

STUDIO REVIEW

GATES RADIO CO.

QUINCY, ILLINOIS

APRIL, 1949

HERE AND THERE

Mr. Gordon Brown of Radio Station WSAY, Rochester New York, made a hurried trip to Quincy via TWA, to inspect equipment and order a phasor for his station. His plans call for a directional with four towers for his 5000 watt station.

One of the newest stations to go on the air will be the one at Silliman University in the Philippine Islands. This station is owned and operated by the Presbyterian Board of Foreign Missions of which Mr. S. F. Mack is director. A Gates one kilowatt transmitter has been shipped overseas to take care of the operations of this outlet.

Mr. L. I. McEwen paid a visit to a number of Gates customers in the South in the past several months. He stopped in Louisiana and Texas. While in Texas he paid a visit to our Texas Distributor the Houston Radio and Supply Company and spent some time with the personnel, as well as calling on some of the various broadcasters in that locality.

"Radio Press" one of the oldest commercial broadcasting stations in Tangier, Spanish Morocco, Africa, will soon be receiving its new Gates one kilowatt transmitter. This Customer will be another of the many users of Gates transmitters in foreign countries.

NAB CONVENTION

On April 6th to 12th the National Association of Broadcasters is holding its annual convention in the Stevens hotel in Chicago. Included in the equipment in the Gates booth will be the new transmitter—one kilowatt AM, one kilowatt FM, and the 10 watt educational; in addition the SA-40 and SA-50 Consoles, and the Matched Control equipment will be displayed. As this goes to press all plans indicate one of the largest crowds ever to attend an NAB convention will be in Chicago.

Members of the Gates personnel in attendance include P. S. Gates, president; Fred Grimwood, V. P. in charge of research and sales; F. W. Wentura, Chief Engineer; L. I. McEwen, V. Pres.; Art Myers, production department; John Anderson, factory foreman; as well as Sales Engineers—Stan Whitman, Bob Ware,

(Continued on Page 12)



One of the most widely publicized and largely attended conventions this spring was the IRE show in New York. Reports were received from those in attendance that the Gates booth was crowded at all times. Broadcasters from all parts of the United States and Canada, as well as many foreign countries were there.

KTRN, RATON, NEW MEXICO



Radio Station KTRN, Raton, New Mexico went on the air December 12th 1948, providing a new outlet to listeners of Raton and vicinity.

This town is known as "Gateway to the Land of Enchantment" at the foot in famous Raton Pass in the Rockies. KTRN is a sister station of KFUN Las Vegas, New Mexico, both stations being operated by Southwest Broadcasters, Inc. E. L. (Ernie) Thwaites is President and General Manager.

The abode style building of eight rooms houses the transmitter, studios, and offices in the southwestern part of Raton. A very up to date setup has been installed and from all indications this will be an up and coming station.

BY AIR OR TRAIN TO QUINCY

Considered for many years off the beaten track for travel facilities, Quincy is rapidly becoming one of the busiest air centers north of St. Louis and west of Chicago. At almost anytime of day plane service is obtainable to all points of the country. For your convenience the new schedule effective April 24, is listed.

All times are Standard Time, planes arriving into Quincy—

From Kansas City and points west, 9:10 A. M.

From Ottumwa, Iowa and points north 11:40 A. M.

From Chicago and points east,, 12:30 P. M.

From Kansas City and points west, 3:50 P. M.

From St. Louis and points south, 2:00 P. M.

From Chicago and points east, 4:25 P. M.

Besides air line facilities the railroads have done much to speed up travel into Quincy and fast connections may be made to and from St. Louis, Chicago, Kansas City, and Minneapolis. Express shipments are moved with maximum speed to all points of the U. S.

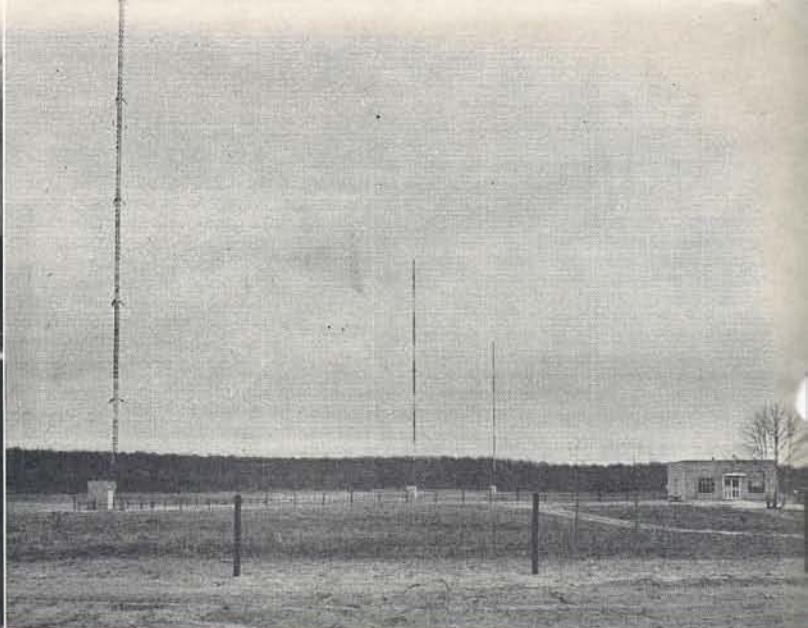
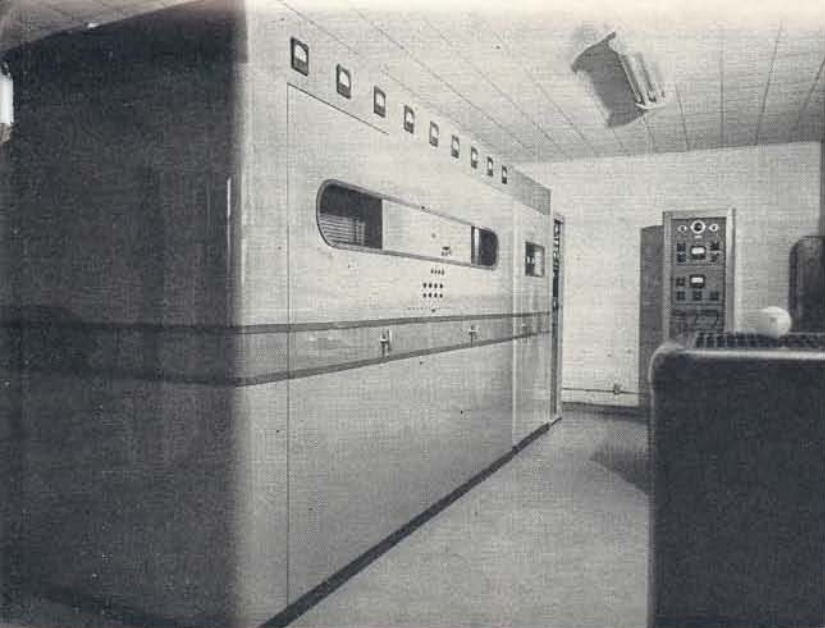
GRIMWOOD FLIES AGAIN

Fred Grimwood, breaking all previous records, made an ordinary month's sales trip in a record five days. Landing at the Washington office, he took time to confer with various F.C.C. officials about new items and technical developments. He also met with some new broadcasters in that area. Speeding on to New York, Grim spent some time with Mr. Larry Cervone, the Sales Engineer, of that territory, and our Export agents. Turning westward he made several stops enroute, yet arrived home in time for Sunday evening dinner and the usual Monday morning business.

