selected locations to produce the desired effect (exactly 20 pages, with quality column and page breaks). So as not to lose such work, NEW was appended to old file names (e.g., APR97.DOC). Four such modified files were created, and they are huge (e.g., 291-Kbyte APR97NEW.DOC). Why the great increase in size following trivial modification? There was no warning of any significant modification. This seems to be just one more symptom of the brain-damaged nature of MS software used by BPA. Files are reasonably small at home under Win95 where they were written (e.g., 138-Kbyte APR97.DOC), but they balloon if modified using WinNT at work. Taking APR97NEW.DOC home, prior to loading, Word pauses for a user choice involving type of conversion, with *Text Only* highlighted. In the past, *Rich Text Format (RTF)* has been involved, but not this time (the file could not be opened as RTF). The only obvious good news is that the bloated storage is highly compressible. PKZIP reports *deflating (80%)* (compare with 62% for APR97.DOC). As a result, there is not that much difference in archive sizes: 59 Kbytes vs. 53 Kbytes.

Laszlo Prikler of Budapest Univ. of T&E in Hungary provided a sobering report about his own use of the latest WP software (see a preceding paragraph). In E-mail dated September 1st, he summarized: *"I really do not want to discourage you, but I spent two full days to make my WP 2000 work. ... It is really unstable, even after installation of the latest (the third! 70 MB) service pack. I am unable to open most of my old EEUG News files written under WP7 and 8. Shorter old files can be loaded, but longer ones produce Windows General Protection Faults in module WSTR9.DLL at ... The service pack did not help a lot. ... I am happy that I paid only < 30 $US for this academic license."* So, expectations in Portland have moderated.

Hoidalen Improves ATPDRAW

ATPDraw version 2.3 was announced on August 28th by Prof. Bruce Mork of Michigan Tech in Houghton. E-mail from his own Fargo list server explained: *"Hans Hoidalen has provided an update to ATPDraw -- version 2.3. It is available from the public domain side of the ftp site (no password required): ftp://ftp.ee.mtu.edu/pub/atp/atpdraw/*

*ad_v2/patch3v2.zip This actually is an update of 5 individual files -- just overwrite the existing files in your installation with these new versions. If you have not installed ATPDraw, the complete installation is at ftp:// ftp.ee.mtu.edu/pub/atp/atpdraw/ad_v2/atpdraw2.zip After installing, this, you will still need to make the updates with the patch file. Pasting from Hans' e-mail, the changes to ATPDraw are: *) Circuit Nodes used as input by several models only declared once. *) Output of one model can be used as input to another. Specify Type=8 in the model's node dialog box. *) The sorting by group number option applies also to models. Model that uses output from other models must have a higher group number (Group No. in the model's dialog box). *) ICAP parameter in line constants PI-model is now set according to Xopt in the main circuit. *) The two synch-mach-59 sup-files have been updated."*

Year 2000 Compliance of ATP ?

Possible corruption involving public officials is yet another problem of the Y2K hysteria. This point was made months ago by Orlando Hevia of Universidad Tecnologica Nacional in Santa Fe, Argentina. After reviewing an advance draft of the July newsletter, Mr. Hevia illustrated a different form of legal proceeding against persons who might have behaved irresponsibly. Attached to E-mail dated June 28th, Mr. Hevia provided an English-language translation of a story in the city's newspaper, *El Litoral*, of that same day. The headline reads *"Claudia Bello is accused of defrauding the State."* Rather than being a smooth-talking salesman on the outside, Miss Bello was a high-ranking official (*"secretary of the Public Function"*) inside the former government of Carlos Menem, which was turned out of office by November elections. The replacement government of Fernando de la Rua, through an anti-corruption office of the Justice Ministry, is pursuing cases of alleged abuse. About Y2K and Bello, advertising agency Lautrec S.A. was awarded a contract for brochures, videos, posters and envelopes designed to inform the public about the Y2K problem. Using round numbers, $7 million was the price for services (300K boxes and a million envelopes) that in fact might not have exceeded the level of 200K boxes and 800K envelopes. A $2 million discrepancy is alleged, and Bello will have an opportunity to tell her side of the story August 25th when judge Servini has scheduled a hearing on the accusation.

