VINTAGE RADIO

By JOHN HILL

A look at early radiograms

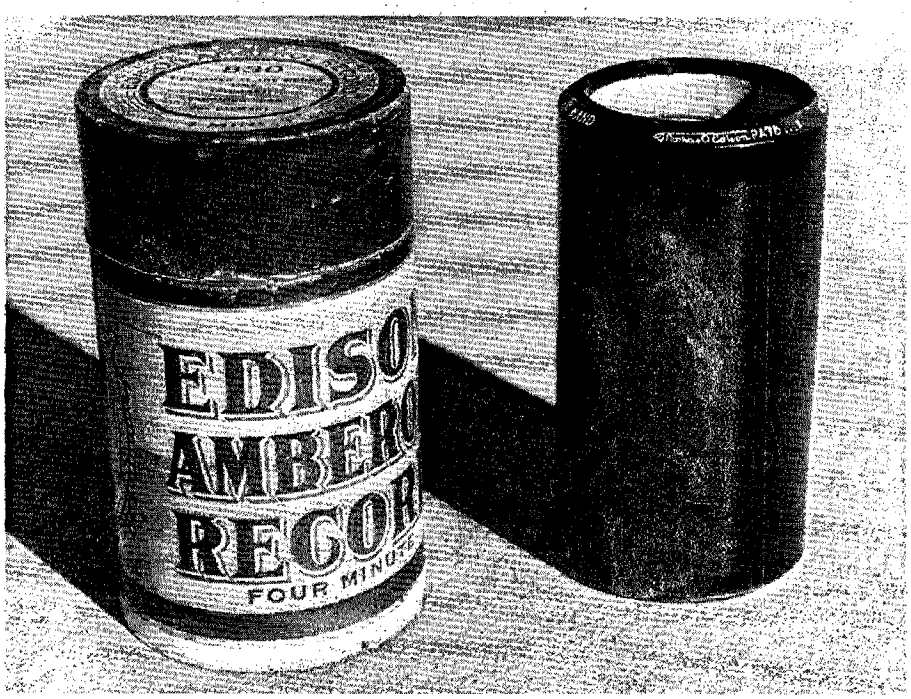
The first recorded words were: "Mary had a little lamb". Of course the voice that made that historic recording was that of Thomas Edison and the year was 1877.

Edison's record was cylindrical and the surface was covered with foil. The device was crude and it had a lot of development work ahead of it before it could be of any commercial significance. The late 19th century saw the birth of many new gadgets and inventions, the phonograph being just one of them.

If one listens to an Edison cylindrical phonograph, the first impression is how terrible it sounds. Any subsequent impressions simply reinforce the first. The reproduction is thin, harsh, scratchy, totally lacking in bass and distorted at particular frequencies. When I demonstrated my Edison machine to my brother, his comment was: "I had no idea they were that bad!"

Looking at the recording industry at the turn of the century, it could only go one way – forwards!

It's all very fine to look back in the light of today's knowledge and comment on how bad early records and record players were – but everything has to start somewhere. Most inventions undergo development and modification for the rest of their commercial life. Whenever we look back at early sound recording, radio, motor cars or whatever, it doesn't pay to be too critical because that was the best mankind could do at the time.



A genuine four-minute Edison cylindrical record. These early records were "hill and dale" types; ie, the modulation of the groove was up and down, not sideways as in later years.

New developments

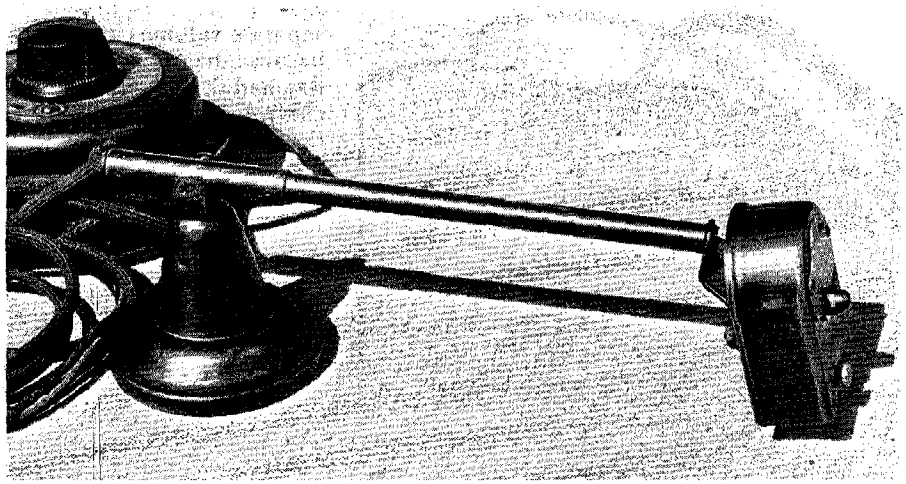
Most inventions start out with humble beginnings and improve as time progresses. The phonograph was like that and it went through many changes – from cylinder to disc, vertical "hill and dale" modulation to lateral, from huge sound horns to built in types with volume controls. But the real improvements did not come about until records were electrically recorded and could be played electrically through a radio receiver. This new era of sound recording and reproduction came in around the late 1920s.

