

TELEVISION TOWER IN GEORGIA IS WORLD'S TALLEST STRUCTURE

WRBL-TV and WTVM With RCA Antennas
Atop 1749-Foot Tower
Cover 25,000 Square Mile Area

Piercing the sky 1749 feet above the Georgia pinewoods, a needle-like TV tower—now the tallest man-made structure in the world—is beaming television programs of WTVM and WRBL-TV, Columbus, Georgia, to an area of more than 25,434 square miles.

WTVM operates on Channel 9 and is owned by Martin Theaters of Georgia, Inc. of which Mr. C. L. Patrick is Executive Vice President. Channel 3 WRBL-TV is owned by Columbus Broadcasting Com-

pany. J. W. Woodruff is president and general manager.

Coverage Area Multiplied

To pinpoint the Georgia-Alabama border with the world's tallest landmark was not the only vision of the management of the two stations which began operation in 1960 sharing a 1260-foot TV tower. Extending the structure last summer to almost a third of a mile high widened the transmission range for telecasts to reach many viewers in distant areas for the first time. Clear pictures are now being reported as far south as the Gulf of Mexico, and west to Montgomery, Alabama. Reception in Atlanta and Macon, Georgia, has greatly improved.

RCA Prime Contractor

Design, fabrication and erection of the 215-ton structure was subcontracted by RCA to *Stainless, Inc.*, North Wales, Pa. *Bethlehem Steel Company* supplied most of the tower steel as well as the six miles of guy-strand cables which hold the tower in position. Erection was initially performed by *J. M. Hamilton, Inc.*, Gastonia, N. C. and the tower extension was performed by *Furr and Edwards*, Rome, Georgia.

Original Tower Extendable

Prior to construction of the new tower the TV antennas of WTVM and WRBL-TV were supported by a 1000-foot, triangular tower ten feet wide on each face. This special tower exceeded the structural specifications of ordinary TV towers of this height; it was designed to allow additional sections that would ultimately support the antennas at a height of 1760 feet above ground at wind velocities up to 110 mph. (50-pound wind loading).

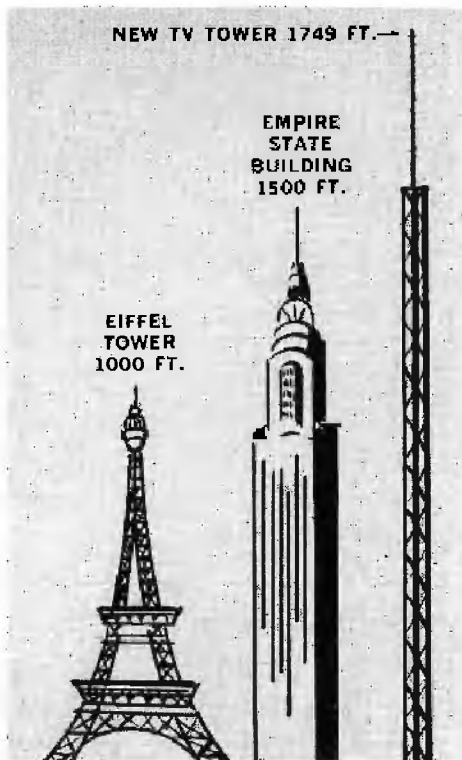


FIG. 1. Comparison of world's tallest tower to other famous structures.

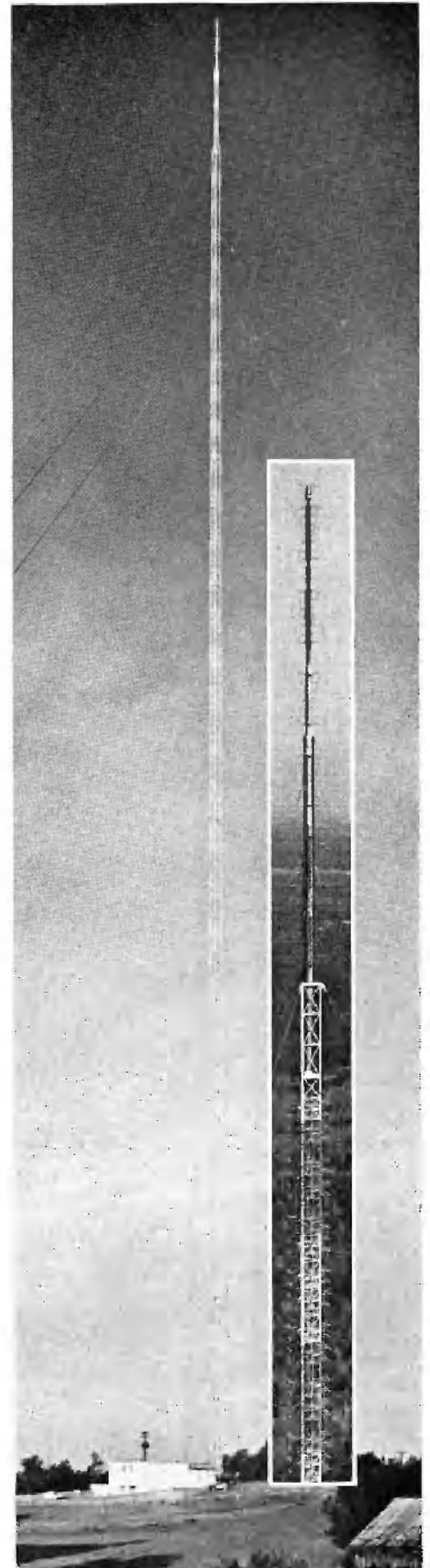


FIG. 2. Full-length view of the WRBL-TV/WTVM tower with inset showing two antennas at top.

