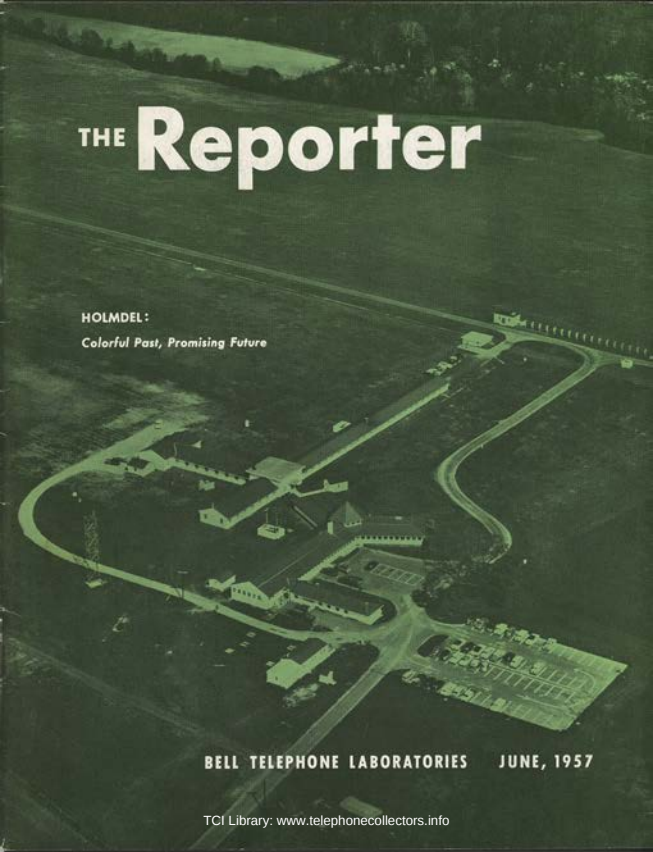


THE Reporter



HOLMDEL:

Colorful Past, Promising Future

BELL TELEPHONE LABORATORIES

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Waveguide building is probably B.T.L.'s longest lab, measuring 300 by 20 feet. Foreground: C. F. P. Rose, A. C. Beck.

W. M. Goodall, who heads systems studies group, has studied pulse modulation transmission methods.



Fred Luth (left), Holmdel's only motor pool driver, and John Warneker of Service Staff unload antenna dish at main building.

HISTORIC

S. E. Miller, Assistant Director of Radio Research; H. E. Rowe, E. A. Maronelli check above-ground waveguide.





Stately Roberts House standing inside the main entrance to Holmdel serves as laboratory. Foreground: Loretta Schaefer.

HOLMDEL

Holmdel's stockroom area is compact. Shown (l. to r.) are John Warnekar, R. D. Bohr, Gene Hult, E. E. Wademon.



AN APT DESCRIPTION of our radio laboratory at Holmdel might be—in the mood of the month—"something old, something new."

The laboratory, located about 27 miles south of Murray Hill and a dozen miles from the New Jersey shore, recently came into added prominence when it was announced that a plan to expand the facility is being drawn up for consideration in the near future. The expansion eventually could provide space for 4,500 employees, more than currently at any of our locations.

If those plans materialize, Holmdel of tomorrow will be vastly different from Holmdel of today. And today's Holmdel, at least to the passing motorist, is virtually unchanged from what it was a quarter-century ago. At that time H. T. Friis, now Director of Research in High Frequency and Electronics at Murray Hill and Holmdel, described the Monmouth County operation as a "research outpost."

Farms, Pre-Revolution Homes Are Nearby

Holmdel's only motor pool driver Fred Luth today can drive to Murray Hill in less than an hour via the multi-laned Garden State Parkway. This thoroughway is a far cry from rural "shore roads" of 25 years ago. Farm-lands handed down from father to son for 150 years now about new industrial plants throughout Monmouth County; houses dating back to a quarter-century before the Revolutionary War are across the road from sprawling developments of split-level homes. Outwardly, however, this particular brand of progress has touched the Laboratories' "research outpost" lightly. But, to repeat, Holmdel is "something old, something new."

For instance, the "Roberts House"—a gleaming, pillared house standing immediately inside the main entrance to the Holmdel grounds—was built just after the Civil War. Inside the house are marble-trimmed fireplaces, a graceful center stairway, flowered ceiling decorations of an older, more ornate period. But the sturdy old house serves us well as a lab, and its high-ceilinged rooms are filled with electronic equipment used by W. M. Goodall's group in their studies of information transmission as applied to microwave circuits; methods of pulse modulation transmission, and explorations of new systems.

