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COMMUNICATION ENGINEERING¹

By Dr. FRANK B. JEWETT

BELL TELEPHONE LABORATORIES

IN most respects the history of electrical communication and of the engineering on which it rests is typical of the history of all great modern industries based on science and which did not originate in the unrecorded and presumably accidental experiences of our remote primitive ancestors. The development of electrical communication in all its branches discloses the typical sequence of one or more phenomena disclosed by fundamental science research appealing to a man or men with some understanding of science and possessed of the inventor's imagination and urge to create new things of practical utility. Once the trail is blazed there follow in succession the eras of development, first by other inventors, then by engineers who know more of science than the inventors but who rarely create essentially new knowledge, and finally the era

¹ Address delivered at the symposium on recent progress of science in connection with the dedication exercises of the new building of Mellon Institute, Pittsburgh, May 7, 1937.

in which development is mainly in the hands of research men and engineers working in intimate cooperation.

All branches of electrical communication—land line and submarine cable telegraphy, radio transmission, whether for telegraphy or telephony, and telephony by whatever means the signal impulses are transmitted or for whatever purposes employed—have gone through the several cycles. Further, they have spread out in this last era to embrace the art of permanent recording and subsequent reproduction of sound and much of the field of acoustics. In all these fields the major advances in the future over the present art are to be looked for in the research laboratory. Mainly I surmise these advances will emanate from the industrial research laboratory, although in the future, as in the past, revolutionary concepts are likely to originate in the laboratories of fundamental science and be brought to fruition in those of industry.

All forms of electrical communication are at base

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