Watson, come here!

Just a hundred years ago, those words crackling in a crude speaker marked the dawn of the voice phase of telecommunication. Had Mr. Bell wanted to send a printed note, his typesetter would still have had to hand-pick each character in precast type, lining them up one-by-one into the desired words.

It has taken an entire century to bring those two technologies together completely, but that has now been accomplished for the *Angle Orthodontist*. Your Editor is now transmitting text by phone directly to the typesetting computer and having the type in hand within hours. Greatly increased flexibility in composition is an equally important benefit that should be shared by authors and readers as well.

Text has been transmitted by wire for most of the past century, but it takes much more than teletype technology to compose type.

On the text processing side, we have been ready for this change for some time. Our first step in processing a manuscript is keying it into the word processor, where editing will typically go through about five drafts before it is returned to the author for final changes and approval. Hopefully, the combination of eyeballs and computer spelling checks will have found any errors by that stage. Up to now, that final copy was then printed out and passed on to the typesetter and printer, where it was once again keyed in.

These days, most text is printed by offset lithography rather than striking inked mechanical type onto paper, and the *Angle Orthodontist* has been printed lithographically for years. The problem is that making a lithographic printing plate is a photographic process, which means that there must be some original typeset material to photograph. In our case, the original has been set by Linotype up to now.

People had been talking on the telephone for several years before Mergenthaler invented the Linotype, but by the turn of the century that marvelous monster was revolutionizing the printing business.

So large that many dental operatories could contain it with difficulty if at all, it seems almost alive. Mechanical parts clank and whir, push and pull, in an orderly disarray of noise and motion, while it breathes fire from a pot of molten metal. Seated at the console, a virtuoso plays the keyboard to cause that mechanical monster to spew out hot freshly-cast type one line at a time. Molds are lined up inside the machine to form the words and space them out to fill each line, so that the final product is a perfect fit in the column.

Those solid cast lines drop into the galley in sequence to create the text. No more loose letters, but the lines are still loose, and that is a two-edged sword. The capability of making corrections in a single line and reinserting the corrected line into the text is very useful, but it also gives opportunity for the kind of errors most likely to make editors tear out their hair.

Lines are frequently switched, and sometimes they disappear only to reappear in some remote part of the text. If

those stray lines consist of whole words, they can be elusive; and even when they are found, there are still the problems of figuring out where they came from, and whether something else belongs where they were found. It all adds up to much tedious proofreading of text that had been brought to a "final" form once before.

With text processing and printing already functioning well with state-of-the-art technology, we were ready to take advantage of the new typesetting. Phototypesetting has been around in various forms for some time, but earlier versions did not quite measure up to the standards that we require. Master negatives of alphabets and other characters in a specific font were optically projected in rapid succession to create text in the appropriate size on photographic paper. This works well, but there are two subtle problems.

Spacing adjustment (kerning) to provide the most esthethic spacing with various combinations of adjoining letters was not well refined. Simple optical enlargement or reduction can also have undesirable effects on esthetics and readability when the fine lines in the characters become too thick or too thin as the size is changed.

Of course, it was computers that came to the rescue. This newest photosetting technology stores the characters on magnetic disks as computer programs, which the typesetting computer processes to form images on a precision video screen. That image is then optically projected at incredible speed onto the sensitized paper.

Characters are actually constructed from a series of lines, spaced 1200 per inch; that is about ten times as fine as the dot matrix pattern that forms our printed photographic illustrations. An excellent article on this new technology appeared in Scientific American in August, 1983.

Computerized typesetting had started a major revolution in the printing business, but we still needed one more thing. Even with the new typesetter, someone had to key in the text, with the potential for some of the same typographical errors found with the Linotype. With text already edited on the word processor and computerized typesetting available, what we needed was a way to bypass the second keyboarding process.

This is not just a matter of plugging in, because the typesetter itself uses an oversized keyboard with special command symbols not found on typewriters or word processors. Some kind of computer interface is required, and these are now springing up everywhere, but the electronic linking of remote word processor and typesetter is still in an embryonic stage. Fortunately, an innovative local programmer/typesetter has developed an excellent interface program, so a local phone call now serves as the connection between the Editor's computer and the typesetter interface.

Benefits go far beyond the Editor. The resultant flexibility provides more creative options for presenting authors' efforts, some of which will be seen in this issue. Our readers will benefit from increased readability as well as a hopefully more esthetic presentation. Of course, it also means that most typographical errors are now traceable directly to the Editor, which is where such responsibility should properly lie.

One major change in this issue is the presentation of references, which is not directly related to the typesetting changes. Since there is no way for the Editor to check out the accuracy of individual references, the authors' copies have been forwarded directly to the typesetter. This has led to several variations in arrangement and referencing in the text.

Now, all references are retyped in the

Editor's office and referencing has been standardized on the European pattern that is also preferred by the University of Chicago Press. No more cryptic superscripts to search out in the back pages; the text shows the author's name and the date, and the reference lists at the end are aphabetized by primary author's name.

We hope that you find these changes helpful. The *Angle Orthodontist* is here to serve authors and readers in the World-wide orthodontic community, and your comments and suggestions are always welcome.