

THE DINNER F
THE FUTURE—A MUSICAL PROGRAMME FURNISHED BY MEANS OF ARC LAMP

THE WONDERFUL TELHARMONIUM

*Will It Be the Musical
Instrument of the Future?*

BY A. B. EASTERBROOK

I WAS seated at my desk enjoying an after-luncheon smoke, when my thoughts were rudely interrupted by a timid knock upon the door of my office.

"Come in," I responded, rather gruffly.

It was Jimmy, the office-boy. His usually solemn face lighted up as he ejaculated: "Say, Mr. Easterbrook, has yer seen the latest wonder?"

"No," I answered, abruptly. "What is it?"

"It's music what comes outen an arc lamp the same time what it gives out light," was the rather surprising reply.

"Is that possible?" I asked, wondering.

"Sure, it's possible. It's up above the Casino. A guy took me in. Gee, but it's great!"

"All right," I returned, indifferently, and Jimmy departed, to attend to his arduous duties.

In a moment, there was another rap on the portal—this time anything but timid. To my invitation, the head of our circulation department entered.

"Hello, Governor; what's in the wind?" I asked pleasantly.

"Have you been up to Telharmonic Hall? Of course, you haven't, or you would have told me about it. Talk about Moses making water come out of a rock. Here's a stunt that relegates the other to the sub-cellar. It's music—but perhaps you had better go yourself."

My curiosity was aroused, and after a few questions as to time and place, I hurriedly put on my hat and coat and left the office.

Arrived at Telharmonic Hall, which, by the way, is at the corner of Broadway and Thirty-ninth Street, I found I was just in time to be admitted to the afternoon performance.

While seated in the car, I had been won-

dering what was in store for me. I had an idea that I was about to hear some harmony reproduced by means of electricity—some electrical attachment to the phonograph or kindred instrument.

But I didn't come within a thousand miles of it.

It was music, to be sure—not music reproduced from a record, but music *produced by electricity*—music that apparently came from any portion of the room at the will of the musician—music of the quality of the flute from jardinières on the ceiling, of the oboe from one side of the room, of the tuba from the other side, of the violoncello from a hydrangea bush, of the French horn from a corner, of the clarinet from urns that stood upon large pedestals—music of the combined qualities of two of these instruments from arc lights hanging in the air.

I rather expected it would next emanate from the heads and various parts of the anatomies of the assembled audience, for I had once seen a troupe of Japanese jugglers cause a stream of water to spout from the eyes, ears and finger tips of one another in a most mysterious and startling manner. Here I was mistaken.

This was real music—there was no doubt about that. Even the veriest tyro would positively affirm that it was wondrously sweet and rounded music.

I was clearly mystified and eager to learn more about it.

In sight, on a raised platform, was a large machine that my first impression set down as a cross between a Mergenthaler linotype and a very large and clumsy typesetting and printing machine which I had seen at Columbia University. It had two large keyboards with keys arranged in the same manner as a piano, but was literally enveloped in electric wires and switches,

and covered with knobs that suggested organ stops.

Here was something new—an instrument by means of which (when completed) could be produced the tones of the quality of any and every musical instrument separately or in combination, from a flute to that of a large symphonic orchestra.

Surely this invention was worth while—but I had not yet begun to realize how great it really was.

However, though the musician was plainly performing on the keyboard, the machine itself produced no sound. At first this seemed curious, but when the theory was explained, the mystery was dissolved instantly.

It was not intended to produce sound. This large and cumbersome instrument was merely the controller of electric currents—in other words a gigantic, but ingeniously devised switchboard.

Electricity, like sound, travels in waves or vibrations, and it is this vibration—or alternation, as the electrician would say—that is the fundamental feature of the system of Telharmonic music.

The keyboard—or switchboard—contains one hundred and forty-five keys, each one connected with its own dynamo in the basement. Each of the one hundred and forty-five dynamos is adjusted so as to produce a certain vibration, and that vibration represents a certain tone in the musical scale when thrown upon the proper surface.