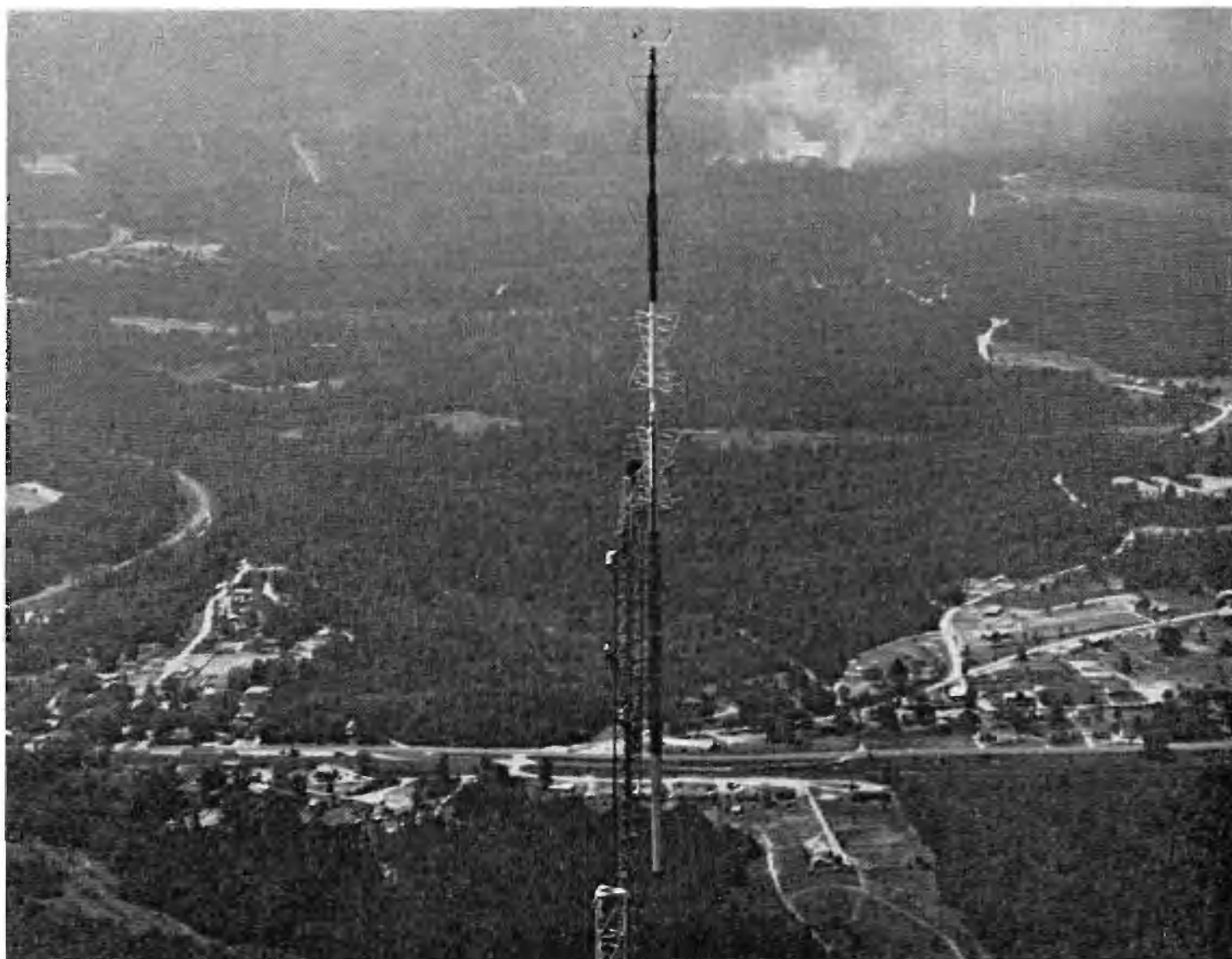


FIG. 3. Aerial view of the world's tallest structure as the RCA Super-Turnstile Antenna was moved into place. Men on gin-pole indicate comparative size of antenna.

Use of an "extendable" tower such as this was the key to substantial savings in time and expense for the two stations. It eliminated the work of dismantling an otherwise inadequate tower, and replacing it with one of suitable design.

Tubular materials are used throughout the entire structure.

High Gain TV Antennas

At the summit of the structure is a stacked TV antenna and lighting beacon assembly 260 feet in length and weighing ten tons.

The antennas consist of an RCA Type TF-6AL Channel 3, 6-section Super-Turnstile and an RCA Mark II Super Gain Channel 9, 18-layer antenna. Members supporting the antennas had to be designed and fabricated to rigid electrical and and mechanical specifications.

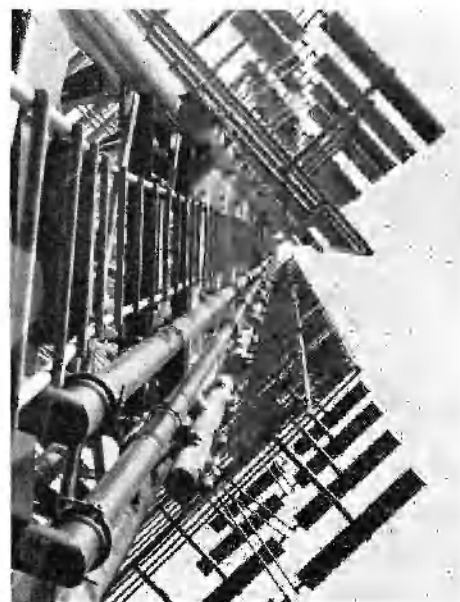
Tower Extended Without Lost Air Time

Extension of the 1260-foot tower to the new height of 1749 feet was completed in less than two months, ahead of schedule, and without loss of air time for either station. Television transmission continued during construction through two temporary antennas mounted from one side of the original 1000-foot tower. After erection of tower steel was completed, and the permanent antennas relocated at the top of the new tower, the temporary antennas were removed.

Safety First

During construction the erection crew ascended and descended the tower in a temporary elevator car operated by cables attached to the gin pole. For safety and efficiency, constant voice communication was maintained between the men on the tower and those manning the lifting hoist and tag lines on the ground.

FIG. 4. Looking up the tower between two of the four stacks of super-gain antennas.



