

Revolutionary Sound Reproducing Method Announced By Brunswick Co.

P. L. Deutsch Gives Details of Sensational New Means for Electrical Recording, Which Makes Possible Records Running Forty Minutes and Reproduced Through Medium of Vacuum Tubes

P. L. Deutsch of Chicago, vice-president of the Brunswick-Balke-Collender Co., announced in New York on Wednesday, August 12, that his company, the General Electric Co., the Radio Corporation of America and the Westinghouse Electric Co. had jointly perfected a new sound-reproducing instrument which represents a radical development in sound recording and reproduction.

This invention, which has been named the Panatrope to indicate that it reproduces all notes, is a combination of radio and talking film developments with the phonograph.

The New Process

The recording of the sound waves is done, it was said, with infinite delicacy by means of the process used in recording sound in the talking film, or Pallotrope, invented by Charles A. Hoxie, of the General Electric Co., which differs in detail from the Phonofilm of Dr. Lee De Forest.

After the record has been made in this manner it outwardly resembles the ordinary disc record. It is played with a needle but the vibrations are changed into electrical current and then stepped up by vacuum cells as in radio to the required volume, and then reproduced by a vibrating disk, instead of a horn.

The grooves in the ordinary phonograph record are cut 80 to an inch, and the 12-inch record runs for approximately five minutes. So much greater delicacy is achieved in the Pallotrope records, according to Mr. Deutsch, that the grooves have been cut 500 to an inch and 12-inch disc records have been made to reproduce whole symphonies, the record lasting for about forty minutes.

Record to Play Forty Minutes

The forty-minute record is a laboratory article at present and will not, for commercial reasons, be introduced for some time to come, according to Mr. Deutsch. The first records by the new process will be issued in October. They are designed to be used either on existing phonographs or on the Panatrope, the first examples of which will be placed on the market in October. On this account the new records are made to be run four or five minutes, with grooves of the ordinary width.

"This instrument is the result of heartiest co-operation between the radio and phonograph interests," said Mr. Deutsch. "It has been largely developed by radio engineers with the help of radio patents. There is entire harmony between the two interests."

"The new instrument is not called a phonograph. It is music reproduction by an entirely different process."

"While the phonograph is limited to reproducing sound-waves roughly between 1,000 and 2,000 per second, this instrument reproduces sound-waves anywhere from 100 to 7,000 or 8,000 a second. It reproduces with accuracy every pitch to which the ear is sensitive. The results are perfect with the full orchestra, the human voice, the piano and even with instruments, like the harpsichord, which have never been successfully recorded by the old processes."

Public Demonstration in October

"There will be a public demonstration of the new instrument in perfected form at Carnegie Hall in October, when the instrument will be ready for the market. By the use of vacuum tubes, the volume from the instrument may be varied from that suitable to a small room to that necessary to fill an auditorium."

"In spite of the vacuum tube amplification equipment, the cabinet for the Panatrope will be slightly smaller than the ordinary phonograph cabinet. It can be run either with batteries or by connection through the electrical socket. The cost of running it is very cheap,

considerably less than that of running a small electric fan. The vacuum tubes will last from three to five years. The prices of the instruments, which will be placed on the market in October, will run from \$200 to \$500, largely depending on the style of the cabinet.

Available for Present Machines

"The disc record will be used at present, because we want to adapt the product to the use of the millions of phonographs now in existence, but the reproduction can be done by films, on which the sound waves are photographed. By this method the record can be made to play for any length of time."

"In order to reproduce the film records, the instrument must be equipped with the apparatus for sending a beam of light through the film to a photographic cell so as to turn the sound waves into electricity, after which the electrical waves are amplified by the vacuum tubes. This apparatus, however, is not costly or cumbersome, and there is no reason why the device using the film records may not become an ordinary household musical instrument. In all developments of this kind, however, it is necessary to protect the owners of existing apparatus as fully as possible."

The Pallotrope Modified

The Pallotrope, which was developed by the General Electric Co. to photograph sound, has been modified considerably for its use in recording sound waves on discs. The sound waves produced by the speaker, singer or musical instrument are made to vibrate a light. The variations of the light are changed by the photo-electric cell into variations of electrical current. These are amplified by tubes until they are powerful enough to operate the engraving tool which cuts the sound wave pattern in the grooves of the phonograph disc.

After the new type of record is made in this way, it may be reproduced either by the needle vibrating a diaphragm, as in the present phonograph, or by the new sound-reproducing instrument which works as follows: An ordinary phonograph needle is used to take the vibration from the records, but instead of being communicated to a diaphragm the vibrations are transferred to an iron "reed" which is placed in the center of an electrical coil. The vibrations of the iron reed in the electrical field cause infinitely fine variations of current. The faint current which is modulated in this manner is amplified by the series of tubes and at the end it vibrates the disc, transforming the electrical current back into sound.

First New Records

The records made by this process, which will be issued in October, include the intermezzo and prelude to the "Cavalleria Rusticana" by the Metropolitan Opera House orchestra, conducted by Paoli; Schubert's "Marche Militaire" on the piano, by Godowski; Irish Lament and Serenade by Arensky on the violin, by Pjastro; a soprano solo by Virginia Rea; Rimsky-Korsakoff's "Hymn to the Sun" by the Brunswick Salon Orchestra; Ben Bolt and Robin Adair, by Elizabeth Lennox; a harpsichord solo by Lewis Richards; "Unclouded Day" by the Criterion Male Quartet; "Forge in the Forest" and "Anvil Chorus," by Walter B. Rogers and his band; a piano duet by Olman and Arden, and a number of pieces of dance music. This series was made as inclusive as possible to show the performance of the new instrument over a wide musical range.

Mr. Deutsch said that experiments were being made to develop a permanent needle. Because of the use of the tubes for amplification, Mr. Deutsch said that the original vibrations from the record might be infinitely faint, so that only the lightest possible contact was necessary be-

tween the needle and record, thus reducing the wear on the needle and the record to a minimum.

The announcement when received by the trade in the East created little short of a furor, for it was the first tangible information that has been offered regarding those new developments in recording and reproduction which have been heralded so persistently for months past, but regarding which so few facts are available to the industry.

Particular gratification was found in the fact that although the new instrument is deemed to be little short of sensational, arrangements have been made to protect the public and the trade by making the new recordings, to a substantial extent, at least, available for use on phonographs already on the market.

It is understood that the trade will receive further details regarding the new Brunswick product direct from the company in the very near future.



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