

Historic firsts: Lettered dial

During the development of the panel system there had been considerable discussion as to whether it should be operated on a full, or only on a semi-mechanical basis. With full-mechanical operation, the subscriber dials the number as is now the general practice. With semi-mechanical operation, on the other hand, dials are not placed on the subscribers' telephone sets, and the subscriber gives the number he wants to an operator as in the manual system. The operator does the necessary dialing or its

dial, but the letters were used merely as a substitute for digits—generally because it was easier to remember a number consisting of letters and digits than one of digits only. In the larger cities where there was more than one central office, each office was designated by a one- or two-digit number listed in the directory ahead of the subscriber's line number, and thus the complete number would include five or six digits. The panel system, however, had been designed for the very large metropolitan areas where



Fig. 1.—A dial of the type in use in 1917 with only numbers beneath the finger holes.

equivalent. With both methods, the same switching mechanism in the central office sets up the call, and thus a decision between full- and semi-mechanical operation could be postponed until fairly late in the development program. With many years' experience in dial operation behind us, it would seem to be an easy decision to make, but actually it was only the invention of a novel method of using letters in dialing central office names—made by W. G. Blauvelt of the Engineering Department of the A T & T—that tipped the scales in favor of full-mechanical operation.

With the earlier dial systems, the dials for the most part carried only the ten digits from 0 to 9, inclusive. Sometimes a single letter was placed with each digit on the



Fig. 2.—A dial that came into use in the Bell System as a result of Blauvelt's invention.

the greater number of central offices would generally make it necessary to use three-digit rather than two-digit office numbers. For a considerable time, moreover, there would be manual as well as dial offices in the same area, and if the well-established advantages of office names in manual operation were to be retained, each office would require a name as well as a number. This obviously would complicate the subscribers' operations as well as the listings in the directory, but more serious was the doubt that subscribers could correctly remember a string of seven digits.

Studies had indicated that while an office name and four digits were easily remembered, and that five-digit and even six-digit numbers could be remembered with a small

percentage of failure, errors became numerous when the attempt was made to remember seven-digit numbers. The seventh digit seemed to be the straw that broke the camel's back.

When plans were made for introducing mechanical switching after World War I, full mechanical operation was therefore decided on for the smaller cities, but semi-mechanical operation was proposed for cities where 6 or 7 digits were required, such as New York, Philadelphia, Chicago, and Boston. With the best information available at that time, this seemed the only way to avoid a deluge of wrong numbers that seemed inevitable if full-mechanical operation were to be adopted for areas requiring seven-digit numbers.

It obviously was not completely satisfactory to have some cities with full-mechanical and others with semi-mechanical operation, and among others Blauvelt had given the matter considerable thought. As a result, in 1917 he proposed the simple expedient of dialing "letters suggestive of the office name." Under his plan, directories would have the first two or three letters of the office name printed in bold-faced capitals, and the dial number plates would carry letters as well as digits. The subscriber would dial the initial two or three letters of the name, followed by the 4 numerals, and thus would have to tax his memory only with a name and four-digit number as before. Most of the office names already in use could be retained. As a result of this invention, it was decided to go to universal full mechanical operation, and the first office using the new numbering plan was cut into service in Omaha in 1921. An application for a patent on this invention was filed in 1918, and patent No. 1,439,723 was issued December 26, 1922.

For many years following the adoption of this invention, the first three letters of the office name were used for dialing in the largest cities. As telephone traffic grew, and the number of central offices increased, however, it became more and more difficult to find office names whose first three letters

would give distinctive codes when dialed, since the same code is received by the central office for all three letters under any one finger hole. As a result it was decided to designate each office by the first two letters of the name and a digit, instead of by three letters. This gave considerably more flexibility in choosing names, and had the additional advantage of permitting two or more offices in the same general area to have the same name but a different number. Experience has shown that subscribers can satisfactorily handle numbers of the form PE6-9970, and this familiar method is now



Fig. 3—The most recent type of Bell System dial.

in general use in the larger cities. The use of this general principle has worked so well and now seems so commonplace, that it is difficult to realize that in 1917 and 1918 the whole course of dial development in the Bell System hung on this seemingly simple invention.

Development of the nationwide toll dialing plan has been accomplished by a division of the entire country in a co-ordinated numbering plan which includes the "2-5" numbering method.