New 5000 Watt Station On the Air

The Colorado Broadcasting Company of Pueblo Colorado, Station KGHF, was granted permission to increase their power to 5000 watts. They are now on the air with a five kilowatt Gates transmitter and directional system on 1350 KC.

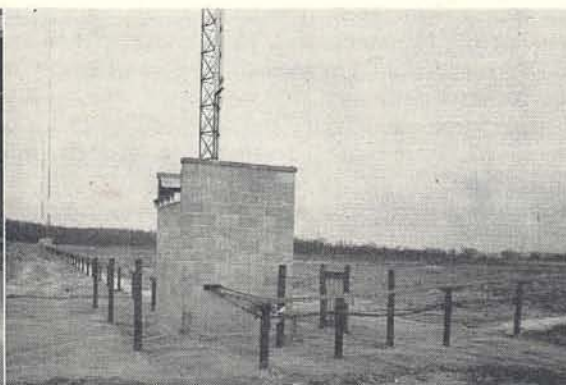
Mr. Robert Ellis is the manager of this station and is ably assisted in the care of the equipment by Willis Shanks, Chief Engineer.



THE NEW FIVE KILOWATT KFSB JOPLIN, MISSOURI

One of the newest stations in the high powered bracket to take the air in recent months is KFSB at Joplin, Missouri, operated by Four States Broadcasters, Inc., and serving the rich southwestern Missouri market. KFSB is completely Gates equipped as can be seen from the illustrations of the Gates BC-5A five kilowatt transmitter with matching directional phasing equipment. The Studios include the new SA-50 dual "Programaster" control console, with an array of speech input equipment of the new SA Series and several transcription turntables of the type CB-10 master design for modernized facilities.

The pictures, herein will be very helpful in suggesting ideas as to planning and construction. Note the neat appearance of the transmitter building. Those who have had previous experience with directional antenna systems will be interested in noting the design of the so-called doghouse. It is also interesting to note the installation of Gates Supercabe coaxial cable, which we are told was done in record time because of the ease of installing. The cable actually feed through two of the antenna tuning houses rather than around them. The antenna towers are Wincharger Type 150, spaced three in a row approximately a half wave length apart.



Directional Arrays Demand Good Phasing Design

Pictured to the right is a typical Gates phasing equipment, designed in this instance to match the Gates BC-5A five kilowatt transmitter. Phasors also may be designed to match all makes of broadcast transmitters in cabinet style and in color as desired. All cabinet enclosures, regardless of design, are fabricated in the Gates plant, thus making it unnecessary to purchase them from other manufacturers, saving both time and cost.

The consulting engineer prepares the technical information for all directional arrays. He makes recommendations as to the quality of components, and in some instances suggests the arrangements of the components. However, the actual design and construction is in the hands of the manufacturer. How this is done, or in short, knowing the tricks of the trade, will save the consultant who must prove the pattern in the field, many headaches. A simple example is in the meter shorting switches, where a compensating loop is placed on all meter shorting switches in major circuits, to equalize that loop provided in the meter circuit itself, thus effecting no change

GATES 1 $\frac{5}{8}$ " 51.5 OHM SUPERCABE

Transmission Line Soon Available

In production at the present time is a complete line of 1 $\frac{5}{8}$ " coaxial cable for FM and Television use.

Gates 1 $\frac{5}{8}$ " Supercabe 51.5 ohm consists of basic 1 $\frac{5}{8}$ " coaxial line in ten and twenty foot lengths, together with the fittings to connect the transmitter and the antenna. The standard lengths and fittings have matching flanges which, when properly assembled with "O" ring gasket, are air tight allowing for pressurization. This latest addition to Gates products meets the RMA standards for transmission lines for FM and Television use.

"Supercabe" fittings include 90 and 45 degree bends, gas barriers, end terminations and various adapters to other size air dielectric and solid dielectric cables. A field flange is provided for sections which are cut in the field. A complete line of hangers allows "Supercabe" to be mounted under any set of conditions, while an expansion joint takes care of the expansion and contraction of the Supercabe which occurs under temperature changes.

An automatic dehydrating unit together with air manifolds and fittings round out the Supercabe line which may be used with either AM or FM installations or both.

A feature of this dehydrating unit will be a compressed air outlet making available a limited amount of air for general use around the station such as blowing out equipment, spray paintings, etc.

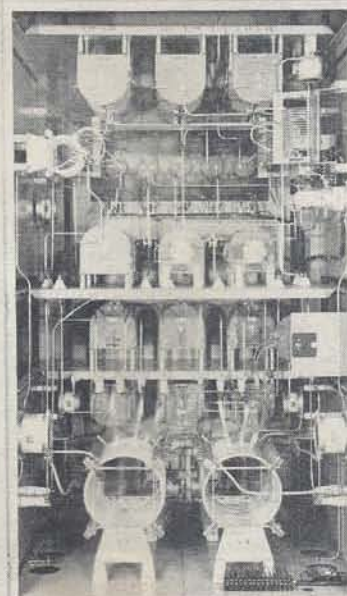
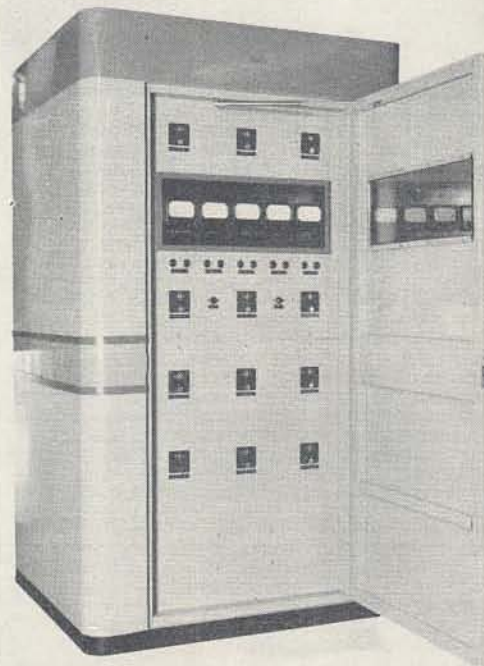
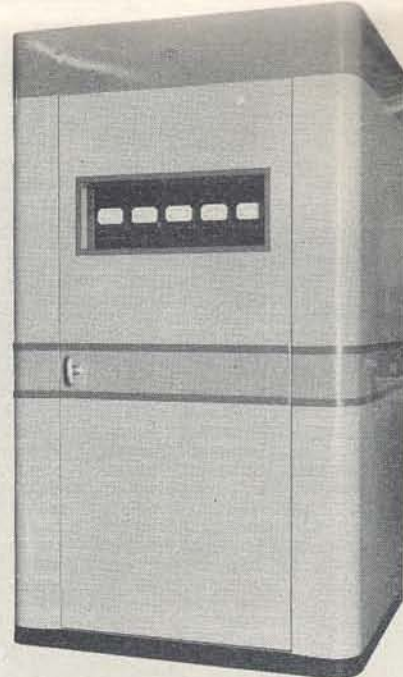
in pattern whether the meter is in or out of the circuit.

By viewing the open front illustration it will be noted that all variable circuits are on Veeder Root counter type dials, thus a fractional indication of the exact location of the inductor is obtained. It should also be noted that instead of permanent knobs being used on the counters, the knobs are equipped with keys which fit keyways in the counters, so that phasing adjustments may only be made by those experienced or authorized to do so. A peek into the back door of this phasing equipment is impressive because of the large, oversized components, heavy solenoid relays, Mycalex supported insulation, and proper allocation of parts, including shielding, that provide all the necessary requisites for the proper and quick tune-up.