The lowest key is connected with a dynamo that alternates forty times to the second, and the number of vibrations increases as the scale ascends until the highest key is reached, which controls the dynamo that vibrates four thousand times to the second.

When two or more of the dynamos are in operation at the same time they produce a combination of vibrations or tones like the striking of a chord on a piano.

By means of tone mixers, pedals, expression levers and other devices, the musician performs on the keyboard and controls the vibrations in accordance with his interpretation of the music score that is before him.

The ordinary black diaphragm of the telephone receiver was first used by the inventor to be vibrated by the electric cur-

rent, that vibration, communicated to the air, producing the sound waves that we hear exactly as we hear the sound waves excited by a piano string or any other musical instrument. However, even the vibrating surface of the sheet iron diaphragm is unnecessary, as the music can be produced by means of an ordinary arc light without additional mechanism.

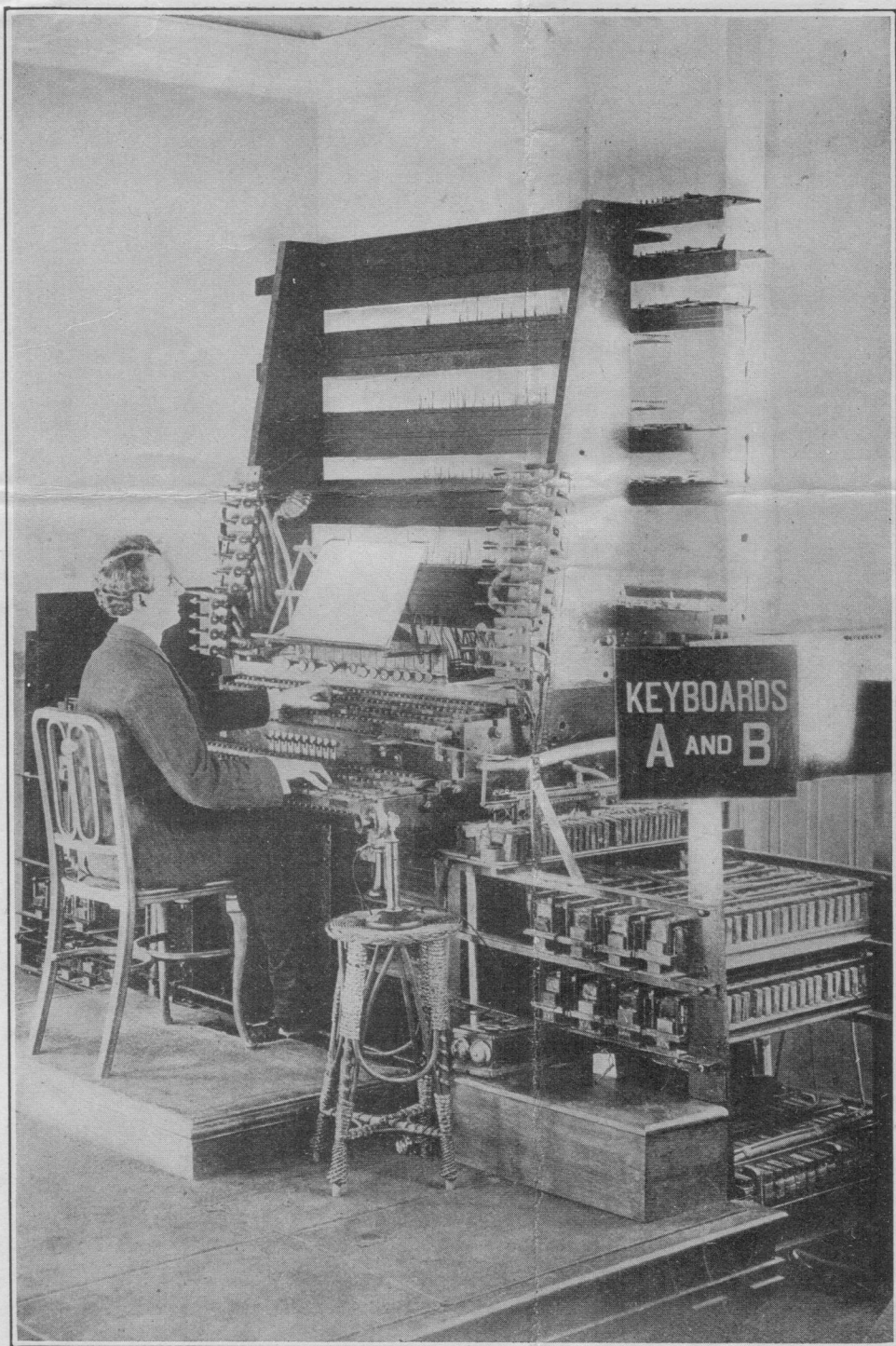
It was rather unpleasantly surprising to be informed that the plant at Telharmonic Hall had cost over two hundred thousand dollars, and was still incomplete. At this rate, only the plutocrats of the type of Rockefeller and Harriman would be able to take advantage of the new invention. I had grown quite fond of this mellow music that was very different from anything I had ever heard, and was disappointed that it was beyond people in the middle walks of life.

