

THE GATES STUDIO REVIEW

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NEW DELUXE PROGRAM TRANSCRIPTION EQUIPMENT ANNOUNCED BY GATES

Coprus Oxide Rectifiers and Their Purpose

A Short Discussion On Dry Rectifiers In Transmitter Service.

The Coprus oxide or dry disc rectifier has been a much discussed article in the past several months. In the old days of battery radios, the first attempt toward light socket operation was by means of the dry rectifier supplying filament current. However, headaches soon developed. The idea of driving the elements in a copper plate all in one direction, so that when A.C. current hit it, it could only flow one way, was good, and it did produce D.C. current for a while or until the elements started to turn around, a run every which way, and then we had A.C. current again with all the resultant hum.

Engineers started to work and developed the electronic type or dry disc rectifier. This was an entirely different principal for copper rectifiers, but was exactly like the operation of a tube. A thin layer of Coprus oxide was placed over the plate, which actually formed two elements, just the same as in a tube rectifier, and after nearly seven years of service has proven beyond a doubt that for low and medium voltages the coprus oxide rectifier is by far the best obtainable. Of course, new tubes do not require this type of rectifier, so it is only for commercial purposes in which radio broadcasting falls.

For several years the Gates Company has manufactured two rectifiers of this type as standard for broadcast and talking picture service. The broadcast type delivered 12 volts at 5 amperes maximum, and the talking picture type 24 volts and 12 volts at 14 amperes. There are many of these equipments all over the country today that are delivering the same high quality of direct current, the same voltage and the same current as they did when they were installed with broadcasters operating as high as 20 hour schedules.

Now in broadcast service the dry rectifier is ideal for direct current filament supply to all tubes as well as for operating relays and D.C. speaker fields in monitor service. Its calibre of direct current when properly filtered is equal to that of batteries to say the least. However, the Coprus oxide rectifier is not limited to 12 volts. As high as 150 volts can be obtained at currents ranging up to 1.5 or 2 amperes. The major purpose for such a rectifier would be for

(Continued on Page 3)

Jensen Announces New Speakers; Ideal For Broadcast Work

The Jensen Radio Manufacturing Co., whose speakers are sold internationally by the Gates organization, have announced two new series of loud speakers, both of which are ideal for radio monitoring and program distribution work. The first series is a new group of 18 inch dynamic cone speakers, which are the finest loud speakers ever developed. The large cone area brings about a rich naturalness of lows never before possible, yet because of the unusual curvature of the cone area, the middle and higher registers are actually greatly improved. In fact, with a five foot baffle, true uniform reproduction is possible from 60 to 9000 cycles, a range never before covered by one loud speaker. The 18 inch model with A.C. field excitation nets at \$53.70 to broadcasters, and the D. C. Model at \$38.70 both with input transformers to specifications.

The second series are a group of new permanent magnetic speakers with field excited dynamic speaker results. A newly discovered metal which will lift many times its own weight has made these speakers possible. The 12 inch model, which sells for \$27.00 to broadcasters, with input transformer, is fully equal to the well-known Jensen concert speaker, and will handle 10 watts output and have equal volume, response and general performance as the popular field excited concert speaker, yet without the aid of field current of any kind.

Radio Station KBIX, Muskogee, Okla., to Go On the Air Soon

Radio Station KBIX, owned by the Press Publishing Co. of Muskogee, Okla., will soon go on the air with its complete new high fidelity W.E. transmitter, vertical radiator and all the fixings that go to make up a modern 1936 radio station. Work is in full progress at the station and an early opening is indicated. Gates transcription and remote control apparatus will be used exclusively in this new station. Mr. W. L. Waltman is in charge of all technical details.

On the heels of announcements by prominent transcription producers, the Gates Radio & Supply Company announces a new program transcription equipment for reproducing transcriptions in the finest manner. In the past years broadcasters, both large and small, have been clamoring for a really good transcription equipment that would stand the gauntlet and could be bought outright without any strings attached or the need of signing for a long period of time for program service. The cry was not truly answered until the new Gates DeLuxe Transcription Turn-Table came along.

