only AMS-TEX manuscripts were acceptable before. (The AMS-TEX document style option for IATEX is different from IAMS-TEX, a macro package Spivak is developing to incorporate some IATEX features into AMS-TEX.) TEX vendors have agreed to include the files which implement the AMS-TEX document styles and style option in all IATEX packages they sell in the future, and to make this upgrade available to all current IATEX users. In addition, the files will be available free of charge from the AMS and will reside in the public domain archives.

The third item is an update and expansion of the current AMSFonts collection. The new Cyrillic fonts from the University of Washington (the article by Dimitri Vulis, p. 332, of this issue of TUGboat uses these fonts, although with a ligature scheme different than that distributed by the AMS) are included in the new package. Also included are an extended set of Euler fonts (see Knuth's "Typesetting Concrete Mathematics," TUGboat 10#1, pp. 31-35) and many new sizes (smaller than 10 point) of previously available Computer Modern fonts. There will be two implementations of the new collection - one for PCs and mainframes, and one for use with Textures on the Macintosh. All the standard TFX magnifications will be available for both implementations. Anyone who has the original AMSFonts package can receive from the AMS, free of charge, the upgraded fonts and instructions for their use. The new fonts can be used either with or without AMS-TEX. However, they were created in conjunction with AMS-TFX Version 2.0, which in turn contains improvements that cannot be used without the new fonts; the new fonts are also not compatible with earlier versions of AMS-TEX.

Anyone wishing more information on AMS-TEX Version 2.0 or on the new AMSFonts collection should contact

Customer Services Department American Mathematical Society P. O. Box 6248 Providence, RI 02940 800-321-4AMS or 401-455-4000 cust-serv@math.AMS.com

If requesting an upgrade of either item, please specify either the PC or the Macintosh implementation. Unless otherwise specified, the PC implementation of the upgrades will be supplied on 5.25" high-density diskettes; the Macintosh implementation will be supplied on double-sided, double-density 3.5" diskettes. If making a request by electronic mail, please provide a full postal address, as the

AMS-TEX files and the AMSFonts collection will not be shipped electronically.

There are two ways users may obtain the AMS-TEX style files for IATEX. First, users of electronic mail can receive these files electronically, by sending a request to the Society on Internet, at the address

ams-latex@math.AMS.com

Second, users may request the style files on IBM or Macintosh diskettes by contacting

Rosanne Granatiero Publications Division

at the Society's address given above.

TEX EURO

Joachim Lammarsch

To communicate with other TeX users there are a lot of possibilities:

- TUGboat
- TFXhax
- UKT_EX
- TFXmag

These are all digests and the UKTEX is the only one which appears weekly (*TUGboat* three or four times a year, TEXhax in uncertain periods and TEXmag sporadically).

Three further lists are used in Europe (EARN):

- GUT
- TEX_D-L
- TEX_D-PC

These are lists, which distribute each note (mail) separately. The languages which are used, are French and German. That's all I know.

In my opinion no real European list exists distributing each note (mail) separately and at once. Therefore I am trying to start a list for use in all of Europe. The languages can vary (not only English, French or German). To my mind people should use the language which is necessary to solve a given problem. For example, a Spanish TEX user having a question concerning only Spanish affairs would only be of interest for Spanish people. Then he can (should) use his own language. On the other hand, he can use the English language hoping for more help (I suppose that English is the most

commonly understood language by TEX users in Europe).

So we'll be able to use English as the only language, but considering that Europe is a multilingual continent, we should also use the other ones if it will be useful.

I have named the list

TEX-EURO

and it is installed at the

LISTSERV at DHDURZ1

For subscribing you should send the command SUB TEX-EURO (your name)

to your nearest listserver or to LISTSERVQDHDURZ1.

The list is intended for use in Europe, but all TEX users outside are invited to join in, if they are interested.

I hope that TEX-EURO is a possibility for all the TEX people in Europe and all the European national groups to get in touch for better cooperation.