Building Designed for Radio Studies

Even the main building, farther down the road, seems unusual to persons familiar with the appearance of other Laboratories facilities. Originally it was constructed entirely of wood since metal interfered with radio studies being conducted at that time. The building's furnishings were installed with the same restrictions in force. While the building today recalls those earlier years, it houses work on microwave electronics, new short-wave transmit-

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H. T. Friis (left), Holmdel's Director of Research—High Frequency and Electronics, meets with Vice President W. O. Baker.



Holmdel's work areas have cheerful atmosphere, as in the shop above. Foreground: Shops Manager H. W. Anderson, L. R. Lowry.

Continued

HISTORIC HOLMDEL

ters and other research connected with the challenges of the future. This work is under the direction of Dr. Friis and J. C. Schelleng, Director of Radio Research.

Many of Holmdel's 450 acres are rolling grassy fields and appear little changed from the days when they were three farms. Again appearances deceive, however, for buried beneath are conduits for an underground millimeter wave system which eventually will extend for two miles around Holmdel's perimeter and will be used experimentally to carry waves at frequencies far higher than any now in commercial radio use. This and other studies in connection with waveguide transmission are the responsibility of a group working with S. E. Miller, Assistant Director of Radio Research.

Another large plot is used for testing and studying antennas at short range. A. B. Crawford's subdepartment is concerned with antenna research, as well as radio-wave propagation and fundamental measurements for millimeter waves.

Housed Early Ship-to-Shore Equipment

Our Holmdel location was established late in 1929 to house a short-wave radio telephone receiving laboratory which had outgrown temporary quarters at nearby Cliffwood. Transmitters for these studies were then at our laboratory in Deal, some 10 miles to the south. In recent years, when Deal closed, a number of our people there came to Holmdel.

The relatively small number of people who have been at Holmdel during the past 27 years is interesting in light of the impressive record of accomplishment compiled at the "research outpost." Today there are about 115 people at Holmdel but the pioneers can recall the early days when a fellow would have been hard put to scrape

up the necessary manpower for a casual softball game during the noon hour.

Although the Holmdel staff has never been large it has been studded with names identified with historic work. K. G. Jansky detected radiation originating in interstellar space and established radio astronomy as a new science. The complicated tangle of waves in transatlantic reception was unraveled by A. C. Beck, C. B. Feldman and W. M. Sharpless. Edmund Bruce invented the widely used rhombic antenna.

Other notable contributions were made by a group led by E. B. Ferrell in developing amplifiers filling long-distance transmission requirements; J. T. Schafer and W. M. Goodall, in the study of the ionosphere; C. R. Englund, A. B. Crawford, W. W. Mumford, C. R. Burrows and L. E. Hunt, in research in ultra-short-wave propagation, and G. C. Southworth, in heading a pioneer group whose fundamental contributions formed a basis for subsequent waveguide developments.

In our war work, the Monmouth County labs became the center of research on radar antennas, including the valuable "musa" and "rocking horse" antennas. Among contributors were W. D. Lewis, W. E. Kock, C. B. Feldman, D. H. Ring and C. C. Cutler. Space prevents detailing post-war research which led to the system of microwave relays carrying most of the nation's television programs and also a considerable part of its long-distance telephone.

Our people working today with A. B. Crawford, S. E. Miller, W. M. Goodall, A. G. Fox in microwave physics and with L. C. Tillotson in microwave applications are adding to that reputation. For Holmdel's importance as a "research outpost" has been due primarily to individual determination and talents. These same qualities foretell an even more significant future.



E. Van Horn of Holmdel Service, W. E. Angerole, R. A. Desmond discuss problem of field drainage.



J. P. Schafer (right) discusses model of microwave filter with J. C. Schelleng, Director, Radio Research.



One of Holmdel's many towers looms over LeRoy C. Tillotson.



R. S. OH, shown here in his laboratory, did important work in the high frequency rectifier field.



A. G. Fox's group is concerned with microwave physics, including the study of ferrite-loaded circuits.

A. F. Dietrich (below) makes laboratory measurements of waveguide power loss.



A. B. Crawford inspects a sighting board used to reset a 60 foot antenna, largest on Crawford Hill.