Broadcasters will receive their announcement on this new equipment in a few days both by mail on generous size announcement in "broadcasting" the industries trade paper. This equipment will include heavy type synchronous motor induction to start and synchronous to run. It is equipped with special designed gear reducing unit which will run without vibration and will stand rough treatment such as holding, stopping or reversing the turn-table with the hand. A special filter-coupling has been developed in the Gates Laboratories which practically isolates the turn-table from the motor proper other than for driving purposes. The entire

unit includes 100 pound cast special turn-table mounting, motor and motor base, crystal pick-up of high fidelity type mounted on special stand to prevent turn-table rumble from reaching the pick-up arm, matching transformer for coupling to a 200 ohm circuit, and where two turn-tables are purchased a special control cabinet is available for complete fade and change over.

The equipment operates at 33 1/3 R.P.M. and is absolutely steady in speed within 1/300th of a revolution. Broadcasters will welcome this latest of Gates items which will sell at a price far under that of present equipments that have been proven to be unsatisfactory for continual operation. Watch for the Gates Direct Mail and Magazine announcement.

COURT DECISION IN WARING vs. WDAS CAUSING MUCH COMMENT

Since the court ruling adjudging Fred Waring as correct in his contention that playing of his records over station WDAS injured his personal liberties in advancing himself in the entertainment world, much comment has been heard on both sides. Obviously the court in this case must not have been fully acquainted with some facts or else the ruling was based on a technicality many of which none of us understand.

The "International Musician," spokesman for the Musicians' Unions, hails the ruling as a great aid to the professional musician, stating that the playing of phonograph records has greatly hindered dance orchestras by making them common place in the minds of the listener and hence greater reducing their drawing power, as well as hindering the effectiveness of their programs over net works where commercially connected.

We hardly believe that either net works or independents agree to this.

Surely when advertisers spend millions with both networks and independents to make their name a household byword, they could not do other than agree that the bringing of Mr. Waring's orchestra or any other musical group to the listener's home every day could only help him, add to his prominence and prestige.

Mr. Waring should not forget that it was only a few years ago that his band was in comparative oblivion, and it was not until his records were featured on radio stations that he became popular, the idol of musicians or lesser popularity throughout the nation. Of

course, there will be disagreement with this statement, but it is mass production that brings results in advertising, and it was the 630 or more stations in this country who all have probably played a Waring record several times a week that no doubt had quite a heavy bearing on Mr. Waring's present rating. We are wondering if Mr. Waring might not be biting the hand that's feeding him.

Now let it be understood this paper has only an equipment interest in the broadcasting station, but we must congratulate WDAS and those who have helped in fighting this case, and the fight is not over. Small broadcasters that have long schedules to fill should rally behind those who will no doubt carry the case to a higher court and turn their minds over for every bit of contributing evidence possible to obtain a reverse decision in the higher court. One thing is certain, broadcasters will be cautious for the present to use Waring records until a higher court ruling is had, and even then many of them will be reluctant to use them, regardless of the decision. Time will then tell just what effect records have on an orchestra's prominence.

Gates Remote Combine Setting Large Sales Record

The Gates "Remote Combine" (see last page) since announcement on March 6th, has become by far the fastest selling item in the Gates line. This no doubt is because of the very attractive price of the equipment and the actual downright performance of the combined Gates velocity microphone and A.C. operated remote amplifier. Radio station WHBU of Anderson, Ind., was destined to take No. 1 equipment from the production line as their order came in less than 24 hours after the mail announcement, left the Gates offices. However, soon after the equipments started on their way to stations throughout the country, including Birmingham, Ala., Jacksonville, Fla., Columbia, S. C., Waterbury, Conn., Muskogee, Okla., Waterbury, Vt., and many others.

Quite naturally, many of our customers have expressed some doubt as to our ability to manufacture a high quality equipment to sell completely at only \$77.00 with velocity microphone. We most certainly agree this has never been done before, as it is the general opinion among broadcast equipment manufacturers that the sale of low-priced equipment merely eliminates the sale of something more expensive. We at the Gates factory were also of that opinion until recently, when we found, after a lengthy study, that most of the remote pick-ups that were not of a major importance still had the old carbon microphone and inferior equipment, because it would not stand several hundred dollars for new equipment. Also it was found that new pick-ups quite often were either supplied by equipment built in the station or something built over if the pick-up was not of actual major importance.

Consequently the new "Remote Combine" was introduced to fit into that pick-up point that could be handled by a single microphone and required the finest of quality at a low investment. How is it done, is then the question. In the first place all of the composite material in both the amplifier and microphone are Grade A. Ginger-bread has been completely eliminated to reduce the price, the microphone is of the high impedance type, thus no input transformer is used, the plate voltage is relatively low, thus expensive filter condensers are not needed. The amplifier has been built into a neat but plain metal cabinet, yet the entire job is fine enough for the best dance band, organ or individual artist pick-up. In fact, the frequency range far exceeds the capabilities of the best telephone line. May we suggest that engineers read our back page description of the "Remote Combine."