However, every cloud has a silver lining and hope again grew bright as the lecturer went on to explain that the machine was not manufactured for the purpose of sale, but merely to produce the music which could be carried by means of electric wires to comparatively distant points as well as those nearby. To be sure, the Central Station, where we were pleasantly lolling, was extremely costly, but one central station was capable—given sufficient electric power—of supplying four million souls with music, if necessary. And at a nominal rate, too.

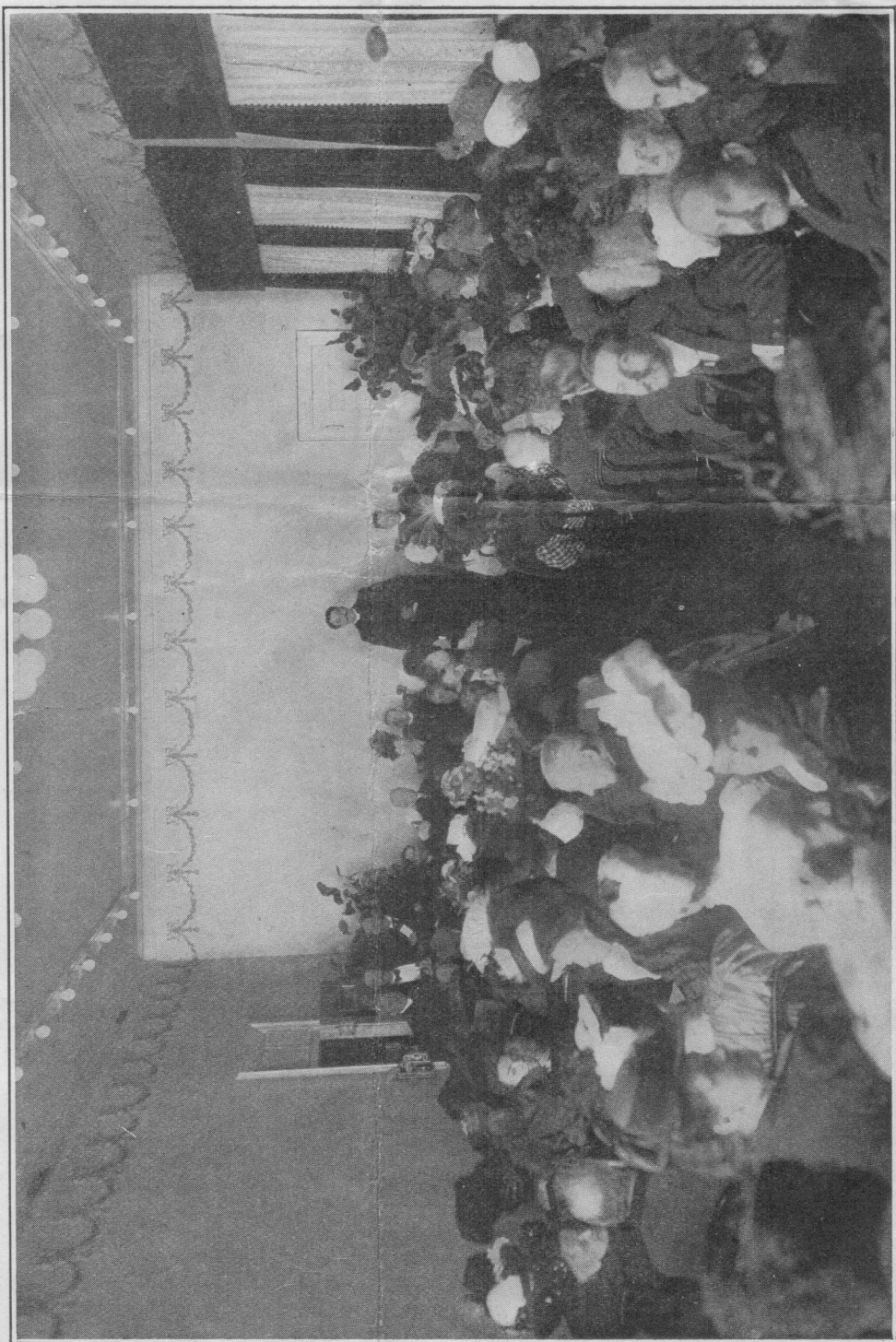
Already, connected with the terminal station by electric cables, there are ten terminal stations at ten prominent hotels in Manhattan, where concerts are given twice daily, simultaneously with those at Telharmonic Hall.