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GUTenberg will distribute MLT_EX

Bernard Gaulle

Nous savons fort bien à GUTenberg que les francophones n'utilisent pratiquement plus que MLTFX et que ceux qui n'y sont pas encore passés souhaitent le faire. Malheureusement MLTFX fait l'objet d'une licence. Par ailleurs sa distribution en dehors du monde PC (version commercialisée par Personal TeX, inc.) n'est pas très conviviale. Il en résulte que différents freins réduisent sa diffusion. Conscient de l'intérêt de MLTFX dans le monde francophone et de ces divers problèmes, GUTenberg a souhaité depuis le début, qu'il soit mis dans le domaine public. Cela n'étant malheureusement plus possible GUTenberg a malgré tout obtenu de pouvoir distribuer gracieusement MLTFX à ses adhérents. Celà concerne les multiples versions UNIX ainsi que les versions VMS, MVS, NOS/VE et CMS. Ces derniers systèmes ne concernent que les centres de calcul donc relativement peu de sites. Par contre les versions UNIX et VMS concernent une très grande population. Les options de redistribution que GUTenberg prendra ne seront donc probablement pas les mêmes dans les deux cas. Mais il est probable que nous ferons tout le nécessaire pour que nos adhérents puissent obtenir une version directement installable sous UNIX et VMS, avec en plus tout l'attirail d'outils et de pilotes souhaitable (du genre de la distribution des disquettes AT dites 'GUT89'). Nous vous tiendrons au courant de l'évolution de cette distribution dans les Cahiers GUTenberg et sur la messagerie GUTenberg (liste GUT sur LISTSERV@FRULM11).

Nous remercions Michael FERGUSON pour son TEX multilangue et pour l'intérêt qu'il porte à GUTenberg.

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A TEX Mailbox in Germany

Garry Glendown

In Germany, we don't have a lot of good BBS-Systems running. And as far as I know, none that has **any** support for TEX. So after getting a modem, I thought about starting one. Well, it is running now!

The Insider consists of two main parts: the Amiga part (which probably won't be of any interest for many of you out there), and the TEX part. Both include message and file libraries for general use.

Using the Insider. To get into this BBS, call the number: 06621/77923 in West Germany at 300 to 2400 Baud, F8N1. Login with your name and place where you live. You will then receive a short explanation of the features of **The Insider** (currently only in German. Anybody out there who wants to call from the States?). After that, add yourself to the user list by selecting 'J'. If I am there, I will give you access to the TEX boards right away, otherwise you'll be added during the next 24 hours.

Features of the Insider. In the moment, I can offer the following features:

private and public messages;

- a file library;
- access to the TEXhax-list (all 1989 issues online; '87 and '88 upon request);
- any files of the Unix-TEX distribution tape may be ordered (sorry, I can't afford filling my harddisk with 30 mbs of TEX). This will take something from 1 to 3 workdays, as I get them from our Apollo WS30;
- forwarding of questions to TeXhax, TUG or any other list/person accessible through Bitnet.

At the moment the box will only be online from 21:00 through 00:30 as I don't have enough users to "stay open" longer. This might change if there is enough demand for it. (If I'm there and have time to spare, I'll start it up when you ask for it.)

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Towards a Complete and Comfortable TEX System for the Atari ST

Stefan Lindner and Lutz Birkhahn

Once upon a time. The Atari shareware TEX story began in August 1985 when we came upon the magazine Forschung; Mitteilungen der DFG dating from April 1983. In an article of only 1 page, Prof. Dr. H. Werner and Dr. Paul Janßen reported on a new typesetting program called TfX. In order to make its abilities clear, they showed a small formula in source code and its printout on a 9 pin writer. Although the print's quality was not very good we were enthusiastic. As we could not get more information at that time we forgot TFX for a while. In Autumn 1986 The Beauty of Fractals was published and after we had translated a few chapters (an excellent method to study a document in depth) we felt the need of an appropriate text system with the help of which we could typeset the formulas in the right way. And, what was more, the program should be appropriate for future theses and other works. Now we remembered the article on TFX.