SPEECH INPUT CABINET

MODEL 500-A



The 500-A Speech Cabinet is full high fidelity from start to finish and is the finest speech equipment manufactured today and selling for less than \$1000. Built on a heavy steel rack type cabinet 70 inches tall, 20 inches wide and 18 inches deep with full size rear door and desk with orange linoleum top. It is striking in appearance. Consider just what the 500-A has in features, then compare it with competitive equipment and then compare the remarkable low price of \$495 complete.

Features:

- 1—Supplied with 3 high fidelity pre-amplifiers, Model 40-B for Velocity Microphones may be also had for crystal microphones if desired.
- 2—High fidelity line amplifier with guaranteed response flat from 30 to 13,000 cycles within one decibel.
- 3—Level indicator having 40 step calibrated variable pad giving decibel reading from -10 to +46. Uses Weston decibel meter.
- 4—Four position calibrated mixer. Fully shielded, constant impedance and silent in operation.
- 5—20 jack patching panel complete with four sets of cords. Any circuit may be patched in and out of mixer as well as incoming remotes.
- 6—Heavy built desk for arm rest and general aid to the operator.
- 7—Master power supply. Delivers filament and plate current to all amplifier equipment, both line and pre-amplifiers.
- 8—All circuits terminated at bottom rear of rack, no wires to run in the cabinet after receiving.

Sold To All Broadcasting Stations at \$495.00

Manufactured by

GATES RADIO & SUPPLY COMPANY

MANUFACTURING ENGINEERS SINCE 1922

Quincy, Illinois, U. S. A.

P. L. TOURNEY



Mr. Tournay is an old timer in the Gates organization, having joined up in 1927, or nine years ago. It is safe to say that he has had a hand in producing nearly 1000 remote amplifiers in broadcasting stations today. To him is accredited the latest Gates contribution to the remote equipment field, namely the "Remote Combine." Like many of the country's best broadcast men, he has grown with the industry and knows broadcast audio problems by actual step-by-step contact in the Gates Laboratory. His hobby—a swell boy and girl, ages two and four.

WITH APOLOGIES

We are sorry that no Studio Review came to broadcasters in February. In the first place it was held up to announce the new DeLuxe Transcription equipment which we felt was very important to every broadcaster, and then the usual delays in getting into production on a new item were greater than anticipated, and at last it was well into March before the Review could go to press.

NOTICE

The Gates Radio & Supply Co. not only manufactures a long line of broadcasting equipment, but sound equipment as well. As this is political year, many broadcasting stations will be called upon for public address amplifying service.

Gates has a complete public address catalog which will be sent on request to any broadcasting station. It has a complete listing of amplifiers from 6 to 32 watts and a striking portable system for automobile service operating from the six volt battery that would be swell for any politician. Many broadcasters will cash in on P. A. this year.

Gates Radio & Supply Co.
Quincy, Ill., U.S.A.

WHERE IT GOES

(It is quite impossible to list every one of our customers in the broadcast field who make purchases, because of space limitations. Our intentions are the best and your station, if not listed, will appear in a succeeding number. Thanks!—Ed).

Station WMPC, Lapeer, Mich., installs new Gates 106-C Line Amplifier, and Model M Microphone.

Station WNEL, San Juan, P. R., purchases new special Transcription Turn-Table with 905-B Mixer and Ready Panel.

Station KBIX, Muskogee, Okla., installs two B-94 Portable Remote Amplifiers, two P-1 Power Supplies, two B-1 Battery Cases, VB-105 Transcription Equipment and a "Remote Combine."

Station KSD, St. Louis, Mo., installs Gates VB-105 Transcription Equipment.

KUSD, Vermillion, S. Dak., installs Gates Velocity Microphone Equipment.

CMKC, San Diego, Cuba, installs Gates Pre-Amplifier Equipment.

CKCH, Hull, Que., purchases two new DeLuxe Transcription Turn-Tables and two 78 R.P.M. Equipments.

WAPI, Birmingham, Ala., installs a "Remote Combine."

Station KMO, Tacoma, Wash., installs Gates A-9 Coprus Oxide Rectifier.