Gates has always used solenoid pattern changeover relays in directional phasing equipment. With this type of relay the current is never left on the coil and there is no danger of a relay falling out or burning up. Likewise, the contacts which are friction instead of a flat surface type always assures a complete make. Gates phasors provide pilot light indication for all relays located in antenna coupling equipment, activated by an attached micro-switch, by which the operator has indication directly before him, that the relays have properly been changed during the pattern change sequence. This again is important as infrequently a field mouse or failure of a control circuit will clog a relay and throw the pattern off. In multiple tower arrays, it is indeed very handy to see where the difficulty lies, rather than to visit each of the several towers on a process-of-elimination basis.

If your station is planning a new directional installation, the engineering department of Gates Radio Company would be pleased to figure on your requirements. Simply forward the engineering information as prepared by your consultant and a complete proposal and outline will be forthcoming in a few days. Gates phasing equipments will be found in nearly every state of the union and are daily serving broadcasters with minimum maintenance expense.

FOR SATISFACTION MAKE IT—
ENTIRELY GATES



Story In Pictures



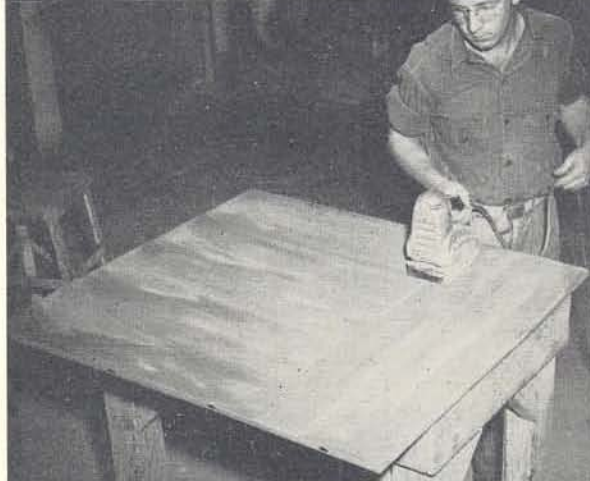
Heavy machinery used in the Gates plant is largely responsible for economical production. A minimum of outside purchases reduces both double profits and transportation charges. Gates probably fabricates a greater percentage of its materials than any other manufacturer.

Machining. An elaborate machine shop with the latest machinery provides direct inter-department supply of materials with minimum of delays, lower cost and better quality. Complete supervision under one roof is the reason for Gates moderate prices.



Rough Casting. This is the beginning of a console cabinet for the SA-40 or SA-50.

Rear Views. Assemblers of Gates transmitters are certainly not white collar workers. It is heavy equipment and the fellows frequently must get on the floor and do the back-aching jobs.



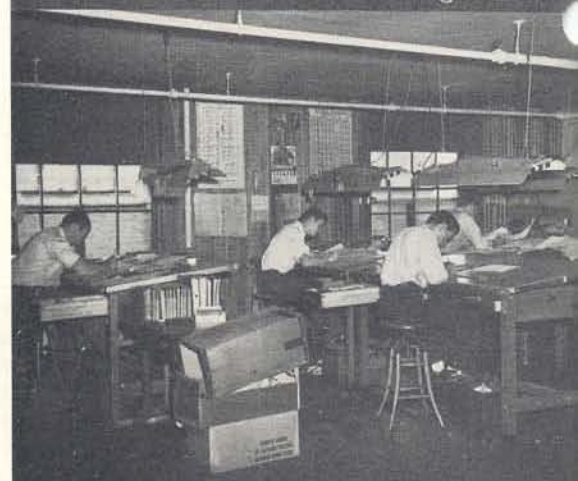
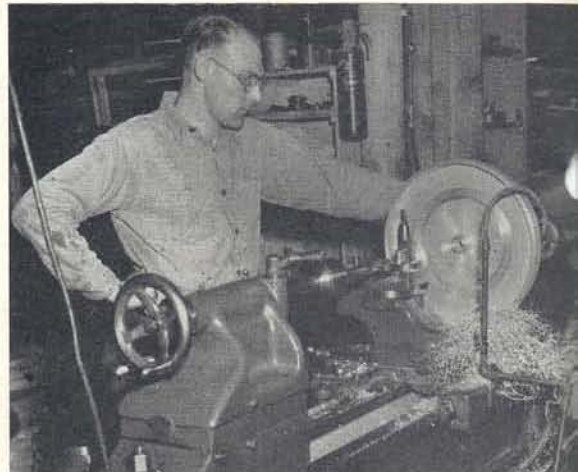
Finishing. Sheet metal, like wood, must be properly prepared to obtain a high gloss commercial finish. Sanding and filling operations are employed prior to sending to the paint department.

Drafting. Today when you purchase Gates equipment, complete records of what went into it, is on file.



Brass. The chief engineer, left, along with the Prexy, look over a new design. Obviously the chief is endeavoring to sell the Prexy on what he thinks is a good idea. The fellow who built it is saying nothing and stands observingly in the rear.

Painting. Contrary to some opinions, spray painting is an art. Improper handling of spraying equipment may cause streaks; improper temperatures can cause changes in color and improper air flow can ruin the job.





RADIO STATION KAYL

Storm Lake, Iowa

Radio Station KAYL, Storm Lake, Iowa, went on the air November 14, 1948, 990 on the dial, with 250 watts. Wm. H. Carman, of New Mexico, supervised the installation of equipment in its entirety. O. J. Grau is president of the Corn Belt Broadcasting Co.

The transmitter house has been arranged to include FM at a later date. All studio as well as other equipment is of the latest design and includes a 250 watt De Luxe transmitter and SA-50 De Luxe Console. The plant is completely air conditioned and reports have shown exceptional coverage.



Radio Station WNVA, Norton Va., in line with the industrial progress in that mountainous mining area has added one of the new Gates deluxe consoles to its stations facilities. Vance Johnston spins a record while fellow DJ's Stan Kotel and Hugh Ely stand by. WNVA is heard on 1450 KC.

PLANT EMPLOYEES ENJOY BOWLING PARTY

Gates Bowling Festival Saturday night March 26, 1949 brought to a close the winter activities in the plant. A repast was served at 6:30 P. M. and a well rounded out menu left nothing to be desired. Following the dinner bowling and cash bingo were enjoyed with dancing ending the social. Bob Flotkoetter of Shipping Dept. assisted by the committee from the various departments was in charge.

Another station to recently install a Gates BC5A transmitter is the station in Scottsbluff Nebraska. This station was formerly the old KGKY but in 1948 the call letters were changed to KOLT and they are soon to go on the air with an increased power of 5000 watts.

"Did Edison make the first talking machine?"

"No, son, God made the first one, but Edison made the first one that could be shut off."

Preventative Maintenance In Mercury Vapor Rectifier Tubes

by L. B. Petery

One of the most annoying aspects in the operation of high powered broadcast and industrial apparatus using mercury vapor tubes, is the difficulty of anticipating and identifying tubes causing arc back conditions and other operating difficulties. The natural tendency of both management and engineering is to obtain the maximum useful number of tube hours, but considering the cost of broadcast station outages and the possible secondary damage to other portions of the operating equipment, mercury vapor tubes should be removed from the circuit at whatever time their best usable life span is nearing an end. The determination of the condition of a tube by simple checking procedure has been long sought but not generally available.

Reading the different tube manuals, we encounter something to this effect: "The condition of the mercury vapor rectifier tubes can be determined by observation with a cathode ray oscilloscope" and "Where uninterrupted service is desired, the voltage drop of the tube should be measured."

