General Delivery

From the President

Bart Childs

The TUG meeting in Montréal was a big success. Dean Guenther again put together a great program. He had able assistance from Christina Thiele and Shawn Farrell. Shawn was an entertaining, gracious, and generous host. We are particularly appreciative of his help in understanding drivers, subways, and Olympic taxes. We just wish he had possessed the power to stop construction projects for a few days. Our annual meetings just seem to get better and better every year. We owe a great big thank you to these individuals and to our staff in Providence.

The Sunday evening kickoff events have really been great. My family will long remember my being Gouverneur for an evening and hosting a dinner with my "mistress" at my side. (No gentleman would bring his wife to New France!)

We introduced another new TUG employee at the meeting, Mary Armstrong. Mary's main functions will be in the coordination of recruiting members and selling TUG and its products (especially courses).

I wish to thank Mike Ferguson, Cal Jackson, and Patrick Ion for serving as the Nominations Committee for the past two years. Last year they convinced David Ness to be a candidate for Treasurer and this year they got a slate of four for the office of Vice President. I don't remember ever having a real election before. We elected **Rick Furuta**. Dean Guenther was selected to replace Rick as an at-large member of the Finance Committee.

The Steering Committee changed its name to Board of Directors to agree with the legal terms used in our official Bylaws. Some of the actions of note taken by the Board are:

1. Adding Malcolm Clark, Shawn Farrell, Regina Girouard, and Christina Thiele to our ranks. Malcolm will be our European Coordinator.
2. Changing the VMS Coordinator from Barry Smith to David Kellerman.
3. Selecting next year's Nominations Committee: Liz Barnhart (Chair), Pierre MacKay, and Norman Naugle.

The offices of President and Secretary will expire next year. There is nothing about the qualifications of officers in our Bylaws, but it seems obvious that they should be *active TEX users.* We should consider the matter carefully and help the Committee select the best possible slate of nominees. Our office will make lists of attendees at the last several meetings available for your perusal. Feel free to armtwist and encourage in the best way you can.

Most of the rest of the items in this report were discussed in the meetings of the Board of Directors, the business meeting, or in personal conversations. These are topics that you should know about or we will have to address in the near future.

The Bylaws were generally created with some attention paid to the previous ones from when we were a less official organization. Several items underwent editorial changes to agree more closely with some generic ones used by our lawyer. Several of us would like a few changes, such as:

- Rewrite them in plainer but legal English.
- Give the power to change the Bylaws to the membership (it ended up in the hands of the Board).
- Give some more guidance or rules regarding the membership of the Board.

I have appointed a committee chaired by Allen Dyer (a lawyer himself) to bring a new set to the next meeting. He will be assisted by Barbara Beeton, Lynne Price, Sam Whidden, and Ray Goucher.

We project our budget to show a small loss in this year. The loss is due to the change of accounting methods, purchase of equipment, and a significant—and much needed—increase of staff at TUG headquarters. We expect that these actions will pay dividends, and next year we should return to building the desired cash reserves. Your Finance Committee is closely monitoring these actions.

Cathy Booth pointed out that the attendance at the Exeter meeting was nearly the same as ours. We have several times as many TUG members in the U.S. and Canada as there are in Europe. Can we do something better? Maybe we should send all the officers to the next European meeting to be observers? I have appointed a membership recruitment committee that is chaired by Regina Girouard with volunteers Malcolm Clark and Mary Armstrong (ex officio). Are one or two more of you willing to carry on an E-mail dialogue in making plans? The three main items are: reaching more users; serving European, Asian, and southern hemisphere TEXers; and getting members to participate in local, regional, and national meetings.

By the time you read this, TUG will likely have assumed the responsibility of subsidizing the maintenance of the core software and the TEXhax moderator. We expect this to be carried out by

one graduate student at a university (probably U. of Washington).

You will also notice from a new byline in this issue that maintenance of the LaTeX style files repository has been moved to Clarkson University under the management of a new volunteer, Mike DeCorte. Our warmest thanks go to Ken Yap for taking such good care of it for the past few years.

It has been strongly suggested that TUG be in the business of making distributions of style files, TeXhax, etc., available on diskettes, for users who have no access to any of the electronic networks. We are working on plans for that.

Happy TeXing.

Extra! Extra!
TUGboat Becomes a Quarterly

Beginning in 1989, TUGboat will be a quarterly. The fourth issue will be dedicated to the Proceedings of the Annual Meeting. This will ensure that the contents of these papers will be presented to the entire membership.