Outrigging of Temporary Antennas

WRBL-TV's temporary antenna was a Channel 3, RCA single-section Super Turnstile which was mounted on the permanent structure with its center of radiation 850 feet above ground. The dual run of $3\frac{1}{8}$ -inch line leading to the original RCA six-section Super-Turnstile Antenna was disconnected at the 1,000-foot elevation and, by means of an adaptor/transformer and elbows which formed a "U" turn, was run back down the tower for a distance of 160 feet. This co-ax was then connected to the inputs of the single section antenna at the 841-foot level.

The second temporary antenna, a Channel 9 Super-Turnstile, was installed on the tower face with its center of radiation 804 feet above ground. The $6\frac{1}{8}$ -inch transmission line was then disconnected from the Super Gain antenna and connected to the standby antenna by means of an adaptor/transformer, a 50/50 power-dividing tee, and a 90-degree quadrature section.

Dismantling Original Antennas

After installation and check-out of the temporary super-turnstiles on the side of the 1000-foot tower, the stations transferred to them and the two original antennas, plus a 15-foot transition section that couples the super-gain antenna to the tower, were removed and lowered to the ground to allow for tower extension.

Ground Assembly of Tower Sections

To support the antennas at the extended height, the project required the addition of 488 feet of steel to the existing 1000-foot tower. Sections of the triangular structure, 25-feet in length, were fabricated at the *Stainless* Pine Forge plant and shipped knocked down by rail and truck to the tower site. These lengths were then bolted together on the ground ready for erection.

The gin pole was an auxiliary tower section equipped with a rotating pulley at the top. Bolted to the side of the main tower, it was used together with a ground lifting hoist and load line to hoist sections to be bolted to the top of the structure. As sections were joined, the gin pole was raised 50 feet, until all 488 feet of tower were added.

Relocating High Gain Antennas

The Mark II Super-Gain antenna and the TF-6AL Super-Turnstile and light beacon assembly, which attain a total length of 261 feet, were then installed successively at the top of the tower at an elevation of 1488 feet. New sections of



FIG. 5. Riggers used this temporary elevator car (tool basket) to ascend and descend the tower during the extension of tower height.

transmission lines were installed through the tower extension and connected to the permanent antennas. After check-out, operations were transferred to the main antennas, the temporary antennas were lowered. Following this, the new tower sections were painted to complete the final phase of construction.

Pre-Stressed, Proof-Loaded Guys

A total of 24 guy cables are installed at eight levels in three azimuth directions, utilizing two levels of existing guys with added link extensions. Use of higher strength, bridge-strand cable permitted a reduction in the diameter of the guy, contributing to reduced wind and ice load. All guys were equipped with open sockets for connection to the tower, and with closed-bridge sockets and tensioning adjustments at the ground anchorages.

Pivot-Base Design

As opposed to a fixed-type design, the base of the 1749-foot structure is "pinned" by a pivot configuration which assures even distribution of the 215-ton load, and eliminates any redundant moment at the bottom of the tower.

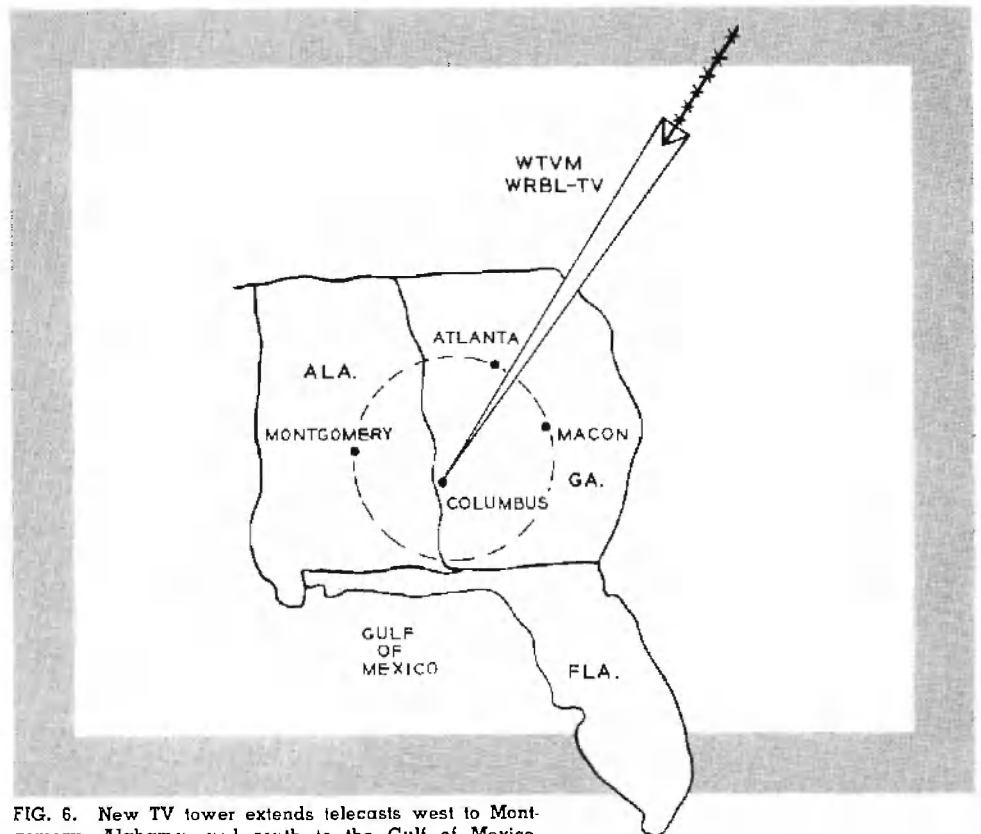


FIG. 6. New TV tower extends telecasts west to Montgomery, Alabama, and south to the Gulf of Mexico.

FIG. 7. Side view of tower and antennas showing guy attachments.