During the war, the writer was working at a large broadcast station which also operated several powerful short wave stations for the OWI. No less than sixty mercury vapor rectifier tubes of all sizes were used in the installations. Replacement tubes were generally labelled with reject slips from the various armed services with no clue as to the cause of the rejection.

To try to keep the tubes in the transmitters as long as reliability could be assured, and to avoid their removal after an arbitrary number of hours, as well as time loss by failures, the writer began checking the tubes with an oscilloscope.

In a three phase full wave rectifier, this meant a major project, disconnecting high voltage buses, wiring in low voltage A.C. and load. Fig. 1. The net result was an oscilloscope pattern, but interpreting the pattern was another task. Calibration would easily be 100% off, and the end of the checking merely left one wondering.

Being like all other radio men, not lazy, but believing in the conservation of energy, the writer studied ways and means of checking the tubes which would be quick and easy, and would be an index number which could be referred to from day to day, week to week, or month to month, that the deterioration of the tube could be charted.

As the conducting cycle is applied to the mercury vapor rectifier tube, the voltage rises to the point at which the tube starts conduction; which will be referred to as "ignition voltage." The voltage at which the tube starts conduction is one of the main indications of the serviceability of the tube. The voltage drop across the tube after conduction is another factor, but this later developed to not always offer a clear-cut indication of the tube condition.

It seemed then that the requirement would be some sort of power supply with which D. C. voltage could be controlled and the voltage of conduction measured. The first model was capable of supplying considerable current, but subsequent investigation revealed what should have been apparent from the first. Since no current is flowing, the ignition voltage would be the same, regardless of the supply voltage. The tube drop would only have meaning if it were measured under the same conditions of voltage and load as the tube in actual service. This led to a second model tester which used lower currents, but was still using a power supply. It did not take long to see that the ideal tester could be much smaller. The idea was recently brought out of retirement as the result of an engineering discussion, and a tester made which is but slightly larger than a popular volt-ohm combination meter.

This model tester contains a small B battery, with momentary contact switch, so the current drain is only a couple milliamperes for the few seconds required

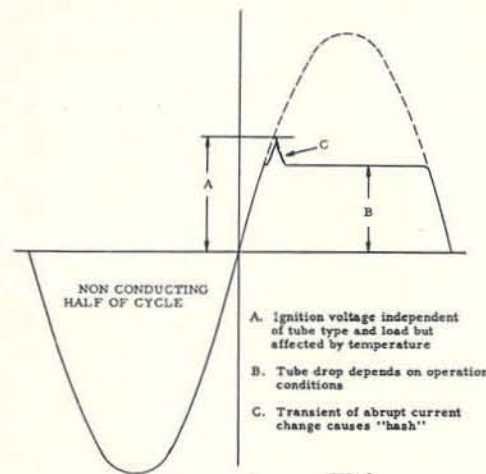


FIG. 2

Typical curve obtained with the circuit of Fig. 1. Accurate quantitative measurements are difficult to get.

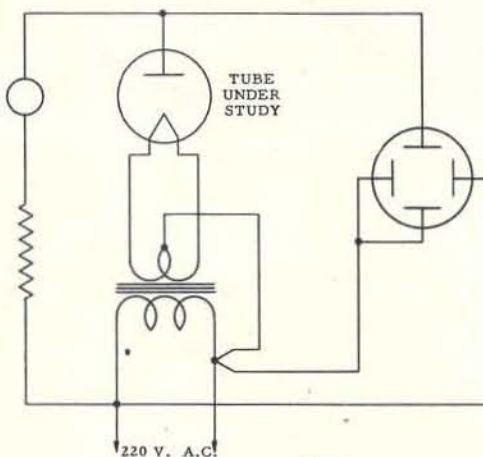
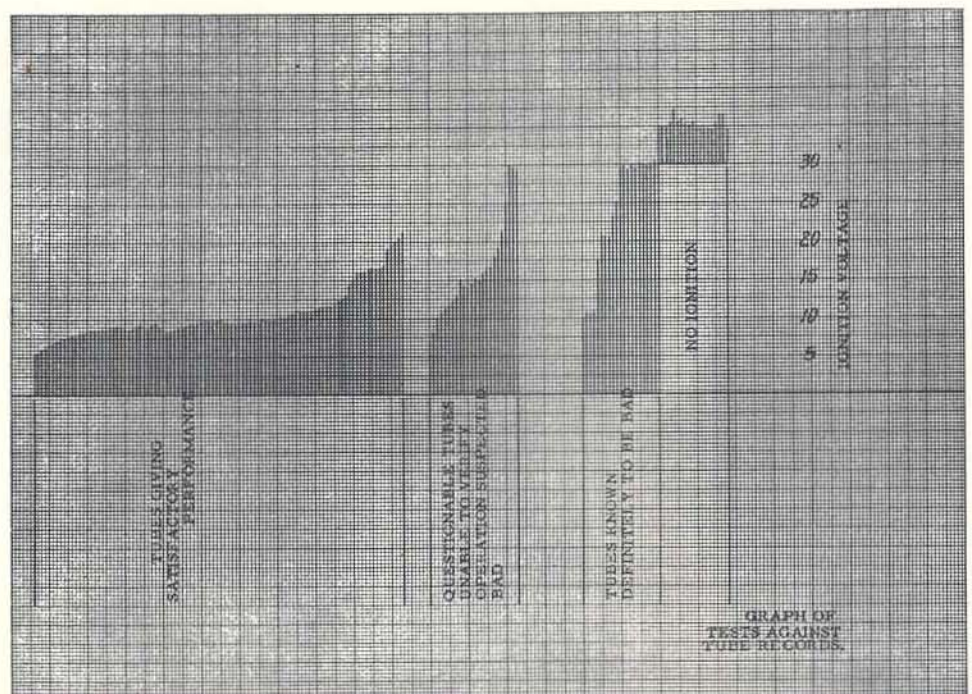


FIG. 1

Circuit diagram used to check mercury vapor rectifier tubes with oscilloscope. The author found this system lacking in practical application.



to make a test. One or two leads are clipped on the filament center tap or across the filament terminals, the plate connection made, the switch closed, and the voltage knob turned until ignition is indicated. This may be a levelling of voltage regardless of increasing the voltage control, or a slight drop of voltage may be noted. Two filament connections are used when required, as some center tap connections are not always easily reached, and connecting to one side of the filament alone may give the filament voltage in addition to the tester voltage, thus resulting in an erroneous reading.

A mercury vapor tube acts like a mercury vapor tube whether it is a three 866A or a twenty-five pound 870A. Without knowing, the operator could not tell which tube was connected to the tester. Over two hundred tubes of all types were tested, a good portion many times over, checking the conduction pattern with an oscilloscope, and comparing the results with tube records. (See graph page 6.) New tubes required an ignition voltage of around 10 volts; the group requiring between 8 and 16 volts were considered satisfactory; those requiring between 16 and 20 volts as doubtful; while those requiring over 20 volts for ignition were considered unsatisfactory.

Of the known bad tubes tested, 85% were over the "20," the remaining 15% being definitely proven bad with a lower ignition voltage, or giving better than "20" reading and still in actual service. The group of doubtful tubes included in the tests had some tubes of discontinued types that could not be tested to verify the tube histories, but of those that could be checked, 75% agreed with the tube tester results. The good tubes included new tubes and tubes which had been operating satisfactorily in service. Of this group, 6% required over 20 volts. In this 6% group was an 870 with 42,500 hours; five 357's with over 13,000 hours; three 872's with over 10,000 hours. A shipment of 24 new 872's was received, and were all checked with the tester. One tube gave a reading of 21. The usual procedure was to put the tubes in a rectifier, heat a few minutes, and run plate voltage (about 2000 volts) for a couple minutes; and if all appeared normal, consign the tube to the stockroom. This "21" tube passed this test, but was put back in the rectifier for a longer test. After a few minutes it began flashing and arcing back. Two other tubes tested "15" but both survived a hundred and fifty hours of operation without trouble.