Another Honorary Degree for Donald Knuth: Doctor of Science, Oxford University 22 June 1988

Presentation by the Public Orator (Mr. Godfrey Bond)

Illvstrissime atqve honaratissime domine cancellarie, vosqve egregii procvratores:

De machinis computatricibus quibus studiorum causa utimur saepissime et in officinis et inter vina disputamus academici. *nota magis nulli domus est sua* quam nobis apparatus illi molliores, ut vocantur, quos in machinis illis dirigendis adhibemus, visceribus mandata extrinsecus insinuantes. Levia quidem sunt haec colloquia, χελιδόνων tantum μουσεῖα. subest tamen scientia subtilissima

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computandi qua imbuti mandata illa docte machinis iniungimus, ut ordine praescripto data digerant. 'scientiam' dixi, 'artem' tamen hic mavult appellare. artem enim exercentis est eleganter rationem ingeniosam computandi excogitare ex qua non solum artifex ipse sed etiam qui existimatores accuratius intuentur magna concitatione mentis commoventur, magnam capiunt voluptatem.

Facultati igitur Artium debet hic quem produco adscribi, quamvis ad gradum Doctoris in Scientia admittatur. quin etiam φιλόλογον debemus salutare qui de linguis quibus viri docti mandata exprimunt luculenter scripsit nec non de verborum computatoriorum explicatione. etenim opus magnum comparat, voluminibus iam tribus vulgatis, cui titulus est *Ars machinis computatricibus mandata iniungendi.* quibus in libris genera omnia mandatorum percensuit atque quo modo celerrime machina iussa quaelibet exsequatur praescripsit. momentum ita ingens dedit scientiae toti computandi.

Partes vero nonnullas scientiae illius primus hic invenit. nam hoc primo monente collegaque adiuvante didicerunt machinae quo modo formulam quamque mathematicam optime resolvant atque vertant. mathematicorum etiam in penetralia ingressus est, rationem numerandi occultam licet in libro ἐξωτερικῷ perscrutatus qui multum de dialogis Platonis vel Georgi Berkeley refert. quam lepide puellam istam iuvenemque depinxit de legibus mathematicis rebusque infinitis colloquentes! mysteria sunt haec studia quae summa reverentia intueor, πρόσωθεν tamen ἀσπάζομαι.

Multa etiam arti typographicae contulit. rationem enim librorum mathematicorum machinis computatricibus faciendorum cui nomen est τεχ inventam retexit: o τέχνην egregiam!

In civitate California educatus Professor est in Universitatis praeclara Stanfordensi. fidem Lutheranam profitetur, organum pneumaticum feriatus modulatur. elegantiam summam in libris scribendis praestat nec non diligentiam, quippe qui historicorum modo rerum origines soleat attente inquirere. nonne hic aptus est qui origines rerum antiquas indaget cui nomen est antiquum regis nostri modestissimi?

Magnopere vero decet hoc anno quo scholares primi Oxonienses qui mathematicam scientiamque simul computatoriam feliciter excoluerunt ad gradum admittentur computatorum hunc maximum honorari.

Praesento vobis Donaldum Ervin Knuth, ut admittatur honoris causa ad gradum Doctoris in Scientia.

Admission by the Chancellor

Computandi magister eminentissime, qui in arte numerandi mathematicos multa docuisti, ceteris beneficia innumerabilia contulisti, ego auctoritate mea et totius Universitatis admitto te ad gradum Doctoris in Scientia honoris causa.

For any who may prefer it, a paraphrase has been provided.

Presentation by the Public Orator to the Chancellor and Proctors

There is much academic talk in our laboratories and Senior Common Rooms about the computers we use for research. As Juvenal put it, *nobody knows his own house better* than we know the software we use to programme these machines,

Inserting orders in their entrails from without. Such conversations are only gossip, mere swallows twittering in a concert hall. But they have as their foundation the elaborate science of computation which we must master to programme our computers correctly. I said a 'science' of computation, but our honorand would rather call it an art. For it is characteristic of an art to work out elegantly an ingenious program which inspires a pleasurable intellectual excitement in the programmer himself and in the critics who review his work.

So the honorand I now present should really be enrolled in the Faculty of Arts, even though he is admitted to the Degree of Doctor of Science. We should also welcome him as a philologist who has written with great clarity about the languages used by scholars in writing programs and about the analysis of the words used in computing. The *magnum opus* on which he is engaged is entitled *The Art of Computer Programming*. In the three volumes already published he reviews all kinds of programming and determines which programs will be most rapid in getting the right results from the computer. This book has had an enormous influence on computer science in general.

He has done pioneer work in parts of his subject. He and his collaborator Bendix were the first to devise term-rewriting systems for algebraic computation. He has even ventured into the inner shrine of mathematics, examining its hidden laws in a popular book, *Surreal Numbers*, which is reminiscent of the dialogues of Plato or Berkeley. How charmingly he depicts the young man and his girl discussing the laws of mathematics and the infinite! These studies are mysteries which I gaze on with respect but salute from afar.

