

*The Place of the Laboratories in the Bell System*

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will always necessitate new ways of achieving old ends as well as warrant the introduction from time to time of new types of service. To meet these changing situations the one satisfactory course to pursue is that of development and research based on accurate studies and analyses of operating conditions.

The present-day complexity of the telephone plant is such that very few problems involve experts in but a single field. Improvement at one point usually opens up the possibility of improvement at other points and to take full advantage of such opportunities calls for centralized engineering and development groups who are at all times closely in touch with field conditions. Thus, transmitter and receiver tie to local and toll circuits, to central office switchboards, relays and signaling equipment, to telephone repeaters, to superposed telegraph and carrier facilities, until a single pair of wires with its associated equipment may represent the investment of more than a million dollars, and an improvement contemplated in one element may echo back and forth through the plant to such an extent that hundreds of experts in different departments are needed to decide the best procedure.

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