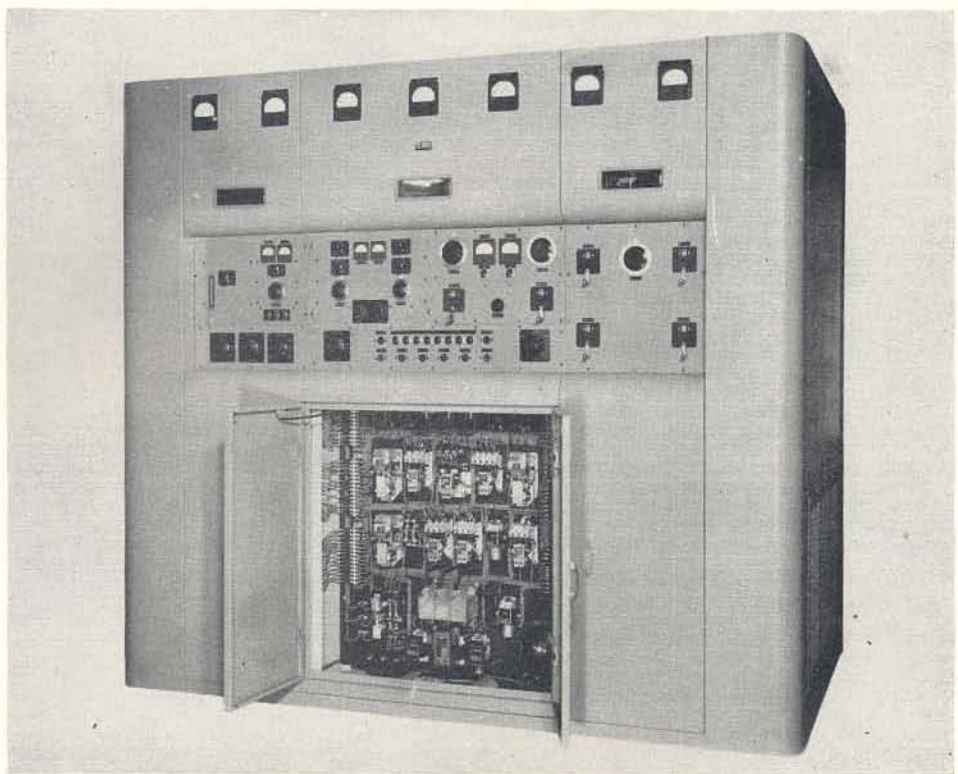
Another interesting "patient" was a 357 which indicated "20." This tube was placed in a transmitter for test, with the

anticipation of trouble. Trouble came, not in frequency, but in very violent arcbbacks. After two vicious arcbbacks, the tube settled down and performed without trouble; and the following week when checked, gave a reading of "13". This apparently was a gassy tube in which the arcbbacks cleared the gas.

One three phase full wave rectifier was giving trouble. There were no indicating targets and it was impossible to watch the tubes for flashes. They measured 9, 13, 16, 16, 17, and 23. This last tube was changed and the trouble ended. Another time, a rectifier using some "doubtful" tubes began giving trouble. During a fifteen minute shutdown for

frequency change, it was a great temptation to change the suspected offenders, however a check showed no change from a previous measurement. It was found that the bellows on an A. C. overload relay had worn so the overload was tripping too quickly.

In checking a rectifier group, it was found the reading varied somewhat, generally due to slight temperature differences. The best time is immediately after shutdown, when the tubes are still at their operating temperature. The readings do not have to be recorded to less than a half volt, and a volt is generally quite sufficient. Checking takes
(Continued on Page 9)



Gates New Communications Transmitter TYPE HF15-1

Overseas and long distance high speed radio telegraph circuits are now being served by the initial production of a new 15KW high frequency, 400 word per minute telegraph transmitter. The unit shown above also features frequency shift keying and complete front of panel tuning control, expecting only power amplifier inductor changes where wide frequency differences are encountered. It has been particularly designed for convenience of servicing and shipment. Many features regularly found in broadcast equipment but rarely found in communication equipment are included. Among these are complete automatic sequence cycling and an automatic overload reset system. After the fifth overload occurs, an alarm bell of consider-

able volume rings until attended.

The totally self-contained unit is housed in an accessible multidoor cabinet. No external components of any kind are required. The overall dimension of this apparatus is seven feet wide, five feet deep and six and one half feet high.

This new transmitter will be followed shortly by a companion unit which will create both amplitude and phase modulation (the latter for diversity code transmission.)

This equipment is the first of a series of similar designs to round out the Gates communications equipment line. The development of this fine product was under the direction of engineer L. B. Petery, of the Gates staff.

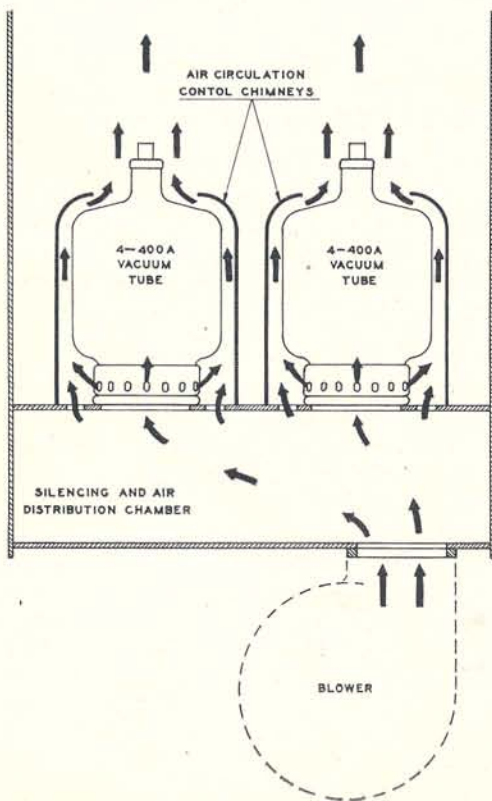
The Gates BF-1C 250 - 1000 Watt FM Transmitter

The Gates BF-1C FM Transmitter incorporates all the developments and improvements which have resulted from experience in post-war operation of FM stations. These developments have led to the design of a new transmitter which equals the simplicity of operation and maintenance of low power AM transmitters. Internal arcing and short life of tubes—the bugaboo of FM broadcasting—has been eliminated by the use of internal anode tubes.

The power amplifier tubes, two type 4-400A, are a development of the 4-125A which has proved so highly successful in the last four years of use. The 4-400A is actually a larger version of the same design. At the nominal 1000 watts output rating of the BF-1C the tubes loaf along at approximately 40% their rated dissipation. This too, to course, extends the normal life of the tube.

The simplicity of the exciter-modulator unit is achieved by the use of the phasitron system of modulation. This greatly reduces the number of tubes required in the modulation and frequency multiplication process and insures absolute frequency stability by direct crystal control. The actual frequency stability as checked against a frequency standard shows less than plus or minus 250 cycles variation over the day's operational period. The use of overall feedback compensates effectively for possible variation in commercially available tubes and maintains noise and distortion at low values without the requirement of complicated testing and adjusting equipment.

