

# THE BELL SYSTEM TECHNICAL JOURNAL

DEVOTED TO THE SCIENTIFIC AND ENGINEERING  
ASPECTS OF ELECTRICAL COMMUNICATION

---

Volume 54

January 1975

Number 1

---

Copyright © 1975, American Telephone and Telegraph Company. Printed in U.S.A.

## Bell Laboratories Fiftieth Anniversary

Since its formation in January 1925, Bell Laboratories has taken over the central role of scientific research and technical development from its predecessors in the Bell System. The pages of *The Bell System Technical Journal* have reflected a steady flow of Bell Laboratories technological contributions over the intervening years (see "Fifty Years of B.S.T.J." in the July-August 1972 issue). It is, therefore, particularly fitting that we give some recognition to this half-century anniversary of Bell Laboratories.

With its preeminent contribution to such broad fields as information theory, solid-state technology, and electronic data processing, Bell Laboratories has been the creative force in a vital and closely integrated Bell System team for transforming technical possibilities into economical telecommunications realities. Examples include the development and deployment of today's vast microwave carrier network (now containing over 300 million circuit miles), the burgeoning array of electronic switching systems—providing a new degree of flexibility and reliability in the handling of telephone calls—and the provision and use of an increasing family of versatile, sophisticated, computer-based systems for better network implementation and maintenance as well as for more efficient business operations.

In an era when the Bell System is being attacked for its monolithic structure, while at the same time being generally praised for the quality of its service and its record in keeping costs down, we should carefully note that our spectacular progress is largely a result of the close ties among Bell Laboratories, Western Electric, the Operating Telephone Companies, and the AT&T parent company, and is not an independent phenomenon.

The second half-century of Bell Laboratories scientific and engineering activity is beginning with the same exciting promise as did the first. Innovative research in basic materials and processes flourishes. At the system level, trends in both switching and transmission are pointing to a steadily growing digital network with important advantages in quality and flexibility of service. Giant projects such as toll mess switching and millimeter waveguide transmission are harbingers of this future. Optical fiber transmission will form the basis for another avenue of important telecommunications advances. Low-cost electronics are extending the fruits of the solid-state revolution to the loop plant. The realization of control and processing functions in ever smaller, cheaper electronic packages opens the door to increased sophistication in system operation while maintaining uncomplicated interfaces with those who use and maintain such systems. An integrated Bell System team is the key to successful transformation of such technological promises into telecommunications service to the nation and, less directly, to the world.

W. E. Danielson  
*Chairman,*  
*B.S.T.J. Editorial Committee*