He has also contributed to the art of typography, having invented a system for typesetting mathematical books by computer called 'TEX', an ingenious piece of technical detection.

He was educated in California and is Professor of Computer Science at Stanford University. He is a Lutheran and plays the organ in his spare time. His style of writing is elegant and precise, and he has a historian's knack of tracking down the origins of the things he describes. This is appropriate for one who bears the ancient name of Canute, most modest of our Kings.

It is particularly timely for us to honour a scholar who is eminent in computing this year when the first Oxford degrees in the Honour School of Mathematics and Computation will be awarded.

I present Professor Donald Knuth for the Honorary Degree of Doctor of Science.

Admission by the Chancellor

Leader of computing scientists, who have taught theory to the mathematicians and conferred widespread practical benefits, I, acting on my own authority and that of the whole University, admit you to the Honorary Degree of Doctor of Science.

Editor's note: Thanks to Joe Stoy of Balliol College, Oxford, for supplying the text of this citation in a TEX file, and to Charles Curran, of the Oxford University Computing Service, for providing a copy of the *Oxford University Gazette* in which it appeared.

TEX and TUG Go International — A Trip Report

Barbara Beeton

This summer, I had the pleasure of attending two major TEX meetings — "TEXeter" and the annual TUG meeting, in Montréal. Both (particularly Exeter) were notable for the number of new faces that could be attached to names, and the quality and content of the technical programs made it abundantly clear that TEX is no longer just a computer hobbyist's playground (if it ever was).

TₑX88, Exeter

Exeter is an old town in the English midlands, on
the Exe river. The university was founded in this
century, on the grounds of an old estate that is also
a botanical garden and arboretum. The conference
was most competently arranged by Malcolm Clark
and Cathy Booth, with help from Ewart North. A
three-day program was surrounded by short courses
and workshops.

Before the conference proper, I was kindly
permitted to sit in on the second day of the session
on document design. This was led by Paul Stiff,
of the University of Reading. As we all have
heard many times before, it was stressed that the
real purpose of technical (and other) documents is
communication, to provide a means by which an
author's ideas can be communicated to a reader.
Anything that gets in the way of that goal is thus
poor design, whether or not the appearance of the
document is attractive. (A pleasing appearance is
desirable, but secondary.) Though there seems to
be no "cookbook" that one can refer to, keeping
in mind how a document is to be used should
prompt its creator to do the "right" thing. And
looking at many instances of similar documents,
deciding which are most effective at their task of
communication and why, is one of the best ways to
develop a sense of appropriate design.

The conference program consisted of talks on
various topics related to TₑX and METAFONT, with
a break on the second afternoon for an excursion on
an old steam train and a cruise up the Dart River.
Malcolm Clark presented a memorable harangue on
how TₑX users should make their presence better
known in the composition world.

Several speakers presented their experiences
providing TₑX production services. (My favorite
quote: "Academic publishers have to live day by
day with the lunatic fringe — they are our authors!")
Publishers are interested in lower costs, but without
sacrificing quality. With some adustments (e.g.,
more traditional fonts), TₑX is becoming accepted
in this environment. One speaker offered this
warning about working directly with authors —
authors are often willing to accept the limitations
of WYSIWYG word processors, but if they know that
the back end of a system is TₑX, they can and will
choose to subvert any style filter provided for them.

Several papers were presented on experiments
with METAFONT. Two authors spoke on extract-
ing METAFONT's spline information for use with
other graphic processors. Victor Ostromoukhov has
developed a method for delivering the splines to

PostScript, and his demonstration (on a Mac, in
the evening) of letters wrapped around spheres and
other "solid" objects was quite captivating.

Other topics covered by the talks included
support for authors (usually, but not always, in aca-
demic environments), language-specific processing
(including the use of non-latin scripts), graphics in-
clusion in TₑX documents (including two papers on
chemistry), TₑX and databases, and a description of
the Aston TₑX archive. Space prevents inclusion of
the full program in this issue, but the Proceedings
will be published early next year — I am looking
forward to reading them.

A topic of particular interest, though nowhere
was it listed formally on the program, was how
to deal effectively with A4 paper. TₑX, and even
more explicitly, LATₑX, assume the use of $8\frac{1}{2} \times 11''$
paper; and output drivers assume that the reference
point of a page (the top left corner) is one inch
from the top and one inch from the left edge of
the paper. These assumptions are not ideal for A4
paper (297mm $\times$ 210mm), and much discussion was
devoted to how best to adjust both the dimensions
specified in TₑX macro files and LATₑX style files
and/or the output drivers' assumed reference point
to compensate for the different dimension systems.
However, one of the philosophical underpinnings of
TₑX is the ability to move documents from place
to place with the assumption that they will get
the same treatment and presentation. No good
answer was found, but it seems clear that this
is an area that could benefit from rethinking, as
TₑX is accepted in Europe and other areas of the
world even more readily (if possible) than in North
America.