A new cooling system is employed



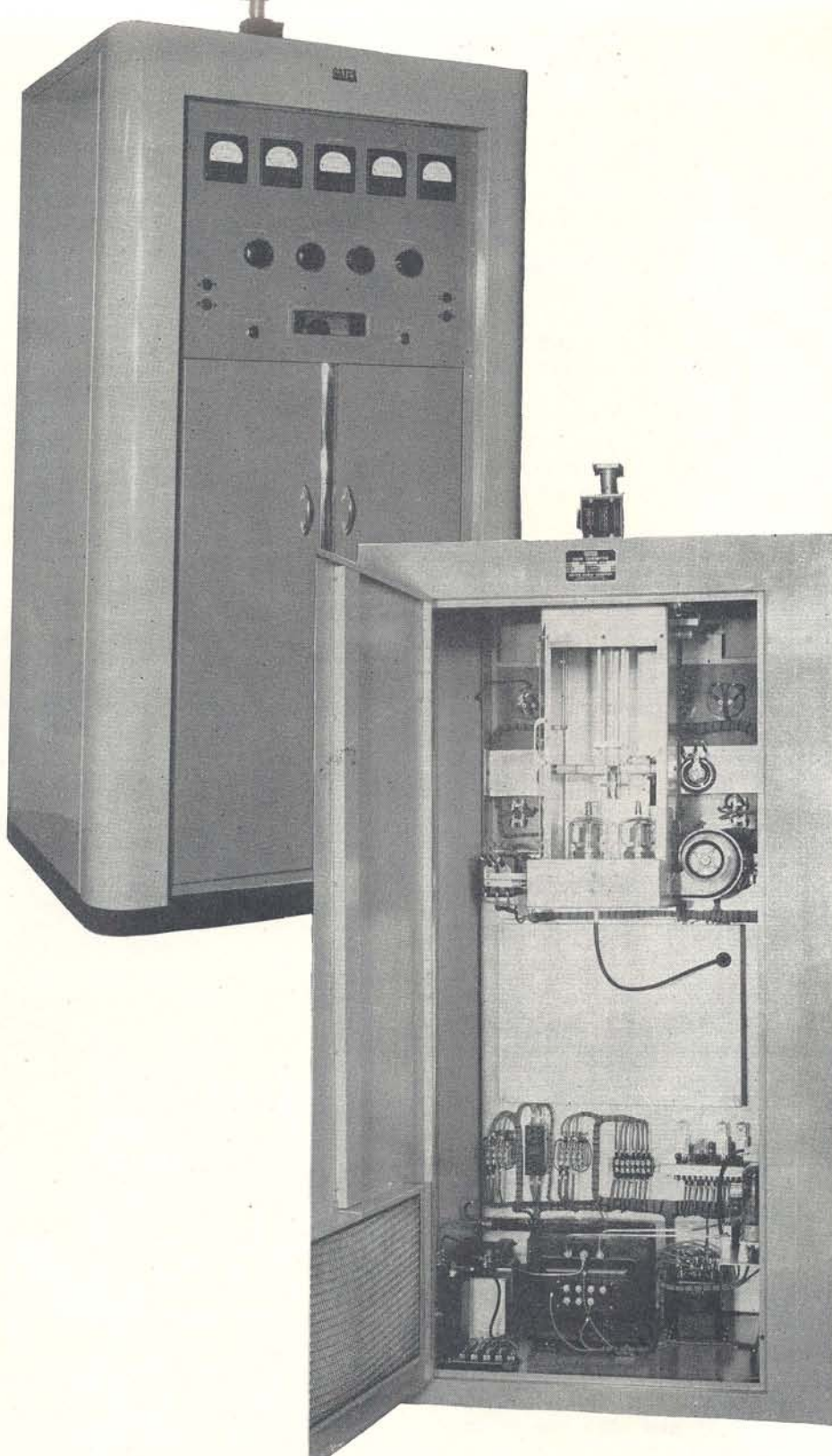
which results in a cool running transmitter with four times the actual amount of required air blowing across critical tube seals. This system is the outgrowth of numerous laboratory experiments carried out both by Gates and Eimac. Reference to figure 2 will illustrate how this is accomplished. Due to the fact that high air pressures are not required, blower noise is reduced to a new low. In fact, it is possible to operate a microphone in the same room with the transmitter.

The power amplifier operates at efficiencies in excess of 70% throughout the FM band. The overall efficiency, A. C. power input to RF output, is 36%

for an output of 1 KW. This efficiency was made possible by the simple straight forward design of the BF-1C exciter modulator unit and the exclusive plate tank arrangement developed by Gates.

This plate tank arrangement has no wiping type RF contact usage, nor troubles of the type due to arcing, wear, and dirt. The symmetrical tuning and plate tank arrangement make possible the high efficiency while simultaneously reducing RF radiation. The use of a welded all aluminum power amplifier enclosure further decreases the RF radiation to a new low value. This latter feature will be appreciated by users who

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New Sales Engineers Added to Gates Personnel

In an effort to give more complete satisfaction and better service to all parts of the United States three new Sales Engineers were added to the list of Gates Sales Staff.



THOMAS G. BANKS, JR. of Pueblo Colorado joined the company December 1, 1948. Mr. Banks has had a very liberal education in the broadcast field and his experiences have been varied and many. Tom owned and operated his own radio station prior to coming with Gates, as well as serving as consultant for numerous clients throughout the mountainous regions of the West. He is now located with his family in Oklahoma City serving the states of Kansas, Oklahoma, New Mexico, and Utah. This territory was formerly serviced by Harold Arment who is now in the West Coast area, and is located in one of the suburbs of Los Angeles.

Preventative Maintenance In Mercury Vapor Rectifier Tubes

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only a couple minutes per tube without removing the tube from the transmitter, can be made a regular maintenance procedure, and the aging of the tubes observed. Tubes which have given trouble may be found to have given trouble because of some other condition such as improper temperature. When a tube has passed to the high ignition requirements it can very seldom be brought back, the one referred to previously being the only case encountered in over two hundred tubes, or less than a half per cent, and this was done by accident rather than any scientific procedure.



ROBERT KUHL, who has been with the company since 1947, working in various departments the latest of which, Order Service, received his assignment as Sales Engineer the first of the year. Bob is working the states of Louisiana, Mississippi, Arkansas and part of Tennessee. Mr. Kuhl has made his home in Quincy since his discharge from the service but plans to locate in Memphis, Tennessee around May 1.

A good many doctors have made their money in the stork market.



KENNETH NEUBRECHT joined the company the first of the year as Sales Engineer for the states of Ohio, Michigan, Eastern Indiana and Eastern Kentucky. Ken's home is in Berkley Michigan, where he has resided for the past number of years, close to his work at WJR Detroit, Michigan. He also owned a business of his own in Detroit. Centrally located, he is quickly available for service in any part of his territory. Mr. Neubrecht furthered his education in science and electronics at Ohio University, Toledo U. and University of Michigan.

Radio Station KMO, Tacoma, Washington

Radio Station KMO, Tacoma Washington has improved its facilities with a new Gates BC5A five kilowatt transmitter. This station is now prepared to give better coverage to this area because this transmitter is designed for higher fidelity, greater efficiency and increased listening pleasure.



This station is owned by Carl Haymond, who has been in broadcasting business for many years. He is ably assisted in the management of the station with a competent staff.

Dial 1360 if you are in that locality for featured programs.

Broadcasting—An Amazing Business

I have just read, as no doubt many of you have, the fine speech made by Mr. Maurice Mitchell of N. A. B. before the Jamestown, N. Y., advertising club at the invitation of Mr. Simon Goldman of WJTN, Jamestown, N. Y.



