

First and second  
quarters 1999

## piece of the past

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# Pressing matters

## Touch-tone phones spark debates



In the 1970s, the # key caused a war of words between Bell Labs and Western Electric.

Has a child ever asked you why we “dial” a phone number, when we’re really pushing buttons on a keypad? There was a time – not all that long ago – when all telephones had rotary dials. That began to change in November 1963, when AT&T introduced the first touch-tone phone to two Pennsylvania towns – Greensburg and Carnegie.

Constantly seeking ways to improve service, Bell Labs began searching for alternatives to the dial in the 1940s. In a 1948 trial, a group of subscribers in Media, Pa., tested a push-button telephone with two rows of five keys. Each key plucked two reeds, sending a signaling tone down the line.

The Labs’ work continued through the 1950s,

with miniature oscillators replacing the reeds as technology evolved.

Speed was not the only advantage of what came to be called touch-tone dialing. The musical-tone signals, which were within the frequency range carried by the telephone, could be transmitted throughout the entire network, even in the midst of a call. So the keypad could be used to send signals during a call – much as we use it today to interact with voice-response systems, for example. The pulses of a rotary dial, on the other hand, could scarcely travel as far as the local exchange.

In the late 1950s, a Labs team led by R.D. Deinger asked volunteers to try various key-pad

*continued on page 14*

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### *Touch-tone phones*

*continued from page 13*

designs – everything from circular arrays to 2x5 grids. The design that produced the fastest dialing with the fewest errors was a 3x3 grid with 1-2-3 in the top row and 0 at the bottom. AT&T introduced that arrangement in additional field trials in 1959-60. And after modification to the key design, it was included in the commercial rollout.

Accountants protested the key pad, arguing that there already was a standard design for a number pad – the calculator, with 7-8-9 on top. Calculator keypads, AT&T replied, had numbers only, but telephone dials had letters as well. Users preferred a pad with the letters in alphabetical order.

Touch tone became a success as AT&T rolled it

out across the Bell System. By January 1968, more than 4 million touch-tone phones were in service.

In 1968 AT&T made a major change, adding the \* and # keys for the types of advanced services we use today – communicating with computers and other remote devices. This led to another controversy: what to name the # key. Many at Bell Labs began calling the key the “octothorp.” They preferred this unusual term to “number” or “pound,” which they felt implied permanent uses for the keys, or could be misunderstood in other cultures.

But manufacturer Western Electric hated octothorp, and in a 1973 press release stated that “the #’s name is emphatically number sign.”

Neither number nor octothorp won the heated battle. Today most people call # the pound key. 