If the inventor's dream comes true, the time is not far distant when we may go to sleep at night under the soothing influence of some sweet, old-time lullaby, to be awakened at dawn and made ambitious for our day's labor by the soul stirring strains of a military march.

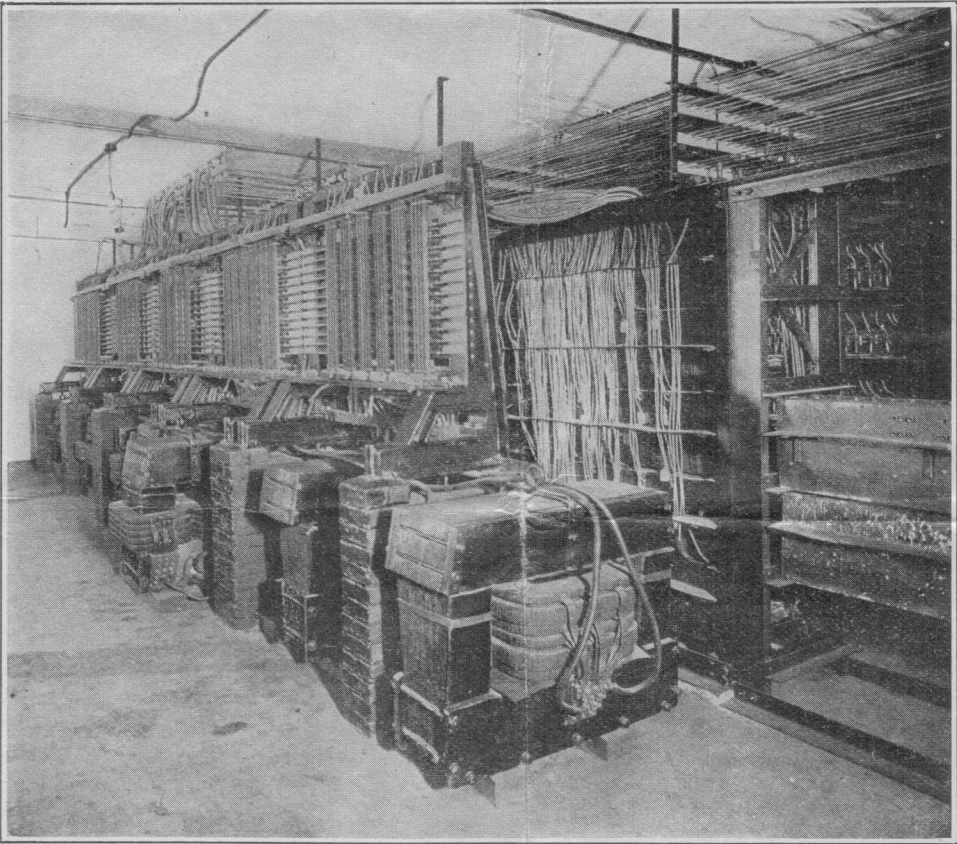
A short time ago, DeForest, of "wireless" fame, was successful in his attempt to transmit Telharmonic music from the roof of the Central Station to several of the large buildings in the vicinity by means of wireless telegraphy, and it is stated that