Mr. Mitchell drives home the effective point that there are more radio stations than daily newspapers and that nearly 36 million radio families have their radios operating $5\frac{3}{4}$ hours every day all year long. Mr. Mitchell states there are 77,000,000 radios compared to 52,000,000 daily newspapers. He did not add that these daily newspapers on the average took only a few minutes to read. In short, Mr. Mitchell states, "Radio has become America's first activity." Of all conveniences, and he even includes tooth brushes, bath tubs, telephones and plumbing, radio is only exceeded by the cook stove.

To those who say there are too many radios stations, it is a little difficult to reason that 77,000,000 radios can be adequately served by even 2000 AM broadcasting stations. If evenly divided this would be 38,500 homes or over 150,000 listeners per station which is a pretty fair country average. However, as your writer is a part owner of a 1000 watt full time station he would be willing to jump on the band wagon of those who contest this reasoning.

After reading Mr. Mitchell's fine talk I could not help but wonder where the broadcasting industry would have been if the technical progress had not always been in step with production of fine programs. If we still had the goose-neck loudspeaker and no one had ever heard of wide response in broadcast transmitters, radio would be a pretty sour weapon for sales.

The motion picture industry has recently recognized in their "Oscar" awards—technical skill. If radio ever gets around to "Oscars," let's not overlook the technical men who may not have done the most for radio—they did, however, make it possible.

P. S. GATES

RADIO STATION WIL St. Louis, Mo.

5000 Watts

Radio Station WIL, the oldest commercial St. Louis outlet went on the air this month with 5000 watts. This station has now joined the numerous other stations that are broadcasting each day with Gates equipment. At 5000 watts WIL is St. Louis' most powerful independent station. It serves a tremendous new listening area in the states of Missouri, Illinois and outlying territory. This station was established by L. A. Benson, who is one of the real Old Timers in the radio game. He has always made it a practice to be first in most of his undertakings and WIL is noted for its **FIRSTS**

First Commercial Station on the air in St. Louis—1922.

First to broadcast baseball, play by play.

First to broadcast boxing, blow by blow.

First to broadcast police news.

First to broadcast election returns.

First to provide constant nightly assistance to those in distress or need. (Mr. Fixit.)

First to broadcast music by remote control.

First to have its own Washington news correspondent.

First FM broadcaster in St. Louis.

First GATES BC5A FIVE KILOWATT TRANSMITTER IN ST. LOUIS.

GATES STUDIO REVIEW

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SALES OFFICES

WASHINGTON, D. C.—Gates Radio Company, Warner Bldg. 13th & E. Street, N. W. Phone Met. 0522, 0523.

NEW YORK, NEW YORK—L. J. Cervone, 917 Castle Hill Ave., Phone TA 3-2548.

BERKLEY, MICHIGAN—Kenneth Neubrecht, 3529 Cumberland, Phone Royal Oak 3529W.

WATERLOO, IOWA—Stanley B. Whitman, 246 Baltimore, Phone Waterloo 6098.

OKLAHOMA CITY, OKLA.—Thomas G. Banks Jr., 4104 Park Lane, Phone 5-2027.

CANOGA PARK, CALIF.—H. L. Arment, P. O. Box 569, Phone Superior 4584.

HOUSTON 3, TEXAS—Houston Radio Supply Co., La Branch at Clay, Phone Capital 9009.

ATLANTA 3, GEORGIA—Specialty Distributing Co., 425 Peachtree St., N. E. Phone Atwood 4406.

CLOSE OUT BROADCAST MATERIAL

The following parts and items listed are all new top quality materials used in early model productions or overruns on special built equipments. They carry full guarantee and we have reduced prices for inventory clearance. Terms on close out items are net cash. Here is an opportunity to obtain that needed spare or improvement at very low cost.

46 POWER TRANSFORMERS, fully cased. Pri. 115 V. 60 C., Secondary No. 1 400/375/325-0-325/375/400 at 250 Ma. Sec. No. 2, 5 V at 3A. Sec. No. 3, 6.3 V. C.T. at 8A. Sec. No. 4, 2½ V. C. T. at 5 A. Type 4275 made by Audio Development. Ea. \$11.22.

30 POWER TRANSFORMERS, fully cased. Pri. 230 V-60 C. Sec. No. 1, 480-0-480 V at 400 Ma. Sec. No. 2, 6.3 V. C. T. at 8A, Sec. No. 3, 5V at 7A. Type A4602A made by Audio Development. Ea. \$11.80.

12 MODULATION REACTORS, fully cased terminals out of top 50 henries at 750 Ma. Response within 1 Db. from 30-10,000 cycles. Excellent for up to 1 KW. Type 5380-made by Audio Development. Ea. \$72.00

12 FILAMENT TRANSFORMERS, fully cased. Primary 115 V. at 60 C. Secondary 5.1-0-5.1 volts at 10. A. 2500 volts insulation. Type A5374 made by Audio Development. Ea. \$8.50.

11 RECTIFIER FILAMENT TRANSFORMERS, Primary 105/115 Volt 60 C. Sec. 5 V. C.T. at 20 A. Insulation 10,000 volts. Type 11F54 made by Thordarson. Ea. \$13.28.

9 FILAMENT TRANSFORMERS. Thordarson Tru Fidelity Type 6F76. Pri 115/230 volts. Sec. 11 V C.T. at 22 A-500 volts ins. Ea. \$25.78.

13 FIL. TRANSFORMERS. Fully cased pri. 115 V. 60 C. Sec. 5 V at 25 A, 2,000 volt, ins. For Eimac 250TH etc. Made by Audio Development. Ea. \$8.78.

59 FIL. TRANSFORMERS made by UTC fully cased. 10 volts C.T. at 10A. Primary 115 volts. A heavy transformer. Ea. \$6.08.

54 FILAMENT TRANSFORMERS. Pri. 115 V. 60 C. Sec No. 1, 10 volts C.T. at 10 A. Sec. No. 2, 6.3 V. C.T. at 8 Amps. Made by Audio Development. Type A4823. Ea. \$7.69.

49 INPUT TRANSFORMERS linear standard fully cased in cast iron case. A quality item for 30-15,000 cycle 1 Db. response. May be used as input transformer where extreme shielding is required. Primary 30/125/200/250/500 ohms. Sec. 100,000 ohms to single grid. Made by Audio Development and a \$20.00 seller. Type 200B. Ea. \$9.70.

39 OUTPUT TRANSFORMERS. Designed for 50 watts low distortion in a recording amplifier. May be used with Power Transformer A4602A above. For use with four 807 tubes push-pull par. to a secondary of 500/250 or 15 ohms. Output 50 watts at 2% distortion and flat response 30-10,000 cycles. Fully cased. Will gladly supply amplifier circuit diagram. If you want a good 50 watt amplifier this is the most important item. Made by Audio Development—Type A4601. Ea. \$14.82.

102 OUTPUT TRANSFORMERS. A linear standard unit for preamplifiers, re-

motes or any use up to plus 25 Dbm. Primary 10,000 ohms and will carry 9 Ma. Secondary 500/250 ohms. Fully cased, chassis mount. Response 30-15,000 cycles 1 Db. Ea. \$9.25.

25 OUTPUT TRANSFORMERS. Made by UTC. Primary 14,000/20,000 ohms for push-pull 6F6, 6V6 etc. Sec. 500/250/15/18/4/2 ohms. Fully cased and a good buy. Type PA710. Ea. \$4.40.