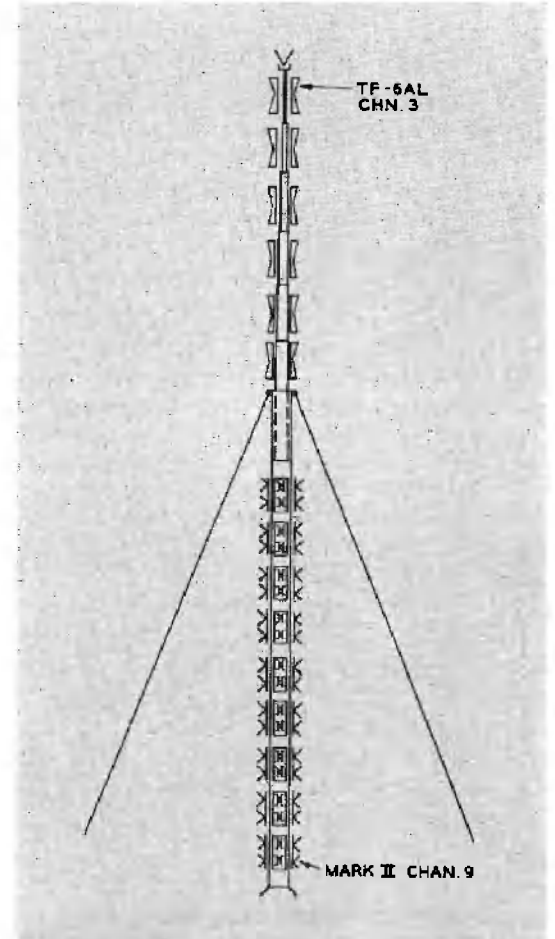
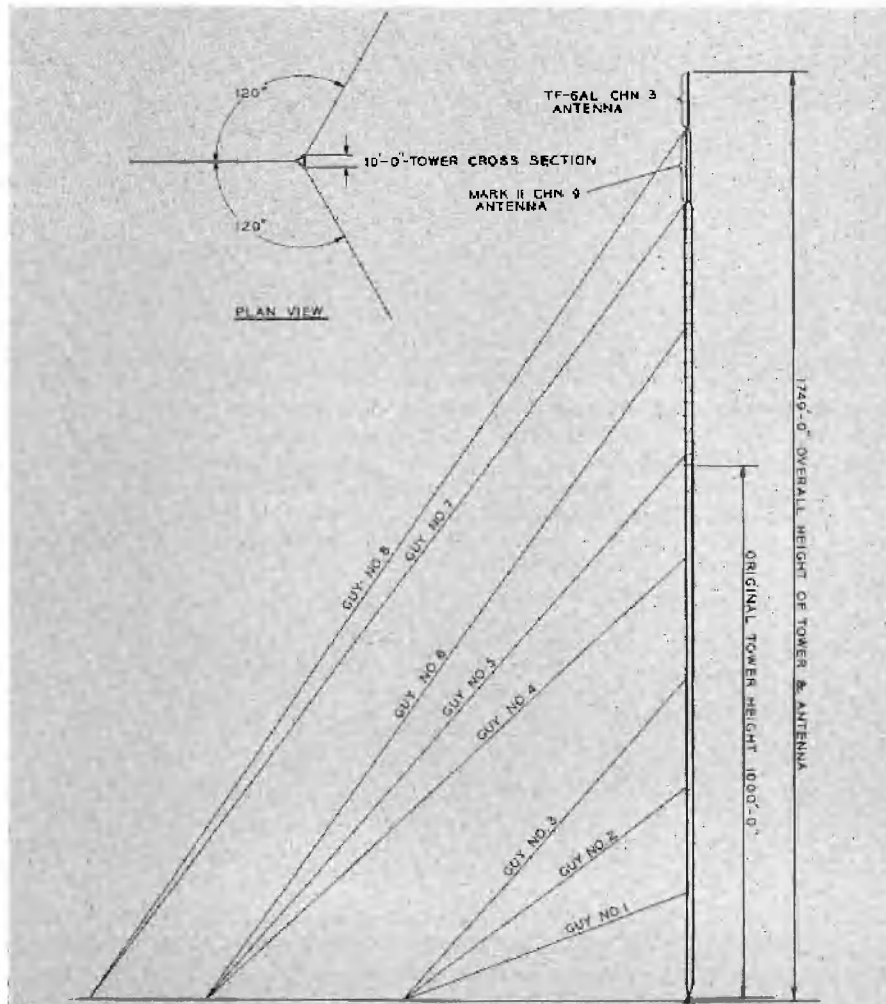


FIG. 8. Draftman's drawing of two antennas "stacked" atop the world's tallest tower.