THE KEYBOARD OF THE TELHARMONIUM



A GOSPEL SERVICE ACCOMPANIED BY TELHARMONIC MUSIC TRANSMITTED BY MEANS OF TELEPHONE RECEIVER



THE GIANT SWITCHBOARD

while the experiment was being conducted, the music was unwittingly communicated to the wireless operator at the Brooklyn Navy Yard, who was holding a conversation with U. S. Battleship *Virginia* off Tompkinsville, Staten Island.

Try to conceive the astonishment of the operator at the Navy Yard when this music came to him apparently out of the very air.

The possibilities of this system of conveying music are infinite.

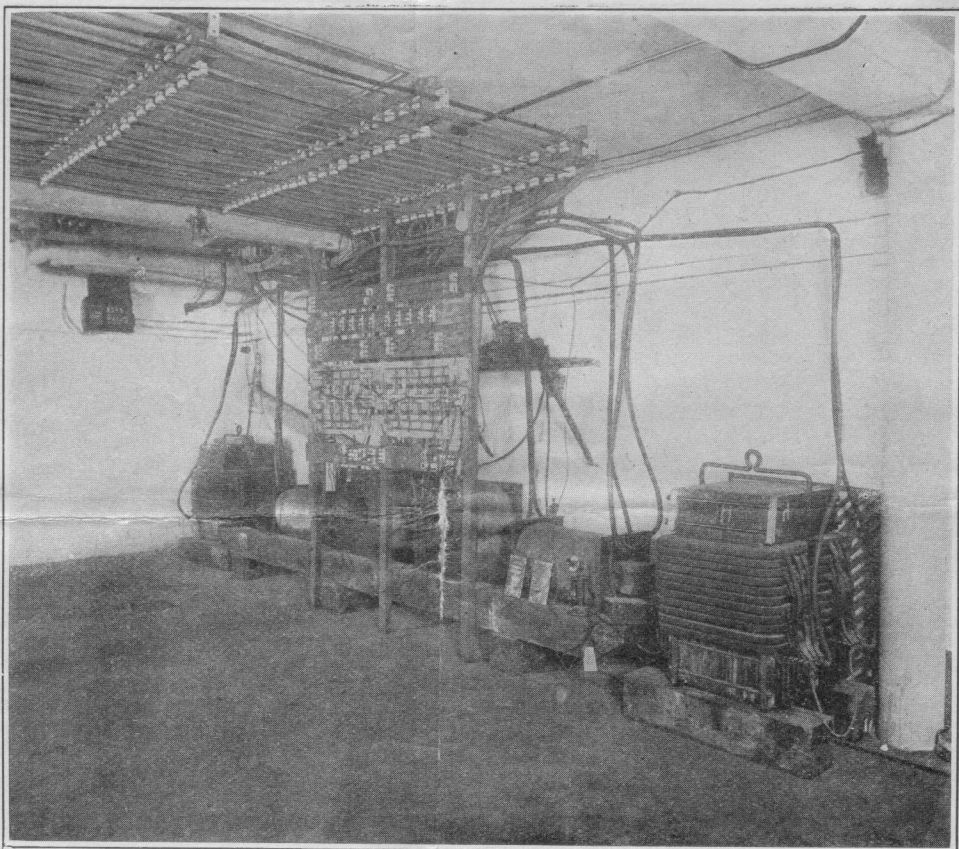
Imagine being seated at the dining-table in your own home with your family and a few friends, listening to the greatest artists of the day while they, miles away, are performing upon an instrument of wondrously exquisite tone; and further, that your little audience is but one of a very large number hearing the same rich and pure tones.