175 INPUT TRANSFORMERS. Linear standard very high quality 30-15,000 cycles. Primary 500/250/125/50 ohms. Sec. P.P. 100,000 ohm grids. Fully cased and shielded. May be used in most critical currents. Type 200 K by Audio Development. Ea. \$9.90.

METERS

14—Simpson Model 27-3" Square Case 0-150 D. C. Ma. Ea. \$4.80.

9—McClintock (identical to Simpson) Model 2001 round case 3"—0-100 Ma. D.C. Ea. \$3.50.

26—Simpson Model 29—4" square case 0-1 D. C. Amperes. Ea. \$4.95.

26—Model 29 Simpson 4" square case 0-1 Ma. have 0-5 R.F. scales but 0-1 Ma. scales available. Ea. \$5.81.

21—Westinghouse RC35 square case 3" decibel meters minus 10 to plus 6 Db. 1 Mw. medium speed. Ea. \$15.95.

15—Simpson model 26 round case 3" meters 0-300 D.C. Ma. Ea. \$3.90.

21—Simpson model 26 round case 3" meters 0-200 D. C. Ma. Ea. \$3.90.

11—Westinghouse model 33 meter 2 inch round case 0-200 Ma. D. C. Ea. \$5.78.

19—Simpson model 39 square case 4" R.F. ammeters 0-3 with external thermocouple. Ea. \$9.90.

16—Model 425 Weston square case 3" 0-3 Ma. with external thermocouple for 20 ohm line. By use with rheostat is intended for remote reading meter. Ea. \$16.75.

The Gates BF-1C 250/1000 Watt FM Transmitter

(Continued from Page 8)

must use low level audio equipment in the vicinity of the transmitter.

A reflectometer is provided as optional equipment enabling direct reading of the power output in watts instead of the usual "relative reading" output meters normally found in FM transmitters. By turning a switch the standing wave ratio may be read directly on the same meter, providing a continuous check on the transmission line and antenna system. On initial installations and during antenna icing conditions this information in of immeasurable value in assuring trouble free operation.

This transmitter is available for 250 watt operation; the only difference

"Box-It"

In the east section of the Gates plant is a department that is easily overlooked, yet is very important to the broadcasting station. The packing and shipping sections insures the secure packing of your equipment after it has been tested. Normally, but especially under present day conditions the rough handling by the transportation companies makes this department a very important one.

Few realize that the small or large box your piece of equipment arrived in is part of the huge stock piles of lumber used each year in this work. The lumber used last year in the Gates packing department would easily build four or five six room houses. Tons of nails were



driven into these boards, while bales of excelsior and shredded paper were used. Gummed tape, kimpack, corrugated paper, water glass, water proof paper and labels by the score were all put into use to safeguard the wiring and appearance of the apparatus that ultimately is delivered to the radio station door.

The jobs are not white collar jobs and credit must be given to these fellows who wield the hammer, who drive the nails, who crate the equipment, which is delivered to your door.

being in the power components. The station may purchase a 250 watt unit and at a later date increase to 1 KW by merely replacing the high voltage power components.

The Gates BF-1C should quickly assume an important place in the FM broadcasting field due to its simplicity of operation and outstanding performance.

OTHER CLOSE OUT ITEMS

Gates has hundreds of capacitors, mica, paper, oil-filled and variable, plus relays, resistors, tubes, coils, and many other items used in the stations. Some amplifiers and power supplies that have been replaced by the new SA line of speech equipment can be had at close out prices.

TELL US YOUR WANTS . . . WE MAY HAVE JUST WHAT YOU NEED.



El Sr. John S. Chavez quien estuvo visitando nuestra planta los días 23, 24 y 25 de Marzo sera nuestro nuevo representante exclusivo en la republica de Mexico. Antes de despedirse de esta ciudad dijo que le dio mucho gusto haber estado aqui con nosotros y de tener la oportunidad de asociarse con un grupo tan cooperativo como es la Gates Radio Company.

Apartado Postal No. 70, Ciudad Juarez Chihuahua, is Mr. Chavez Mexican address.

Mr. John S. Chavez has been appointed Sales Engineer for Gates products in Mexico. At present located in El Paso, he will soon have a permanent address in Juarez, Chihuahua, Mexico. Mr. Chavez has had a most liberal education in radio work and is fully capable to undertake the duties entailed in this part of the North American continent. Associated for some time in a consultant position in Washington, D. C., he has returned to his former home to do the work for which he has been trained.

Mr. Chavez spent several days in the Gates plant becoming acquainted with the personnel before assuming his new position.

HELLO ! ! ! !

We are pleased to welcome to the Gates "Completely Gates Equipped" family the following outlets . . .

Radio Stations KFSB, Joplin, Mo.; KGHF, Pueblo, Colo.; WIL, St. Louis, Mo.; KOLT, Scottsbluff, Nebraska; and KMO Tacoma, Washington, into the 5000 watt class.

The new 1000 watters on the air are New Ulm, Minn.; Marion, N. C.; Forrest City, Arkansas; KVOB, Alexandria, La.; KBRZ, Bryan, Texas; KAAA, Red Wing, Minn.; KSIJ, Gladewater, Texas; WLSL, Pikeville, Ky.; WGLS, Decatur, Ga.; and station WSTS Southern Pines, N. C.; WCPM Middlesboro, Ky.; KWRE, Warrenton, Mo.; WNOR, Norfolk, Va.; WHAR, Clarksburg, W. Va.; KCOW, Alliance, Nebraska; KNEX, McPherson, Kansas; and several new Canadian stations have purchased new 250 watt transmitters and are or will be on the air this summer. Again we say welcome.

COLOR PHOTOS IN THE ROAD

Under the direct supervision of Fred Grimwood, the Sales Staff of Gates has brought "color" to the road. By "color" we mean color photographs . . . actual reproductions in color of the equipment you will receive for your station. The appearance is not left to your imagination any longer—it is on your desk, in your hands and before your very eyes. SEE THEM WHEN OUR SALES ENGINEER CALLS ON YOU.

NAB Convention

(Continued from Page 1)

Ken Neubrecht, Bob Kuhl, Tom Banks, O. J. McReynolds. Some members of the Gates Engineering department will also be there. These include Nibs Jochem, Audio engineer, Bill Parker, FM engineer, Fred Damm, phasor and special products engineer, Les Petry high powered transmitters, and Ralph Patterson, Lou Evans and Howard Young design engineers.

PARKING SPACE—A place in which another car is parked.



Ralph Patterson, a graduate of Ohio State University with a degree in electrical engineering assumed his duties on the Gates Engineering staff, this month. He was employed at station WOSU while working for his degree. After graduation he worked as field engineer for a large broadcasting manufacturing company for some time, leaving this to become an engineer with a well known Washington Consulting firm. Ralph's family, wife and two year old son are now located in Quincy.

New! Continumatic Power Supply

One of the items introduced this spring is a continuomatic power supply for the Gates dynamote remote amplifier. With this innovation on the dynamote a user may remain in operation even if AC power fails. An automatic switchover to a battery supply assures this protection. This continuomatic power supply replaces the regular one only when specified on the order.

TEARS—The greatest waterpower known to women.

THREE COMBINATIONS OF MATCHED CONTROL UNITS

Control combination of FM 10-watt transmitter. This setup completely provides facilities for educational institutions allotted 10-watt power by F.C.C.

This illustration consists of SA-50 Console, CB-60 Desk, plus rollaway desk with two PT-6R Magnecord tape recorders for high fidelity tape recording.

New waist high rack cabinets joined side by side. These units can be placed on top of one another or spaced apart for working efficiency as building space permits.