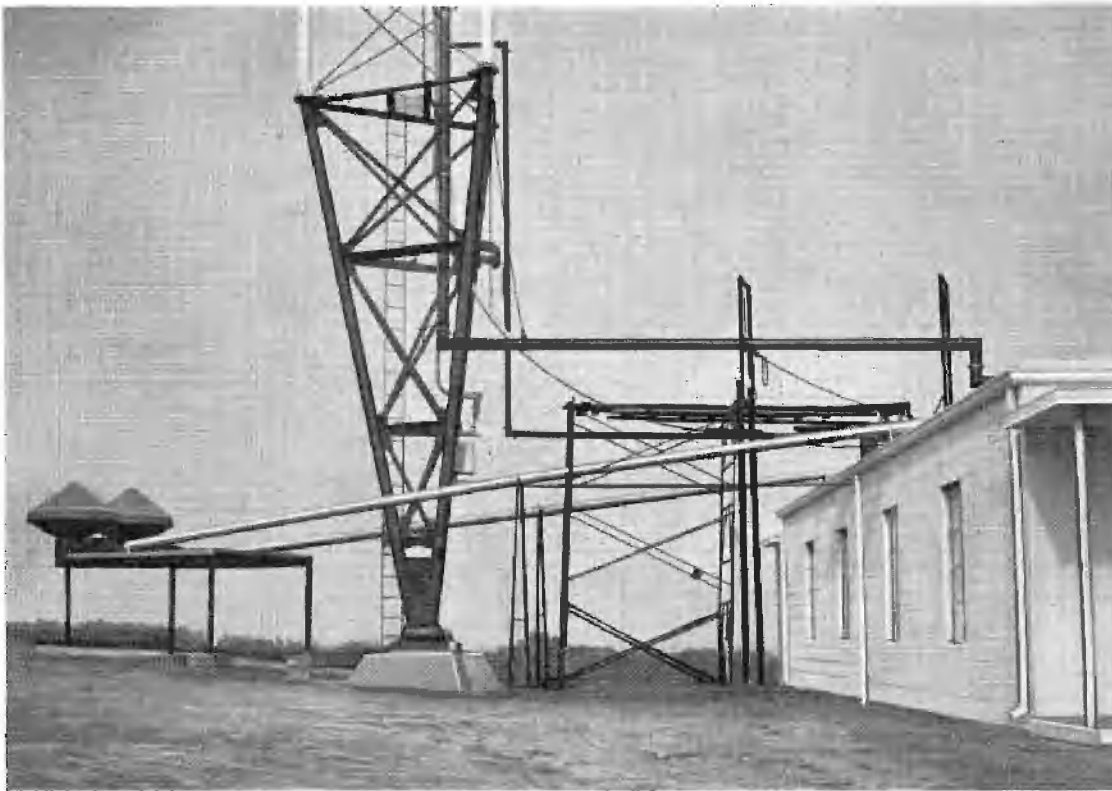


FIG. 9. Beside assuring even distribution of load, the pivot base design provides utmost simplicity and clean access lines at base of tower.

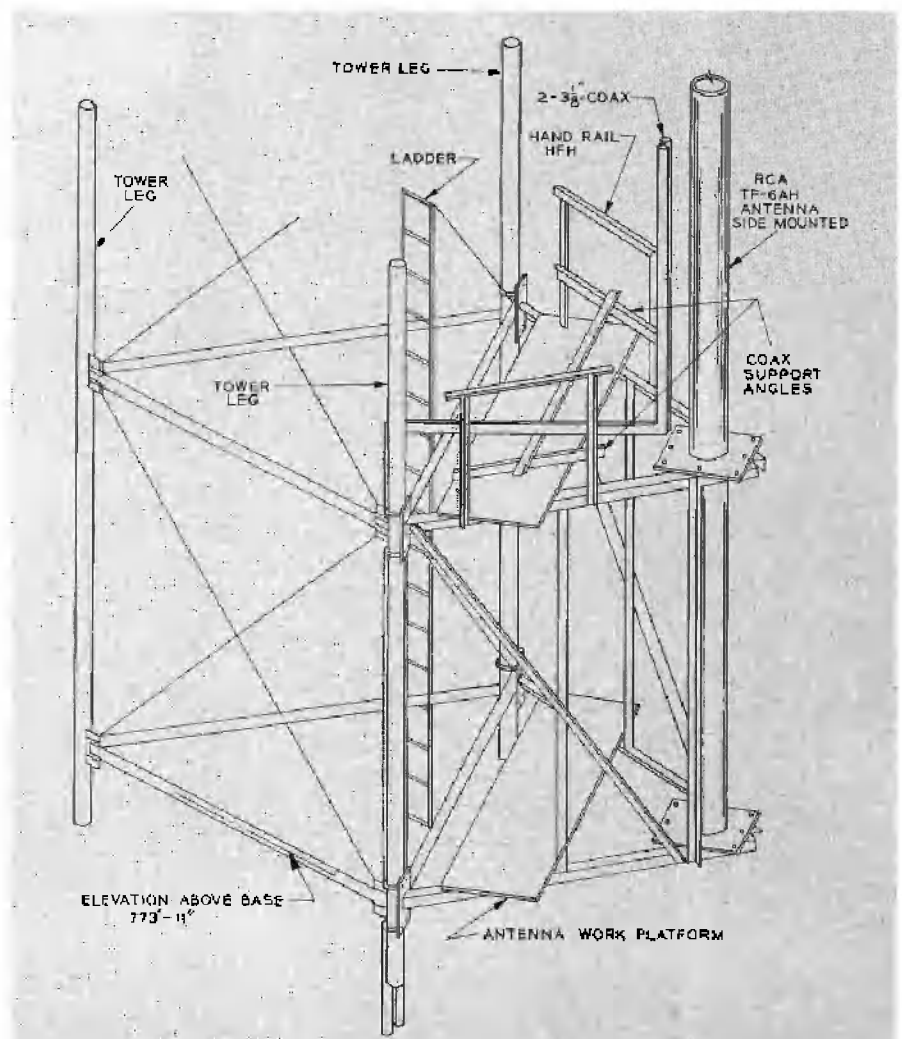
FIG. 11. Side-mounting of temporary channel-9 antenna.

"Electronically" Designed Tower

The WTVM/WRBL-TV structure is the 27th tall tower (over 1000 feet) to be designed with the aid of a new electronic computer installed at the subcontractor's headquarters in North Wales, Pa.

Utilizing data such as moments, shears, reactions, axial stress and deflections at various guy levels, calculated and programmed by the subcontractor's engineering staff, the computer expedites the final tower design and with much greater speed and accuracy than heretofore possible.

FIG. 10. Tower leg flanges are precision welded for snug fit and ease of erection.



WRBL-TV OPERATING CHANNEL 3 FROM WORLD'S HIGHEST STRUCTURE

... Increases Coverage From 37 to 66 Counties

Rising above the pinelands southeast of Columbus (Ga.) is a steel, copper, glass and plastic structure that is the tallest of the monuments to man's ingenuity . . . a slender, needle-like edifice that elevates two television-transmitting antennas almost a third of a mile into the sky.

The beacon atop the Channel 3 super-turnstile antenna of WRBL-TV . . . the "WeeReBeL" station . . . is 1749 feet above ground.