The planning. Another search for literature in spring 1987 brought us to the series of books Computers & Typesetting. At that time we knew neither that TEX, METAFONT and everything belonging to them could also be bought on tape, nor that there were already implementations on PCs. After so many pages of source code had lost their horror (thanks to Lutz Birkhahn's art of persuading), we began to look for a programming language. The Pascal compilers which were available on the Atari ST were not very encouraging as they had great difficulties with 32 bit integers and arrays bigger than 32 kb. Anyhow, we had to type in the programs so that we could translate them into another language. Fortunately, all programs were written in a subset of Pascal which saved us from difficulties with VAR parameters and pointers while translating them. At that time, a number of C compilers were available which seemed to be much better than the existing Pascal compilers. 32 bit arithmetic and big arrays were never a problem for C and, what is more, C was also appropriate because of its preprocessor concept which is similar to the WEB macros. At first it might seem a bit foolish to type more than 1000 pages from books, but even if we had had the sources on magnetic tape or disc we would have first needed to adapt the program TANGLE to the ST and then to write a Pascal to C translator.

The realisation. We had found the programming language, and, precisely on April 1, 1987, we started to transform it. Stefan Lindner dealt with TEX, Lutz Birkhahn with METAFONT, and this partition also shows the preferences of each. We needed one month for typing and transforming, then both programs were completely translated into C. This was only a fraction of the time which we would have needed for adapting TANGLE and writing a Pascal to C translator.

Our first attempt to compile TeX ended quite soon with a compiler bug causing the computer to hang up. The following months passed with looking for typing mistakes and compiler errors. The last typo was found in December 1987, but even then the compiler did not want to translate the program in the right way. In January 1988 Stefan Lindner changed the compiler and the new one soon gave birth to the first running version, but it was very big and very slow. But even in this version were some errors. It was not until June 18, 1988 that the TRIP test was passed successfully. In July and August, TeX was adapted to Borland's new Turbo

C Compiler which rewarded us with a very small and fast program. On August 31, 1988 the TRIP test with version 2.93 of TeX and the new compiler was passed without any error. In this form, the implementation was fully working.

The development of METAFONT was more or less the same. In December 1987 we were able to admire the first simple graphic produced by METAFONT, but it had to be drawn with the help of a file dump utility and a pencil as we had no printer drivers. But this little achievement encouraged us and so we could go on looking for mistakes. In April 1988 the TRAP test was passed successfully, whereupon we began immediately with an implementation of the output in GEM windows. In August of the same year we also finished the transformation to Turbo C.

The DVI drivers. Our next task was to write DVI drivers for the most current output devices. For us, it was most important to write a driver which could be easily adapted to any other output device providing only bit image graphics. Stefan Lindner did the main part of this work. We created a modular driver which at first prepares one page in memory and then sends it as a bit image to the output device. There is no other possibility with pin writers, but with laser printers allowing font downloading, it is not very efficient. We accepted this deficiency deliberately and our decision later proved to have been right as we were able to produce a prototype for a new printer within a few hours. During the first months of 1989 we went over the driver again very carefully, and increased its reliability in operation considerably. Within only two hours' time, we also made a workable previewer from the driver which at the moment can only be handled by keyboard. The drivers work with the packed (PK) format. Of course we also translated the program GFtoPK into C and delivered it together with METAFONT.

An integrated system. TEX and METAFONT are at first command line oriented programs which seem to be a little antiquated on the Atari ST with its modern GEM user interface (a window oriented operating system), and, in this form, they discourage many potential users. METAFONT particularly lives in the shadow as many users are already challenged by TEX and do not want to occupy their minds with another complex program. Also the additional step GFtoPK and the use of enlargements and mode_defs contribute to that.

