All-Number Calling Being Introduced In Bell System

All-Number Calling (ANC) was recently introduced in Omaha, Nebraska, by Northwestern Bell and is currently being introduced in many other areas of the Bell System. Like many Bell System innovations, ANC had its beginnings at Bell Laboratories. In 1954, a team headed by John E. Karlin of the human-factors engineering group began a series of experiments to determine how easy it would be for customers to remember numbers and whether they would like telephone numbers without letters (RECORD, *August*, 1958).

Mr. Karlin began his investigation with Laboratories employees. They dialed seven-digit, letter-number calls in controlled situations, and then made all-number calls. Later, they were tested to see how well they remembered both kinds of telephone numbers. From these early experiments, the study group concluded that: it was easier to dial numbers only; number-dialing was quicker and more accurate than letter and number dialing; for short periods it was just as easy to remember numbers only; but for long periods, numbers only were slightly harder to remember.

Next, 73 employees tested ANC on their telephones at home in New York and suburban New Jersey. Notwithstanding conditions of use unfavorable to ANC, the conclusions were about the same, with a majority favoring the ANC method after using it for a while, and very few experiencing difficulty with ANC.

In 1958, all-number calling was field-tested in Wichita Falls, Texas. Where dialing error in the average cutover to two-letter, five-number dialing normally rises 112 per cent, the figure rose only 58 per cent at Wichita Falls. Further study conducted at Bell Laboratories since these tests has reinforced the view that ANC is a better dialing system.

Although these early studies were not specifically directed at the problem, the fact is that the Bell System is running out of letter codes. This is an especially acute problem with the advent of direct distance dialing, in which the United States and Canada are divided into geographical areas called number-plan areas and assigned three-digit area codes. There can be no two telephone numbers alike in any area. With the old system—two-letter, five-digit numbers—there are 540 central-office codes potentially available in any area. This stems from the fact that certain combinations of letters on the dial are difficult to fit with central-office names. For instance, the dial pulls 5-5, 5-7, 9-5 lack any suitable names. Another limitation arises from confusion of the letter "O" with the numeral "0". This was so great that the numeral zero has generally been eliminated from use as a central-office code.

When the area-code plan was instituted—three digits assigned to each geographical area—there were 152 three-digit combinations for area-code use. Eighty-six of these codes were used when operator toll-dialing was installed in 1947. The remaining 66 were expected to last for many years. But the System has grown so rapidly that 31 of the codes have been used and the remaining 35 area codes are expected to be exhausted by 1975. The limitation of 540 central offices in any one area forces the use of a new code each time this maximum figure per area has been reached.

ANC meets this problem head-on with a seven-digit number. This provides the greatest possible number of central-office codes, since there is no name-assignment problem nor is there any number-letter confusion. ANC increases the number of central-office codes from 540 to 800, thus slowing down the assignment of new area codes and postponing the day when ten-digit numbers with area codes will have to be used rather than seven-digit numbers. Besides meeting problems of growth, there are other major customer advantages of ANC:

(1) A greater proportion of calls will continue to require only seven digits. (2) The door is closed on confusion between the numeral *1* and the letter *I* and the numeral *0*, and the letter *O*, which caused up to 50 per cent of all dialing errors. (3) Difficulties in spelling and pronunciation of central-office names are ended. (4) Dials are easier to read, particularly in dark areas or for older people, because of the larger numerals. (5) Telephone instruments will be easier to miniaturize with letters gone. (6) The Bell System will be able to offer new services, such as in-dialing to PBX stations and direct dialing to mobile stations. (7) Occasional public reaction to the changing of central-office names will be precluded.