There is nothing fantastic, nothing theoretical about this—it is something that is being done here and now.

On a recent evening, at one of the terminal stations already established, a gospel service was held, and to the hymnal music furnished by wire from Telharmonic Hall were joined the voices of an assemblage of one hundred and fifty persons. In this case an ordinary telephone receiver was used as the instrument for introducing the music to the terminal.

One of the illustrations with this article shows how at a little dinner party Telharmonic music is being communicated by means of the arc lamp that is shedding its pleasant glow upon the table.

Though the Telharmonium possesses a range of tone all its own, at the present time, with the equipment already in place—



THE FINAL TONE MIXERS

which is the first double key-board—all the tones and tone qualities of what are known as the wood wind instruments can be produced. These embrace the oboe, English horn, flute, clarinet and bassoon; beside the French horn, 'cello, drums and some minor effects can be approximated.

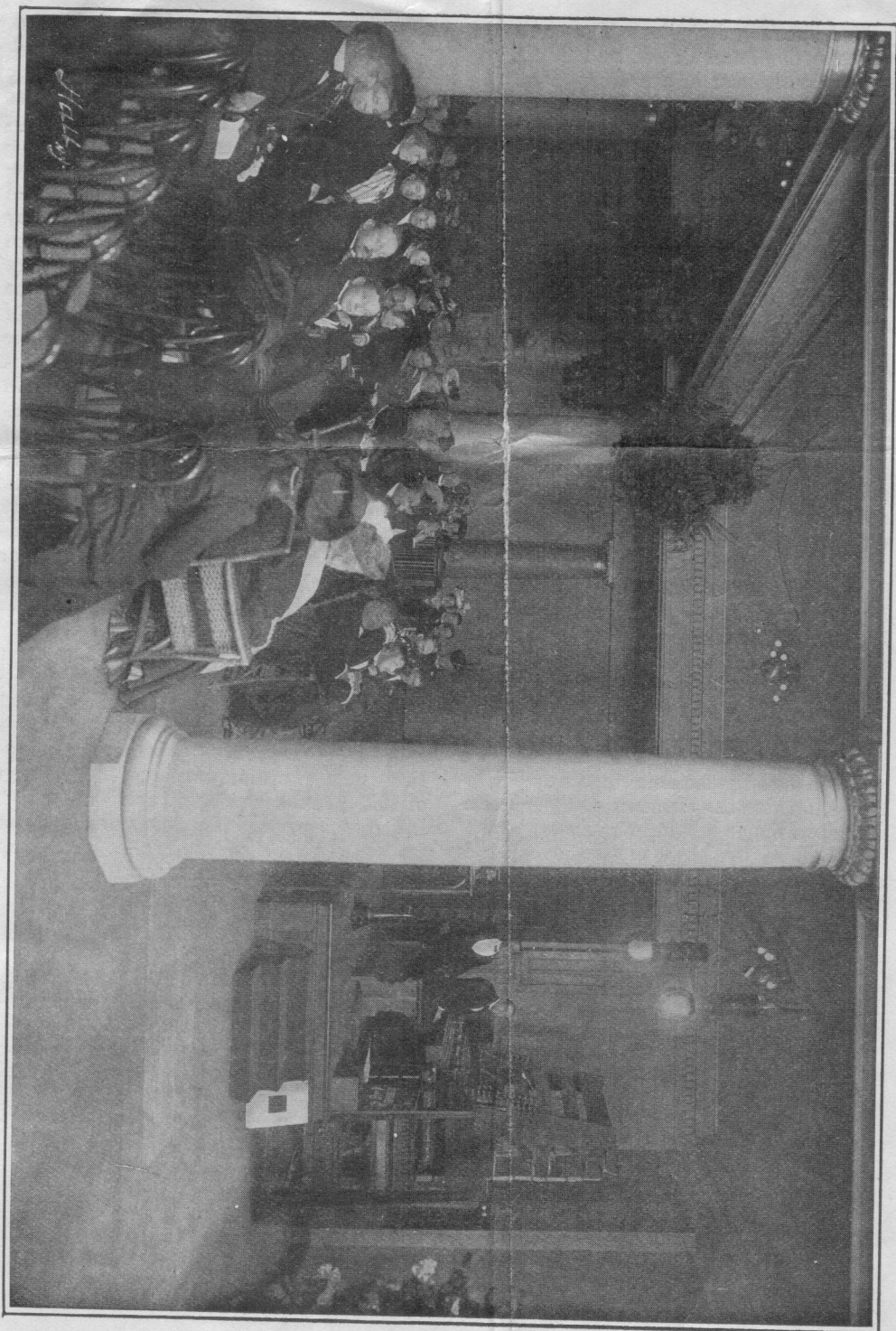
When the entire plant is installed, it is promised that seven musicians at the Central Station may render a programme such as might be given by a symphonic orchestra of eighty-five pieces, including violins, cornets, trumpets, harps, etc.