WRBL-TV Management, History and Other Data

Columbus Broadcasting Company, the operator of WRBL-TV, WRBL-AM and -FM, is a private corporation owned by four interests: J. W. Woodruff, Sr., J. W. Woodruff, Jr., J. Barnett Woodruff and the R. W. Page Corporation. *Columbus Broadcasting* is the offspring of a merger between the Woodruff-owned WRBL-AM and -FM radio operations and the owners of the *Columbus Ledger-Enquirer* newspaper-publishing organization.

WRBL-TV started operations in 1953, with a seven-hour daily schedule, using a studio and office building constructed for the WRBL-AM and -FM operations during 1950. The building was enlarged and modified to accommodate the TV operation. A CBS-TV affiliate since the first day of operation, network programming was delivered to Columbus via an air pickup of the CBS affiliate in Atlanta at a site on Pine Mountain, a peak 32 miles north of Columbus. Microwave formed the link between WRBL and Pine mountain.

The trademark of WRBL-TV is a caricature of a small boy, nattily attired in a Confederate uniform, with the name "WeeReBeL". The George P. Hollingbery Company serves as national sales rep.



FIG. 1. Joe Gamble, WRBL TV's chief engineer, shown at the tower during construction.



FIG. 2. The WRBL trademark . . . a clever device that communicates the stations' call letters as well as its geographic location.

WRBL-TV originally went on the air as a Channel 4 station in 1953 with transmitter and antenna in downtown Columbus. During 1955, WRBL-TV went to full power and moved its transmitter site across the Chattahoochee River to Phenix

City (Alabama). The de-intermixture proceedings of 1957 reassigned WRBL-TV to Channel 3 and the present site went on the air during 1960 using a 1000-foot tower to place the top of the antenna 1260 feet above ground. WRBL-TV shared this tower with WTVM, also of Columbus.

At the time of erection of the 1000-foot tower, the managements of both stations anticipated an increase in tower height. For this reason, the tower was designed to be "ex-tendable" so that additional height could be added later without obsolescence of the existing tower. (See "Television Tower In Georgia Is World's Tallest Structure," page 55.)

WRBL-TV Programming

As mentioned earlier, WRBL-TV serves as the primary CBS-TV outlet in Columbus, however, WRBL-TV broadcasts much local programming.

"At Home With Rozell", a morning program of primary interest to the housewife, had its first airing in September, 1954 and is still on the daily schedule.

Mrs. Rozell Fabiani, hostess of the program, has won many public-service awards for her commercial contributions to the television art. These awards include *McCall's Gold Mike Award* (two consecutive years), the highest award given women in the radio and television field. Mrs. Fabiani also holds an honorary Life

Membership in the *National Congress of Parents and Teachers*. In 1960, "At Home With Rozell" won the second highest honor in the *Carol Lane Awards for Traffic Safety Programs* as a result of "Operation Courtesy," a feature beamed to promote traffic safety among high-school students. The latest laurel bestowed on the program is the top award in the television class of the 1962 *Grocery Manufacturers of America Convention*.

"Chattahoochee RFD", a program for the agricultural interests in the area won the *Georgia Farm Bureau Award* as the best program in the agricultural category.

"Colonel Chick and Bozo," obviously a children's program, has a daily guest list of local children. The program has been a personality children's hour on WRBL-TV since the first programming days of the station back in 1953.

News and Public Affairs holds a respected place in the programming concept of WRBL-TV. Under the able direction of George Gingell, a news-corps of eight people gather, prepare and present news programming four times daily. The feature-news program in this schedule is "Evening Edition" on the air for a full hour daily. Dick McMichael serves as anchor man for the program. A film sequence, entitled "Pulsebeat", presents human-interest features of local origin. It was conceived by Jack Gibney.



FIG. 3. WRBL-AM-FM-TV Office and Studio Building at 1350 Thirteenth Avenue in Columbus. Constructed in 1950 for WRBL-AM and FM, the facility was enlarged during 1953 to accommodate the TV operation. The tower in the background supports the microwave antenna for the STL (studio-to-transmitter) link.



FIG. 4. The "Colonel Chick and Bozo" set. The program puts local youngsters on camera during its daily late-afternoon time slot. "Colonel Chick" is Charles "Chick" Autry and "Bozo" is Jack Morin. Pictured with them are local children.

Another segment of "Evening Edition" is "Personal Opinion", the station's daily editorial. The voice of *Opinion* is that of George Gingell. The sports report is handled by Walter Graham preceding the weather report with Doug Wallace. Mr. Wallace too, is an old hand at WRBL-TV, for he's been giving the weather facts and figures since those early days in late November, 1953.

As a wrap-up for "Evening Edition", WRBL-TV joins the CBS-TV network for Walter Cronkite's early-evening world-and-national news report from New York.

"Evening Edition" is augmented by a 30-minute news program at 7:30 AM and another at 11:00 PM. The mid-day news occupies a 15-minute slot at 1:00 PM and is edited to a great extent for the predominantly-female audience.

WRBL-TV People

Mr. J. W. Woodruff, Jr. has served the company since 1935 as General Manager (WRBL-AM went on the air during July, 1928 and WRBL-FM during September, 1946).

Ridley Bell serves as station manager and director of operations; news and public



FIG. 5. Mr. J. W. Woodruff, Jr., President and General Manager of WRBL-AM-FM-TV. He has served in this capacity since 1935 (WRBL-AM went on the air in May, 1928).

affairs programming is under the talented control of George Gingell.

Joe Gamble has served as chief engineer since 1944. He and his staff supervised and coordinated all installations of RCA equipment in the company's AM-FM-TV operations.

In the sales department, George Jenkins directs national sales while Robert Walton serves as Local Sales Manager.

FIG. 6. The set for "Evening Edition," a 45-minute program that precedes Walter Cronkite's world-and-national news program. From left to right: George Gingell, Dick McMichael, Doug Wallace and Walter Graham.





FIG. 7. WRBL-TV Station Manager, Ridley Bell.

Indicating the high calibre of *Columbus Broadcasting Company* management, fifteen employees have a service record of ten years or more while an additional 23 have established service in excess of five years.