Use of Web for ATP Licensing

Use of a Web form for ATP licensing was the great idea of Prof. Mustafa Kizilcay, the EEUG Chairman. A separate story explains about the new EEUG list server, which should switch to secure operation around the end of September. Each Can/Am-licensed subscriber who wants to survive the transition will need to use the revolutionary new procedure for licensing (which includes subscription).

A first outline of the idea has been traced to E-mail from Prof. Kizilcay dated April 12th. For the historical record, let us document this inspiration, which was enthusiastically endorsed by both the Japanese and the Can/Am user groups: *"About how ATP licenses can be checked, and really licensed persons can be subscribed to the future mailing list with less effort by the user groups, I have some thoughts: 1) On a Web page of either EEUG or JAUG, an electronic form of the ATP licensing form with subscription option (you can propose this) can be put. After the interested person fills in that form he/she must print it using his/her computer. ... 2) The applicant undersigns and sends the sheet of paper either to his user group or to a central place. 3) The data entered ... into the form will be additionally transferred as Email (or collected in a file on the server) to the user group, which then creates a bulk subscription list. For step 1, we need some programming that can be performed by a student. I could ask our students, who study computer sciences and specialize in multi-media applications. The advantage of the above method is it can be applied to all ATP users in the world ..."*

That was the idea. Implementation took a while longer. As reported in your Editor's message "2)" of the list server, dated August 1st: *"July 24th, one serious technical problem remained for some (an unknown number of) users. Since then, while Chairman Kizilcay was in Japan attending ICEE 2000 last week, Deputy Chairman Laszlo Prikler seemed to solve the problem."* At first, your Editor and Dr. Liu thought that maybe they were either incompetent or unlucky. The automatic E-mail of the Web form did not work for them at BPA as it did for all other guinea pigs used by Prof. Kizilcay to test his form. But careful investigation by Prof. Prikler located first another failure, and then expert advice about the need for change. The good news was documented in Prof. Prikler's E-mail dated July 24th: *"I think the error is localized. It is not the MS IE or Java script that fails. The error is somewhere in the 'sending outgoing mails' procedure as configured at BPA."* Prof. Prikler's wife was the second to report trouble. This was the good news: *"What a nice coincidence! Microsoft Internet Mail Service is involved in both failed messages."* The following day, Prof. Prikler pinpointed the problem: *"I ... contacted a friend who passed my question to his employee at his Hypermedia Systems (www.hms.hu), which is one of the biggest 'solution providers' of MS in Hungary. What I learned is this: ... Both forms should result in an e-mail to the recipient's mail box, but the way of creating this mail is quite different. ... The advantage of option a) is simplicity, but it does not work in some cases. Option b) requires server side programming, but it has the great advantage that it always works."* To be continued.

Interactive Plotting Programs

GTPPLOT is the interactive plotting program from Orlando Hevia of Universidad Tecnologica Nacional in

Santa Fe, Argentina. Since that summary of progress through the end of last year (see the April issue), many more changes have been made. Author Hevia summarized these in E-mail dated September 3rd, from which the following continuation has been extracted. Twelfth, dated January 15th: 27) Correction of a mistake involving Pisa C-like FREQUENCY SCAN and HARMONIC FREQUENCY SCAN cases; 28) Correction of a mistake in AGFPLOT if just a single point was being plotted; 29) JOIN was extended to FREQUENCY SCAN and HARMONIC FREQUENCY SCAN cases; 30) The DICE command was enhanced; and 31) The number of time points was increased from 100000 to 1000000 for Win32 and Linux versions. Thirteenth, dated February 5th: 32) For Windows and Linux versions, both the right mouse button and the <Enter> key can be used to exit from a graphic screen; and 33) Several minor bugs were killed. Fourteenth, dated February 25th: 34) The BODE command was enhanced; 35) The MATLAB command for the Linux version was corrected; and 36) The DICE command now allows the x-axis label in interval, in P.U, or in the corresponding physical units. Variable NSTATI of gtpplot.ini controls the label. Fifteenth, dated March 1st: 37) The DICE command was enhanced by the addition of statistical results; 38) The date of the .PL4 file can be added to the plot (variable NODATE of gtpplot.ini controls this option); 39) The name of the .PL4 file can be added to the plot (variable NOFILE of gtpplot.ini controls this option).