To transmit this to any large number of subscribers or to cover any large area of space, it can readily be imagined that no small amount of electric power will be necessary.

In producing this new instrument, the

inventor—an American—Dr. Thaddeus Cahill, has neither made a new discovery nor established a new fundamental law. But applying well-known scientific principles as to vibration, after thirteen years of ceaseless toil and experimentation, he has constructed an instrument from which can be obtained scientifically perfect tones.

The inventor was reared in a town that possessed a conservatory of music, and was otherwise much devoted to good music. He developed a remarkably keen interest in the scientific side of the art, and soon became impressed with the inefficiency of our everyday musical contrivances. For instance, the piano, while rich in chord capacity, cannot be kept in perfect tune, and, furthermore, the quantity of the sound is soon lost; that is, when the string is first struck, the sound



A GATHERING AT TELHARMONIC HALL—MELODY AND LIGHT FROM ARC LAMPS

is loud but soon dwindles. The violin also possesses this latter defect, and in addition is notoriously poor in chord capacity.

With these and the other defects in mind, it seemed to Dr. Cahill that it should be possible to construct an instrument which would unite all the virtues of existing instruments and yet eliminate their defects—a machine which should give a sustained tone controlled by the touch, yet one which would enable the player to express his emotion in all its power and intensity without mechanical hindrance.

Originally, no thought entered his brain of distributing this scientifically perfect music by wire. While that was a comparatively simple matter compared to the construction of the perfect musical instrument, as the possibilities have suggested themselves the general distribution has developed into the great commercial feature of the enterprise.

Scientifically, many of the greatest artists of the musical world of to-day have become interested in the Telharmonium and have been impressed not only with its individuality of tone but with the practically limitless musical possibilities to be derived from the building up of tone upon tone by the combination of its partials; for this is the first musical instrument in history upon which a pure fundamental tone may be produced, making the elements of tone, as elements, available to the musician.

Commercially, however, the invention is one of rare importance, for in every place

to which electric currents can be carried, this wonderful new music can be heard. By opening the switch, the music can be turned on like the incandescent light that is now so common. The electric waves sent out by the great central machine are transformed, by the familiar device of the telephone receiver—or by the arc light shaded by a prettily colored globe, without any other device—into sound waves and reach the ear in symphonies, rag time, waltz music, or whatever programme may be chosen. At the present time, because of the incompleteness of the plant, only one programme is given generally, but it is promised that it will be possible to obtain music at any time of the day for any occasion. Louder tones and greater volume of music are to be secured without any more exertion than the turning of a switch. While the cost of this is comparatively small and within the means of a large proportion of our people, the part that cannot help but strike one as purely commercial is that the charge is measured by a meter as in the case of ordinary electric service.

But perhaps the most marvelous effect of this wonderful instrument—one that is considered worthy of note in the medical world—is that the music can be heard and appreciated by persons who are comparatively deaf to ordinary melody. The reason of this, as explained by a prominent aurist, is the great penetrating power of the sound waves of the Telharmonium, as well as its long sustained, perfect tones.

