"O FOR a blast of that dread horn,
On Fontarabian echoes borne,
That to King Charles did come,
When Roland brave and Olivier,
And every paladin and peer,
On Roncesvalles died!"

So Sir Walter Scott turned into modern verse one of the tallest tales of the Age of Chivalry—a period, be it known, when men were men and the telling of tales was the only skyscraping industry.

Count Roland and the rear guard of the Frankish army, so runs the epic, were ambushed in the pass of Roncesvalles, in the Pyrenees mountains, some time in the latter eighth century. Roland was called upon to blow his horn "Olifant," a mammoth thing of ivory and gold, to bring to their aid the main body of the army under the command of King Charles the Great (Charlemagne). He refused, however, until he found his small detachment destroyed, and himself mortally wounded. Then, seizing Olifant, with his last breath he blew such a blast that the horn was shattered; birds around fell dead out of the air; and Charlemagne, thirty miles away, heard the sound and turned back.

For ten centuries this Bunyanesque legend has remained as an example of what the unrestrained and picturesque imagination can do. We may not call it science fiction, for it contained no science; yet, today, the wild imagination of the author of *La Chanson de Roland* has been overtaken by science.

The illustrations on this page show the details of the most powerful loud speaker yet constructed; the proportions of which may be seen from Figs. A and B, on the preceding page, which were taken near Berlin; where this speaker, mounted upon a factory tower, amazed the people of the German metropolis, miles away, by sudden and powerful radio reproduction in their midst from an unknown source.

Dr. Lee de Forest

EARLIEST RADIO-RECORDING

1224 Wall Street,
Los Angeles, California.

Mr. Hugo Gernsback,
Editor, RADIO-CRAFT,
96 Park Place,
New York, N. Y.

Dear Mr. Gernsback:—

Have just read with much interest Mr. Washburne's article on "Home Recording of Radio Programs and Speech" in the December issue of RADIO-CRAFT. The statement is there made that Charles E. Apgar, called the "pioneer home-recorder," recorded his first radio transmission press in October, 1913.

In the cause of historical accuracy it may be interesting to your readers to know that in the summer of 1912, at the Palo Alto laboratory of the Federal Telegraph Company, in conjunction with the late Charles V. Logwood, I recorded press telegraph messages regularly from San Francisco, using a two-stage audion amplifier and Poulsen telegraphone.

(*Continued on page* 489)

The sound of this Gargantuan reproducer can be heard over fifteen miles, and we may imagine that, if a suitably huge exponential horn were created for it, it might carry even further. Furthermore, the purity of the reproduction and its freedom from metallic resonance is said to be unprecedented.

The instrument is of a pattern which the makers—the Siemens & Halske Co.—call "Blatthaller," indicating a reproducer whose diaphragm is a leaf or sheet of metal. It is of the electrodynamic type, the field having an intensity of 22,000 gausses; and the voice coils are attached to diaphragms which are corrugated to insure their vibration as a whole. The metal is aluminum, 1/16-inch thick.

The speaker unit illustrated weighs more than five hundred pounds. It is quadruple, having four individual diaphragms; since a larger diaphragm would be subject to vibration in sections. The voice coils of the units are of cables, rather than wires; since they must carry a current of 120 amperes. Two hundred watts of energy are put into the air by this speaker—a thousand times the power of an ordinary, room-size speaker. The piston action of the diaphragm reaches a stroke of an inch, and the vibration of the air can be felt more than fifty yards away; in fact, it is so tremendous that some of the operators around the reproducer were severely affected and made ill by the tests.

"A very active part will be taken by this novel salesman," the makers anticipate, "in the field of advertising." It is their plan to demonstrate its power to cover all Berlin from a balloon. We may conceive the implications in American terms: the city of New York has lately forbidden the operation of outdoor loud speakers for commercial purposes; but such a titanic horn, erected on the Palisades of New Jersey, could cover Manhattan with its voice, and Manhattan—between elevated trains, riveting, etc.—would have to listen.

Mr. 'Rastus Robot

During the electrical and radio exhibitions of the past season, the increasing perfection of those mechanical servants, now popularly called "robots," has been the most spectacular feature. One of the finest yet produced, for human appearance and versatility, is "'Rastus," who is illustrated on the opposite page. He has the powers of speech, of using his hands, of rising and sitting—although, to date, the complicated maneuvers of walking seem to have been a little too much for biped automatons.