Miscellaneous Intel PC Information

"IBM's new Memory eXpansion technology keeps commonly used data close to the microprocessors for faster access ..." This according to an article posted at *The Register* on June 26th: *"By using a combination of hardware-based compression algorithms and millions of tiny transistors, IBM researchers have doubled server memory capacity for most applications."* About economics, memory has been the problem: *"For a typical ISP, this could represent a saving of millions since memory accounts for 40 to 70 per cent of the cost of ... NT-based server systems."* MXT is the acronym of the new product that *"has initially been designed for Intel-based industry standard PC servers."*

Cyrix, a name from the past (e.g., see the April, 1991, newsletter), is history. Oh, the name might survive, but the company is gone. This according to a story that was posted at *The Register* with date August 7th. *"The former home of Cyrix ... in Richardson, Texas, has now been sold ...Cyrix was acquired by Taiwanese firm Via which still retains the brand name ... The Cyrix Plano site now houses around ten people."* One former employee provided a brief summary: *"Born in 1988, RIP 2000."*

"64-bit Compaq Alpha tops 1040 MHz" is the title of a short story that was posted at *The Register* on August 25th. About use, *"The chip ... forms the basis of the Compaq server family formerly known as Wildfire ... engineers have finally managed to clock it above 1 GHz."* Meanwhile, *"Intel is still attempting to make its 64-bit chip, now popularly known as the Itanic, clock successfully to 733 MHz ..."* Also, see *Merced* in the January, 1998, issue.

Miscellaneous Small Items

The suppression of CALCOMP PLOT output using NOCALC = 1 failed for the final subcase of DC-54. The average user does not care, and has no intention of using the feature to suppress vector plots. But the feature remains important for Apple Macintosh (see separate story elsewhere) until screen plotting is provided. July 8th, it was noted that Stu Cook's 3rd subcase of DC-54 produced extraneous, unwanted printer plots. In effect, PRINTER PLOT of the first subcase was left over. Although CALCOMP PLOT of the 2nd was recognized and avoided correctly, this avoidance omitted the change to vector mode. Upon adding one line of correction below S.N. 4783 of SUBR28, the unwanted printer plots of the 3rd subcase disappeared.

Use of FMTPL4 = widexx with the PCVP loops of DCNEW-26 was not possible prior to the addition of two lines to universal FORML4 on April 17th. This useful extension was yet another valuable result of the Apple Macintosh testing by Stu Cook of JUST Services (see separate story).

KTRPL4 = +6666 was explained in the October, 1999, issue. While not wrong, the writing seemed unclear to both your Editor and Dr. Liu when it was reread on August 29th. Another attempt will now be made, using a simpler approach: The response to +6666 is the same as the response to -6666 except that a name based on the date and the time will replace the name of the data file. Location will be unaffected, so should be in the same directory as the .LIS file.

Instability of the saturable TRANSFORMER component (STC) was last mentioned in the January issue. Recall Prof. Mustafa Kizilcay of FH Osnabrueck in Germany had sent a copy of his 1999 EEUG paper to Prof. Xusheng Chen of Seattle University by E-mail dated 29 November 1999. July 17th, Prof. Chen finally replied: *"My paper 'Negative Inductance and Numerical Instability of the Saturable Transformer Component in EMTP' was under evaluation by IEEE ... I planned to reply as soon as I heard from IEEE. In May, my paper has finally been accepted for publication on IEEE Transactions on Power Delivery. It took one and a half years from submission to acceptance!"* Just before heading for the ICEE 2000 meeting in Japan, Prof. Kizilcay observed: *"Although I have not yet read his paper, our approaches seem to be in conformity. I plan also to make a short presentation at the coming EEUG Meeting in Wroclaw on September 25-26."*