In the evenings, there was plenty of time
to discuss the day's events and other topics of
mutual interest. Several personal computers were
set up in the lounge of the residence hall, and
experiments were encouraged. Chris Rowley and
I were "fingered" to lead a clinic one evening;
apparently, most of the attendees didn't have many
problems, since only a few came to visit. There was,
however, a request for an open problems session that
couldn't be accommodated at Exeter, but should
be seriously considered for inclusion at the next
EuroTₑX conference.

After the close of TₑX88 proper, I attended
another workshop, on the hackery of LATₑX style
files, led by Sue Brooks. Once again, the A4
controversy surfaced. When someone asked what
was the reason for the "one inch" reference-point,
I said that, to the best of my knowledge, it was

arbitrary, to define some standard to which output device drivers could be written.

TUG annual meeting, Montréal

Montréal is a beautiful city, with a cosmopolitan French flavor unique in North America. The meeting was held at McGill University, in a new high-rise building at the edge of the campus. The city surrounding was evident in many ways, not the least of which was the ubiquitous construction that seemed at times to be tunneling under the very foundations of the building where we were meeting. The program was put together by Dean Guenther (again), Christina Thiele and Shawn Farrell; Shawn also coordinated the local arrangements. As at Exeter, the main program was preceded and followed by short courses and workshops.

The evening before the meeting, almost everyone gathered at Le Festin du Gouverneur, an eating place set up in Montréal's old fort, where a feast and entertainment in the style of the 17th century French settlers were provided. (Picture yourself eating a several-course meal with only a knife between you and bad table manners.) As the TUG contingent was the largest of several groups present, the erstwhile Gouverneur was chosen from our ranks — none other than Bart Childs. The Master of the Feast saw to it that the serving wenches were most attentive. (It should be noted, though, that Bart was on hand the next morning in time to present the annual introduction for new members. A worthy performance.)

The general theme of the meeting was TeX in production environments. The variety of publications "produced" by TeX is truly astounding. (When I was first introduced to TeX it was still the preserve of computer science students and a few visionary mathematicians and physicists.) NASA technical reports, textbooks and computer reference manuals are natural applications for TeX; more surprising are the kennel club yearbooks and TV Guide (for which the first copies with feature pages prepared by TeX rolled off the press in May).

There seemed to be no common hardware or operating environment among the installations reported on, or even a common approach. What was common, however, were the reasons that TeX was selected, and the fact that most production sites have tried to integrate TeX into an existing operation. One speaker described her role as "managing a system of hardware, software and people". These features — an existing operation, comprising both skilled people and good resources — are characteristic of a production system.

Two areas in which it was perceived that TeX could be stronger are fonts and graphics. Ordinarily, only Computer Modern fonts are delivered with TeX. To install other fonts requires, at the very least, some effort; however, production users of composition services are simply accustomed to having a richer selection of fonts. With respect to graphics, the most available technique is still pasteup, whether physical or electronic (through the output driver). This was a design decision by Knuth, and an extension to TeX would be required to overcome the limitation.

Some sensible recommendations were made by the speakers:

- Management *must* coordinate all areas involved, and make them work together.
- To be successful, don't scrimp — make sure the hardware and software resources are adequate.
- User support is important. It isn't sufficient to hand *The TeXbook* to a prospective user. Training time is an investment that pays off.
- User training is best done in a language the users understand. When training a design staff, use "typesetter's terms".
- Users will be at different levels; a reasonable support level might be 1 guru : 5 macro hackers : n ordinary users.
- Use or build tools when appropriate. If something happens more than 5 times, automate it; if you build a tool more than 5 times, build a tool-builder.
- Macros should be designed for optimum data-entry use, as well as to produce the correct format.
- Remember that even TeX has limitations. Instead of simply trying to implement an old, unsuitable format, consider how a new approach might be better not only for TeX, but also for the product.
- For a first project, avoid one with a "drop-dead" deadline, if possible.

And several challenges were raised:

- To TeX developers, make TeX part of a *complete* publishing system, including graphics.
- TeX should be more cooperative about fine-tuning; a small change shouldn't lead to possible changes several pages later.
- Translation between other competent systems (*nroff*, etc.) and TeX should be investigated and implemented.

Proceedings of both TeX88 and the TUG meeting will be published. Both will be available from TUG early in 1989.