Transmitter Equipment

WRBL's transmitter facilities are 100 percent RCA-equipped . . . AM, FM and TV. The AM transmitter is a 5-kilowatt BTA-5H operating on 1420 kc; the FM facility is a BTF-3B transmitter coupled to a BFA-8 antenna. The combination delivers 21 kw effective radiated power.

The TV transmitter is a 25-kilowatt TT-25CL transmitter while the antenna is a six-section TF-6AL Super Turnstile. This combination results in maximum power . . . 100 kw ERP. WRBL-TV uses a TTC-5 Control Console with the transmitter.

Studio Equipment

Three TK-31 Image Orthicon Cameras serve WRBL-TV's "live" studio in the pickup of the local programming mentioned earlier.

New Antenna Height Increases Coverage to 66 Counties

The additional 488 feet of tower height lets the 100-kw signal of WRBL reach out to a 66-county area (estimated) that includes Macon on the east, Albany on the southeast, Dothan on the south and Montgomery on the west, not to mention the hundreds of smaller communities in the Alabama-Georgia countryside.

The Columbus TV market area has practically doubled since the increase in tower height. Earlier, the market comprised only 37 counties as compared to the present estimate of 66.



FIG. 8. WRBL-TV employs 25-kw Type TT-25CL TV transmitter.

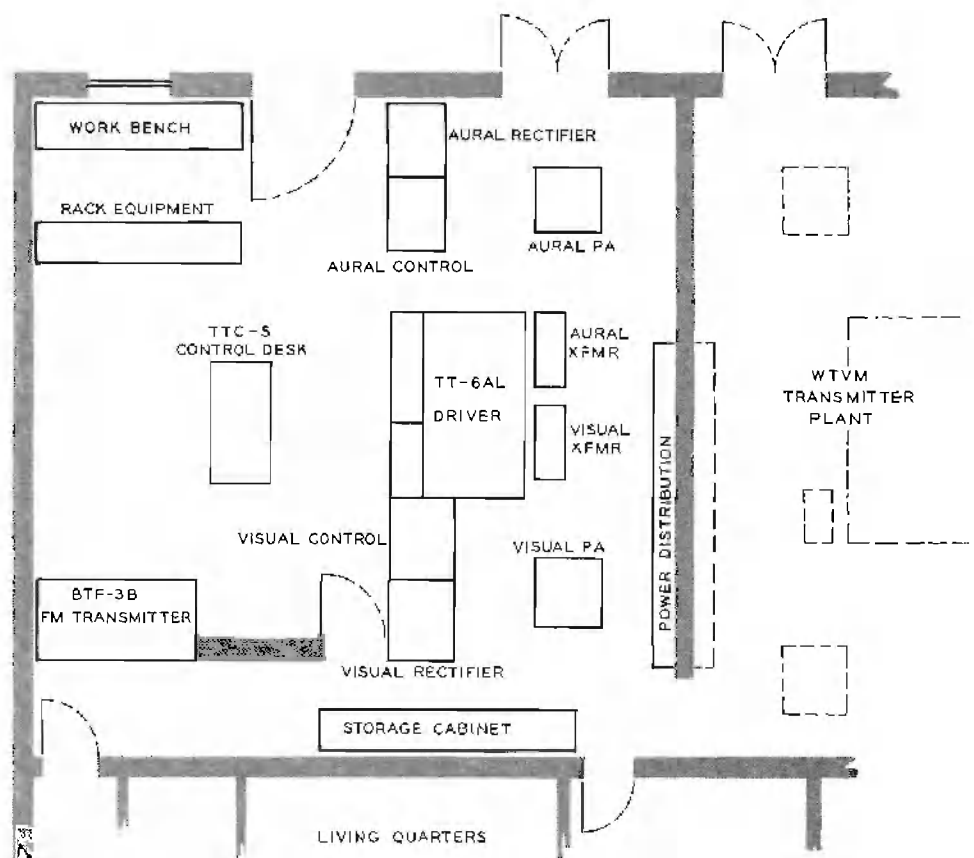


FIG. 9. WRBL's transmitter plant floor plan. The station shares the building as well as the tower. Transmitter personnel live in the "front" part of the building.



FIG. 1. E. D. Martin, President, Martin Theaters of Georgia, Inc.



FIG. 2. Roy E. Martin, Jr., Vice President.

WTVM

OPERATING CHANNEL 9 FROM WORLD'S HIGHEST STRUCTURE

Now Serves as Far as Macon, Albany and
Montgomery with Unduplicated ABC Programming

In 1953, Columbus had a two TV-channel allocation: 4 and 28. WDAK-TV went on the air during October of that year using Channel 28.

The de-intermixture proceedings of 1957 dissolved the Channel 28 allocation and replaced it with Channel 9 from Dothan (Ala.). The Columbus Channel-4 allocation went to Dothan and was replaced with a Channel 3 assignment, which WRBL-TV now occupies.

In 1957, Martin Theaters of Georgia (Inc.) acquired full ownership of Channel 28 and changed the call to WTVM. Almost immediately, plans were started to move the station to Channel 9.

WTVM went on the air on Channel 9 during 1960, sharing a 1260-foot tower with WRBL-TV at a site 16½ miles south-east of Columbus, near Cusseta, Ga.

WTVM Management

WTVM is a division of Martin Theaters of Georgia, a privately-owned corporation under the control of President E. D.