Klaus Heidrich and Reinhard Maluschka also saw these problems and so they developed a GEM oriented shell (see *TUGboat* 9#3, p.238, "Software-Ergonomics on the ST"). In autumn 1988 we got into contact with them for the first time, and, soon after, we met again for a working weekend. Together with these two authors we decided to continue our work on these programs to harmonize them.

The shell makes the use of TFX and META-FONT mere child's play. We will mention only a few of its many features here. After having chosen by mouse a text which is to be worked on, one enters a cycle. At first the editor is started and the text is loaded. You may specify the proper format file in a comment line within the first few lines of the document, e.g. "% macropackage=plain", which will be recognized by the shell. After editing and storing the text, TFX is started automatically. If TFX finds an error one can return to the editor by typing 'e' whereby the file actually in use is loaded and the editor automatically jumps into that line where the error occured. But this can only work if the editor which is used allows filename and line number as command line parameters. After correcting the error and leaving the editor, TEX If the TEX run this time is is started again. finished without mistakes, the previewer is invoked automatically afterwards and the first page is shown on the screen. If there are some fonts missing for the previewer it will show that by special notice. All missing fonts are reported into a batch file for METAFONT and can be produced by only one keyhit (alternatively also with the mouse). This contains not only the choice of the proper mode_def and the size, but also the automatic call of GFtoPK.

The number of necessary passes for LATEX is determined automatically. If MakeIndex or BIBTEX are available, the programs are also started automatically at the end of a LATEX run, but only if there have been any changes in the index or aux file. The average users do not get in contact with the underlying programs and are able to concentrate fully on their texts.

In order to install the whole package on hard disk or floppy disk, all input and output files may be scattered over different drives, partitions and subdirectories. A whole list of paths is allowed which is searched following the given order. The installation on hard disk is done automatically by a specially prepared program. Installing the programs on floppy drives is possible but does not allow comfortable working.

Previous to the real input of TEX, there can be a transformation of single characters into whole strings. In this way it is possible to prepare texts in a more or less readable form with a text editor which knows special characters with an ASCII code higher than 127 and is able to display them. Let's suppose the editor is able to show the character which has an ASCII code of 200. Then we will find in the file for translation the line

'\200' = "\$\alpha\$"

and all displayed α s will be replaced by α s and will be processed in this form by TeX. In this way, one will roughly know what the result with TeX will be looking like while preparing the text.

The size of the mem array is at maximum 65535 words. TEX first of all gives away the memory for all the other static arrays. The remaining memory is then available for the mem array whose size will only be determined during runtime. We have also done an extended version of TFX providing enough memory for applications like PICTEX. The size of the mem array is only limited by the main memory of the Atari, but due to the enlarged array elements the minimum memory requirements are 2 MByte. METAFONT's mem array has been fixed at 65535 words. As it is not easy to create VIRTEX with 'preloaded formats' on the Atari ST, the structure of the format file has been modified slightly, and so the loading time of the format file can be neglected. The *interrupt* variable is supported; TFX and META-FONT can be stopped while they are working and, if necessary, be aborted. The proper key for that is, for reasons of ergnonomics, always the same in all other programs of the package.

TEX and graphics. A deficiency of TEX is the missing ability of including graphics. Up to now there have been no compulsory standards so that this variant, which will be described here, depends again on the computer. The underlying operating system, GEM, knows 2 standardised graphic formats, one of them object oriented and the other one a bitmap format. The actual inclusion of graphics into the text is to be done by the drivers. TEX only reserves an empty rectangle and writes a \special command to the DVI file. If using an object oriented format, the driver would need a complete Interpreter. First of all there is the problem of how to use the text commands as GEM has its own fonts. We chose the bitmap format which only needed the addition of a single function in the driver's source code. Moreover, this solution was to be only temporary, until a compulsory standard was formed. Another reason is the fact that the object oriented format is so little known and is only supported by a few graphic programs. Unfortunately the long awaited standard has not

yet been completed, but there have been activities lately which let us hope again.