Station WHBU buys "Remote Combine."

Station WNBH, Binghamton, N. Y., installs A-9 Rectifier.

Station WMBR, Jacksonville, Fla., installs "Remote Combine."

Station WCAZ, Carthage, Ill., equipping with complete new high-voltage Power Supply.

Station WIS, Columbia, S. C., purchases "Remote Combine."

I. U., Patterson, places Model M Velocity Microphone on Ted Lewis stage show.

Station KFJM, Grand Forks, N. D., has purchased a "Remote Combine."

Radio Station WPRP, Ponce, P.R., has purchased a new Tank Coil equipment.

Radio Station WMBC, Detroit, Mich., has installed new Gates Tank Coil equipment.

Additional listings next month.

INSULL ON AIR APRIL 1

It is stated that the new Afil. Broadcasting Co., headed by Samuel Insull, will be on the air about April 1 or thereabouts. Studios are to be in the Chicago Civic Opera Building and programs will go to many stations in the midwest, including outlets in St. Louis and the Tri-Cities. This will be the first time a large direct wire net work has been attempted in the midwest, or it should be said the north midwest, as the SBS has been quite active in the south for the past several years. Many old faces once with other stations or net works will be seen in the technical line-up of the new network.

EDITORIAL

TUBE COMPLEMENT

There is one thing that engineers give a great deal of consideration in audio equipment, and that is the tube complement and rightfully they should. If we were to go over the tube manual of today, we find almost every type of tube possible to manufacture, even to the point of rectifiers which before were rather few in number to choose from. However, when either building equipment or looking over the tube complement before purchasing, consult your tube manual for the following information: (a) does the tube have a low cathode to heater impedance so that the hum level will be low, (b) does the tube have enough amplification factor to your sense of understanding to help develop the gain as stated by the manufacturer or desired in case of building, (c) does the driver tube before the last audio stage have sufficient handling capacity in wattage to fully excite the last stage with low distortion content?

It is furthermore suggested that only under extreme circumstances that other than heater type tubes be used in the line amplifier set-up. The popularity of the 2A3 tube has made this seem desirable for an output tube in the line amplifier; however, it is not a heater type tube, and the internal hum is higher than such tubes as the 89 or 59. Therefore, in certain places a 2A3 combination might cause trouble in excessive hum, while in others, if high enough in the circuit, no trouble will be experienced.

CABINETS FOR THE TRANSMITTER

A couple of whoops for the cabinet makers! It seems that the metal cabinet manufacturers have now found a way to turn out not only speech equipment cabinets, but the large double-doored cabinets that will house a complete transmitter of the 100 to 500 watt class, and at a price that will be reasonable. One manufacturer who supplies a large number of the Gates special cabinets advises a new cabinet with doors on front and rear will be ready in ten days. It will have inside of aluminum lacquer finish and outside in either gray or black to customers' desires.

THE WEAKEST LINK

A high fidelity transmitter, new radiator, modern studios, and then the programs being sent out by means of an old Carbon or condenser microphone or the same fine set-up of equipment with perhaps a modulation reactor or coupling transformer along the line of an old vintage. This is a condition which seems to exist in a large number of stations today. No doubt the one or two items of lesser quality will be weeded out sooner or later, but it does seem to be too bad that in many cases seemingly all new equipment is held back because of one tardy replacement.

Copus Oxide Rectifiers
And Their Purpose

(Continued from Page 1)

transmitter bias supply. We all know the failure of the bias supply can cause serious trouble unless cut-out relays are employed, and even then the failure of a rectifier tube in the bias supply means time off the air. In the Coprus oxide rectifier there is nothing to burn out and nothing to wear out in any proportion like that of a tube. Take, for example, the life of the average tube is 500 to 1000 hours, yet the Coprus oxide rectifier goes right on for four or five years without attention.

Getting back to filament supply, it is still considerable safer to use D.C. on sensitive pre-amplifier tube filaments and essential for all popular types of condenser microphones (of which there are still several thousand in use). Also A.C. lines running everywhere in the studio are not always desirable, and for that reason many engineers use direct current and forget hum troubles. For those engineers that still believe batteries are the best bet, the Coprus oxide rectifier may be used to float across, offering a continual charge without a possibility of A.C. getting into the filament circuit. When we consider the fact that our largest theatres are using the Coprus oxide rectifier to operate arc lamps to throw their picture to the screen, we can feel safe that they will handle our comparative light service in radio broadcast without a quiver.