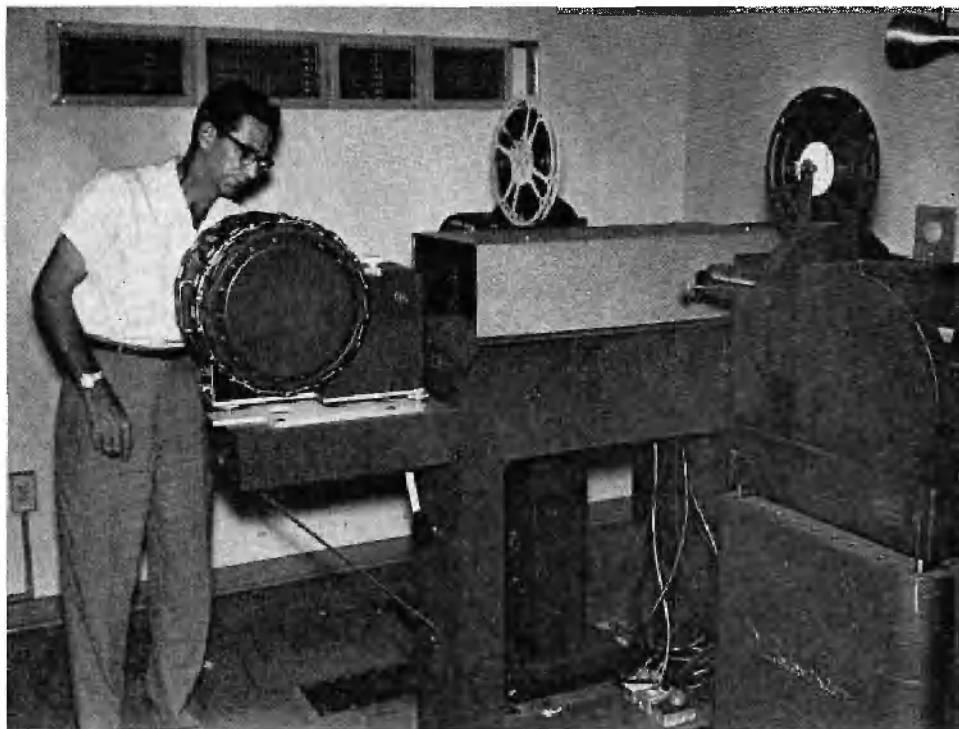


FIG. 8. WTVM film programming starts here. Herman Ragland loads the Type TP-7 Slide Projector which works into the TP-11 Film Multiplexer. The two 16-mm projectors are TP-16 units. The pickup is via RCA vidicon camera.



FIG. 3. C. L. Patrick, Executive Vice President



FIG. 4. Reeve Owen, V.P. & Gen. Mgr., WTVC, Chattanooga, Tennessee.



FIG. 5. Joe Windsor, WTVM General Manager.



FIG. 6. Ted C. Short, WTVM Station Manager.



FIG. 7. Charles Parrott, WTVM Chief Engineer.

Martin, Vice President Roy E. Martin and Executive Vice President C. L. Patrick. *Martin Theaters* also owns WTVC (Channel 9) in Chattanooga of which Reeve Owen is Vice President and General Manager. Mr. Owen only recently transferred to Chattanooga from WTVM and, as Vice President and General Manager of the Columbus operation, conceived and planned the combined operation of WTVM and WRBL-TV.

FIG. 9. Program control room at the downtown studio. John Stikes (through glass) announcing; Don Watson at switcher and Herman Ragland at camera control unit.





FIG. 11. RCA TRT-1B TV Tape facility in the control room at the downtown studios. WTVM uses this recorder for commercial spots and programs.

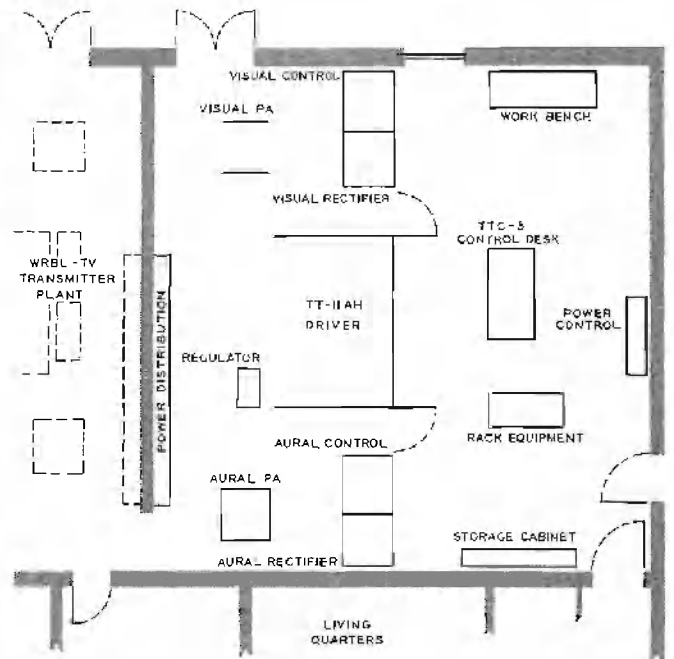


FIG. 10. WTVM shares the transmitter building with WRBL-TV. This floor plan illustrates the roomy, well laid-out plant.



FIG. 12. WTVM transmitter plant. In foreground is the TTC-5 Control Console. At far background are the rectifier and control cabinets for the TT-25CH aural power amplifier.



FIG. 13. One of the two r-f power amplifiers located to the rear of the driver of the transmitter (see FIG. 10). Primary-power switching devices on rear wall.



FIG. 14. Peter Cole, WTVM News Director, on the set for the 5-minute newscast at 7:25 A.M.

Joe Windsor is now general manager of WTVM with Charley Parrott serving as chief engineer. Ted Short is station manager and Jack Poole is director of operations.

Network Service

As a result of the change in allocations for the area, WTVM is the only primary-ABC outlet between Atlanta to the north and the Gulf of Mexico to the south and, as such, the only station serving Macon, Albany and the Columbus-Phenix City area with an unduplicated Grade "B" television service.

WTVM's weekly schedule totals 121½ hours of air-time, 15 percent of which is live programming.

Studios and Offices in Downtown Columbus

Staffed by 38 full-time employees, WTVM occupies a three-story building located at 1307 First Avenue. General Manager Joe Windsor heads a management team with an average age of only 35 years . . . one of the reasons for WTVM's great business success.

The pictures on these pages indicate the quality of the facilities WTVM operates, using the finest of broadcast equipment.

FIG. 15. The transmitter driver . . . an RCA TT-11AH . . . which drives the TT-25CH power amplifiers. Making a routine check is John Maxwell, resident engineer.