Distribution as shareware. In the beginning our own interest in TFX and METAFONT had been the reason for the implementation on the ST, but later, when the first running versions existed, we wanted to make the programs available to as many users as possible. It was clear from the beginning that the implementations should not be sold to a commercial software vendor but should be quite cheap so that above all other students would be able to buy them. But TEX and METAFONT are two programs which are too complex to be distributed as public domain. They are not to be used only by programmers or mathematicians, but also by all the other owners of a computer. Leslie Lamport created within LATEX an interface between the user and TFX which allows any user who is interested in the subject to write his texts with TfX.

Our purpose was also to spread TEX quite far with the help of our implementation. For this reason we sell the whole package in the form of Shareware. Everybody is allowed to copy and try it. Anyone who thinks it might be useful for his purposes and wants to work with it more often is supposed to pay the sums which are mentioned below and receives in return the most recent version of TEX or METAFONT. The concept of Shareware has many advantages. As it is so cheap, this implementation has become known throughout the German-speaking countries and in recent times also in the rest of Europe.

In return for the money you will not only get the most recent version and the option for a free update, but also telephone support. As students were the main group we wanted to reach, we came into contact with many of them and were able to win some new colleagues who contributed other drivers, MakeIndex, BibTeX and numerous macro packages.

All these inventions need to be examined, collected and integrated into the package. So our addresses have become the collecting point for all these voluntary works. The authors have joined the Shareware idea and hand their works over to us without charging a fee. It is only possible to actualize and coordinate the programs at any time if they are sold as Shareware (in contrast to full public domain) but this concept has proved to be right by the increasing number of voluntary colleagues. In this place I want to mention Klaus Heidrich, Robert Kiessling, Reinhard Maluschka and Michael Mies who stand for many others. All this is only

possible because Shareware allows one to ask for the complete source code which would be nearly impossible if the programs were sold by a firm. The price is to cover our expenses and not to make any profit. If there is a profit we use it for further development of the implementation.

Our future planning. An object oriented editor for IATEX pictures will soon be finished. A member of the laboratory for information technology in Hannover where the program was developed has kindly allowed us to distribute it; this is another success of the Shareware concept.

The whole purpose of the work is to produce a fully integrated package consisting of TFX, editor, previewer and drivers. An extended version will support the integration of WEB, CWEB and compilers in the same package. The Atari ST lacks the ability of multitasking, so that still some problems remain to be solved. The editor should run in one screen window from which TFX can be started. TFX runs in its own window in the background. Every page which is formatted is shown in a third window by the previewer. In the meantime one can continue writing the text and correct mistakes which are to be seen in the previewer window. If there is enough memory it is even possible to run METAFONT in another window. As already mentioned, much work remains to be done because these things ask too much of the ST's standard functions.

Availability. Both writers of the programs currently study computer science at the University of Erlangen (Germany).

TEX can be bought for \$35 (60 DM inside Germany) from Stefan Lindner at the address below. The package includes TEX, INITEX, IATEX, plain, the previewer, one printer driver and the GEM shell. Please do not forget to name the output device you use. The extended TEX version is sold only in combination with the normal TEX diskettes and needs additional \$15 (30 DM).

METAFONT (including INIMF) plus shell, CMR font sources and GFtoPK can be bought for \$30 (50 DM inside Germany) from Lutz Birkhahn at the address listed below.

For those who want to order both programs it is enough to send their order to one of the given addresses as both authors are in regular contact and will give the order to the one who is responsible for them.

A complete package consisting of both versions of TeX, METAFONT, MakeIndex, BibTeX, a collection of macros, 3 printer drivers of your choice and the source code for the drivers (including WEB

and CWEB) can be bought for \$130 (220 DM inside Germany).