RADIO SALES INFORMATION

Many managers will be interested in the following information recently released on radio set sales. It was found that 73% of all domestic sales in 1935 was made in homes already owning some form of a radio. It was also found that there were 27% new radio set users, an astounding percentage when we think of radio sets as so common.

In cities over 250,000 population 94% of the homes are set equipped. In cities from 25,000 to 250,000, 92%; towns from 1,000 to 25,000, 89%; towns under 1,000, 78%. The remarkable figure is that still 60% of the farms remain unsold. There are now 22,400,000 homes with radio sets and still 28½% of the American homes without radio sets.

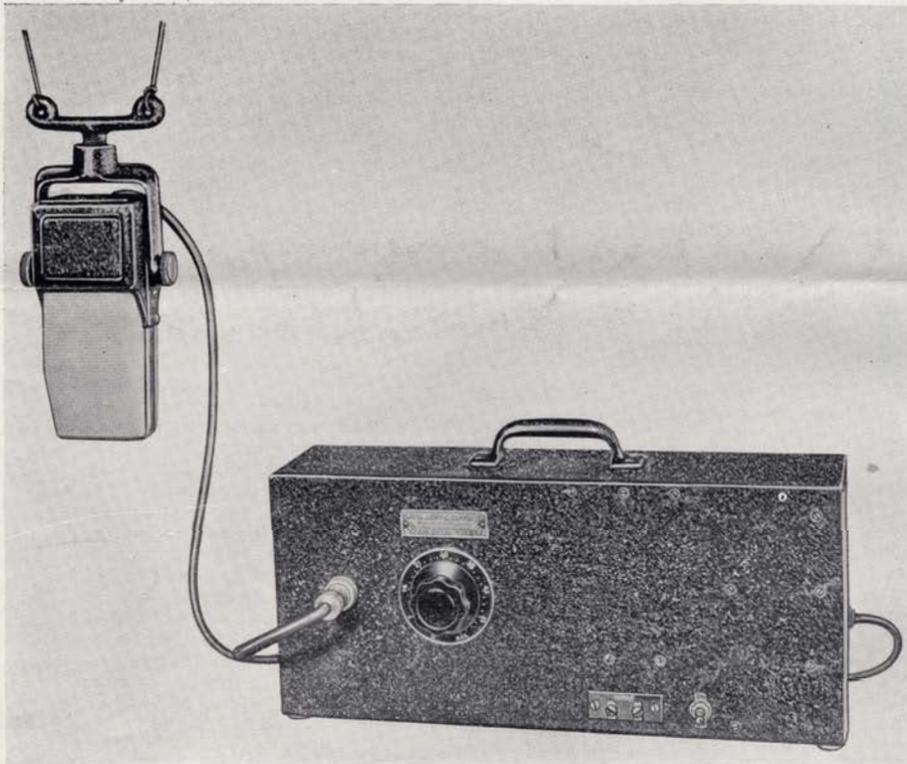
In 1935 there were 1,100,000 console radios sold, 2,204,000 table models, 780,000 auto radios sold—making a total of 4,084,000 receivers. There are still 20,160,000 cars without a radio. There was 65,500,000 radio tubes sold domestic at an average retail price of 97c. Parts jobbers sold \$12,500,000 worth of parts in 1935.

BROADCASTING INCOME

Three major net works in 1935 did \$54,000,000 worth of business; and all stations, net work and independent, did \$88,000,000 in business, compared to \$40,000,000 for the chains in 1934, and \$54,000,000 for all stations.

THE NEW GATES "REMOTE COMBINE"

An All A. C. Operated Portable or Permanent Remote Amplifier Complete With Velocity Microphone and Tubes at a Remarkable Low Price



The "Remote Combine"

Seven Salient Features of the "Remote Combine"

- 1—High gain (75 Db.) three stage amplifier.
- 2—All A. C. operation. Power Supply self-contained.
- 3—Uses metal tubes except rectifier.
- 4—All metal construction with all parts fully shielded electrically and against dirt and dust.
- 5—Unusually fine response curve.
- 6—Supplied with high output Gates Velocity Microphone.
- 7—THE PRICE COMPLETE IS ONLY \$77.00.

FULLY DESCRIBED GATES CATALOG BULLETIN No. 122

Manufactured by

GATES RADIO & SUPPLY COMPANY

MANUFACTURING ENGINEERS

Quincy, Illinois, U. S. A.

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