(*Continued on page* 509)

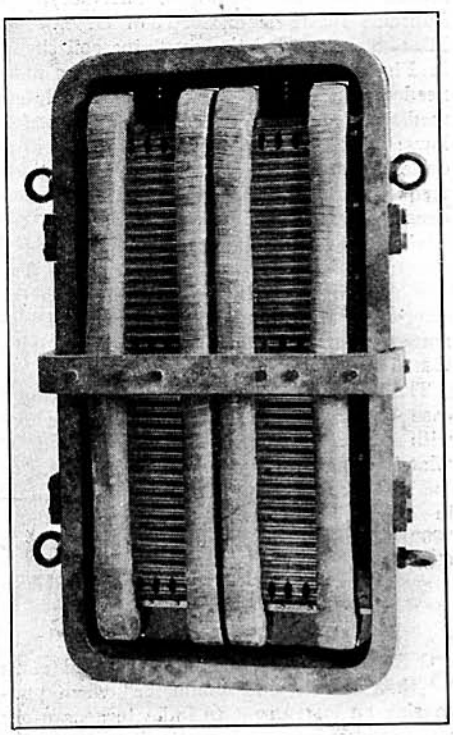


Fig. C

Suspended in the frame of the speaker are the field coils; through them we see the corrugated diaphragm, which is made in four sections, to swing back and forth.

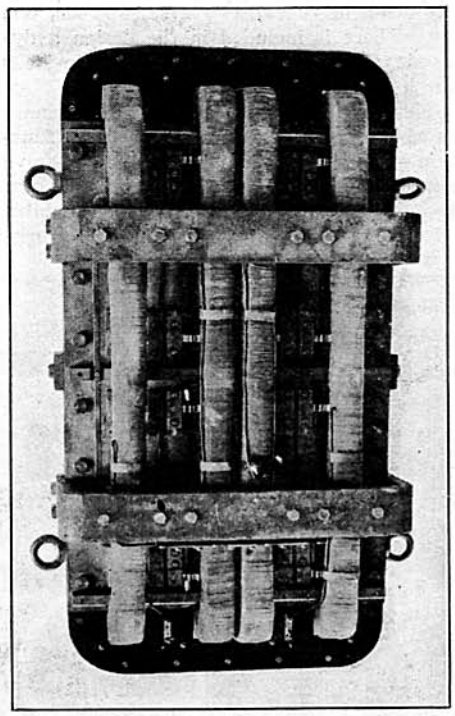


Fig. D

The rear view of the giant speaker, which shows the strength of its bracing, and the voice coils, which are attached to the aluminum diaphragm. This is the largest of a family of electrodynamic speakers working on the same principle.

Earliest Radio-Recording

(*Continued from page* 469)

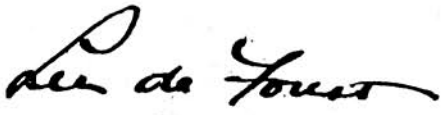
In March, 1913, this system of high-speed recording, and slow-speed reproducing, by means of the telegraphone and audion amplifier, was installed for commercial work by the Federal Telegraph Company between their San Francisco and Los Angeles stations.

Speeds up to 90 words per minute were thus handled.

In the fall of 1912, Logwood and C. F. Elwell, chief engineer of the Federal Telegraph Company, installed for the U. S. Navy at the Arlington station a complete three-stage audion amplifier-telegraphone recording outfit, which was purchased by the U. S. Navy.

In the spring and summer of 1913, the writer spent several months in recording voice and music on the telegraphone, using of course the audion amplifier both in recording and reproducing; having in mind to use this method for synchronized talking-pictures.

All of this work was so long ago, prior to any attempt to electrically record radio or voice on phonograph cylinders, that until I read Mr. Washburne's interesting article I had almost forgotten these historic incidents of 1912-13 in California and Washington. Very sincerely,



We are very glad to publish this interesting bit of historical material from Dr. de Forest. However, the story, "Home Recording of Radio Programs and Speech," in the December, 1930, issue of RADIO-CRAFT, was written only along the lines of amateur experimentation and did not take into consideration work which might have been done at a prior date in development laboratories.

In this connection Mr. Charles E. Apgar remarks: "The letter from Dr. de Forest, containing his kind comment on the work I did in 1913 on recording high-speed telegraphy and reproducing it at a slower speed, thus rendering it intelligible, came as somewhat of a surprise; for I was not aware that elsewhere high-gain amplifiers had been put to the same use, and as far back as 1912, at the Palo Alto laboratory of the Federal Telegraph Company.

"However, this work was undertaken by a well-equipped laboratory, with a commercial motive, whereas I was attacking the problem, at a later date, (in my home) from an amateur standpoint, and with no expectation of financial gain. Of course, for some time now, we have had laboratory recordings of radio programs; but only within the last few months has it become convenient for the amateur to record these programs.

"Again, it is interesting to observe that, while Dr. de Forest used a high-gain amplifier for his experiments, the recordings were made magnetically on the steel wire of a telegraphone; and not, as I did it, and as it is done today in home-recording, on a phonograph record sensitive to the vibrations of a recording stylus."