Currently all documentation is in German, but we are planning to translate it into English in the near future.

Editor's note: The authors also supplied the following METAFONT mode_defs for their output devices, along with accompanying commentary.

Some of the mode_defs have a negative blacker value. This may cause problems with some fonts (e.g. cminch), but the result looks much better than with a blacker of 0. For the fonts which cannot be created with negative values, the blacker value has to be set to zero.

The Atari ST laser printer SLM804 is a write white engine. You have to use the modified CMBASE according to TUGboat Vol. 8 (1987), No. 1. We have introduced a new boolean write_white_engine in the mode_setup macro, so there is only one CMBASE file which behaves differently according to the setting of this boolean.

```
% stlaser mode: to generate fonts for
% the Atari ST laser printer SLM804
mode_def stlaser =
pixels_per_inch:=300;
 blacker:=-.25;
 fillin:=.5;
 o_correction:=0;
 write_white_engine:=true;
 enddef;
% psix_low mode: to generate fonts for
% the NEC P6 printer (180 dpi)
mode_def psix_low =
 pixels_per_inch:=180;
 blacker:=0.1;
 fillin:=.2;
 o_correction:=.6;
 enddef;
% psix_high mode: to generate fonts for
% the NEC P6 printer (360 dpi)
mode_def psix_high =
 pixels_per_inch:=360;
 blacker:=-.75;
 fillin:=.2;
 o_correction:=.75;
 enddef;
```

% starn1 mode: to generate fonts for
% the star NL-10 printer
mode_def starn1 =
 pixels_per_inch:=240;
 blacker:=-.6;
 fillin:=0.2;
 o_correction:=.4;
 aspect_ratio:=9/10;
 enddef;

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Editor's note: The authors have asked that any correspondence for them be sent through Klaus Heidrich at

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VMS Site Coordinator's Report

David Kellerman

The TUG meeting this summer was a memorable one. I must be a bit of a traditionalist, because it was nice to have it back at Stanford, which still feels like "home" to TEX. The tenth anniversary brought back faces that haven't been around for a while, and I realized that the eight years I've been involved with this group has been long enough for people to age perceptibly—they looked wiser, too.

All this nostalgia was balanced by real excitement in the increasing "internationalization" of TEX. The strong activities of the European user groups and noticeable meeting attendance from outside the U.S. were topped off by the promise of TEX 3.0. It looks like these changes will put other Roman languages on an equal footing with English. And they're certainly going to keep people busy rewriting device drivers, constructing new fonts, and reworking hyphenation tables.

Several important things came out of the VMS "birds of a feather" session.

The last VMS distribution available through Maria Code, assembled by David Fuchs and Eric Berg, is in need of attention: it has slipped well out of date, and there is really no one left at Stanford to update it. There is a need for a public domain distribution with good coverage of the TEX software available for VMS, separate from the commercially supported distributions. Professor Knuth also indicated a personal interest in seeing the Maria Code distribution continue, both because Maria Code has provided a consistent service, and because royalty payments from that distribution continue to help defray costs from the TFX project. It was suggested that the DECUS TEX distribution for VMS, which is actively updated by Ted Nieland, might also be made available through Maria Code. Ted, upon prompting from several sources, has generously agreed to take steps to make this happen. He also mentions that the latest DECUS distribution is August, 1989; notable additions include TeX 2.991, and additional WEB and PostScript software.

Peter Abbott was present to describe the status of the TEX archive at Aston University, which, besides having an imposing selection of software, has knowledgeable staff who appear to have the time to keep it well organized and up to date. I wonder if this might provide another alternative for distribution through Maria Code.

All this activity has spurred me to upgrade my network connections. I am now available on the UUCP network at uunet!nls!davek and an Internet address will be forthcoming shortly. There is also a FAX number: 503-228-5662. I expect these to allow me to route information more quickly and to be more effective as site coordinator. There's still the telephone, too—tradition, remember?

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