Electrically made recordings greatly improved the quality of recorded sound and electronic sound techniques opened up a whole new frontier with the advent of talking motion pictures. So, from this time on, records and radio merged closer together.

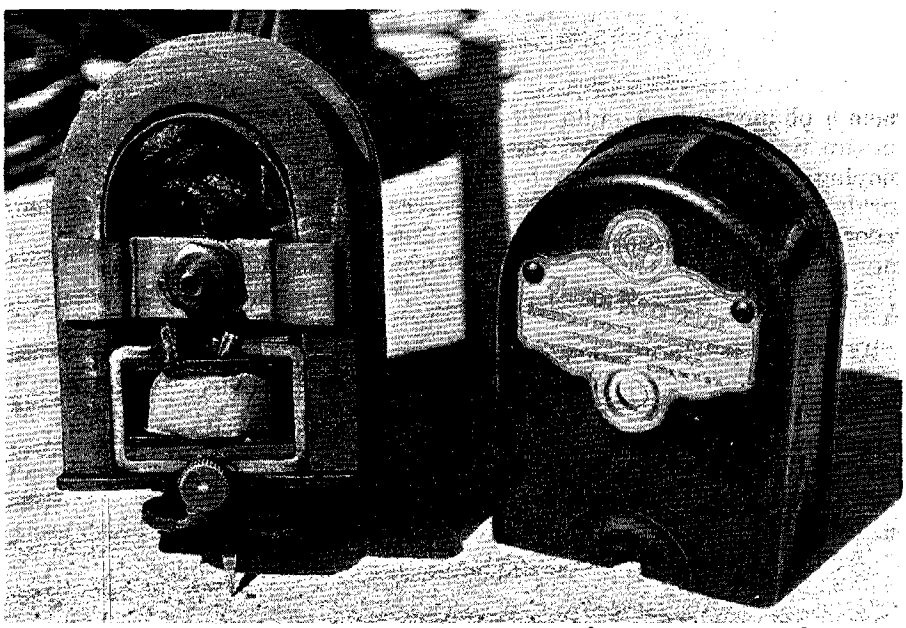
Anyone with an ear for quality would prefer to listen to their records played through their radio rather than a phonograph. Indeed, most radio receivers from the late 1920s to the end of the valve era had some provision built into them to allow a pickup to be connected.

Early pickups

Early pickups were big and heavy. They used a large magnet and were



This old magnetic pickup was made by the American Bosch Company. With its 6-ounce (170 gram) head, steel needle and lack of counterbalancing, it no doubt wrought considerable damage on many an old record.



This close-up view shows the Bosch "Recreator" with its cover removed. Note the horseshoe magnet, the pole pieces and the 2kΩ coil between the pole pieces. The thumbscrew at the bottom is for securing the needle.

fitted with a thumbscrew for holding the steel needle which needed replacing after every playing.

As can be seen from one of the accompanying photographs, the pickup head contains quite a sizable horseshoe magnet, with a 2kΩ coil mounted between the pole pieces. The armature that vibrates inside the coil is rubber mounted and it is the age-hardening of this rubber mount that causes trouble with these ancient pickups.

If the needle carrier and armature are remounted in soft new rubber, it will restore the pickup to working order once again. Assuming that the coil is not open and the magnet has not lost its magnetism, the pickup should work.

Some of these old pickups weigh in at around 6 ounces (170 grams) and many had no counterbalancing to lighten the load. Transfer all that weight onto the tiny contact area of the needle point and you have an instrument that has been scientifically designed to tear the guts out of the needle track of a record in a relatively short period of time (or record time if you will excuse the pun)! In this respect, they were no better than the acoustic sound heads they replaced – and in some cases worse.

When ones compares the Bosch "single furrow record plough" with some of the lightweight pickups of the microgroove era, the difference is amazing. So too is the difference in record life.

Playing records

Now if one wishes to play 78rpm records through their old 1930 TRF receiver, it's not just a simple matter of plugging in a pickup and away you go. If you do this it will work, no doubt, but the volume control on the set will not control the volume of the records being played.

The reason for this is quite simple. In the late 1920s and early '30s, the volume control on nearly every type of receiver was in the radio frequency (RF) end of the set, which was contrary to later developments. In those days, the volume control took the form of a wirewound potentiometer which either varied the cathode bias or the screen voltage of one of the RF valves.

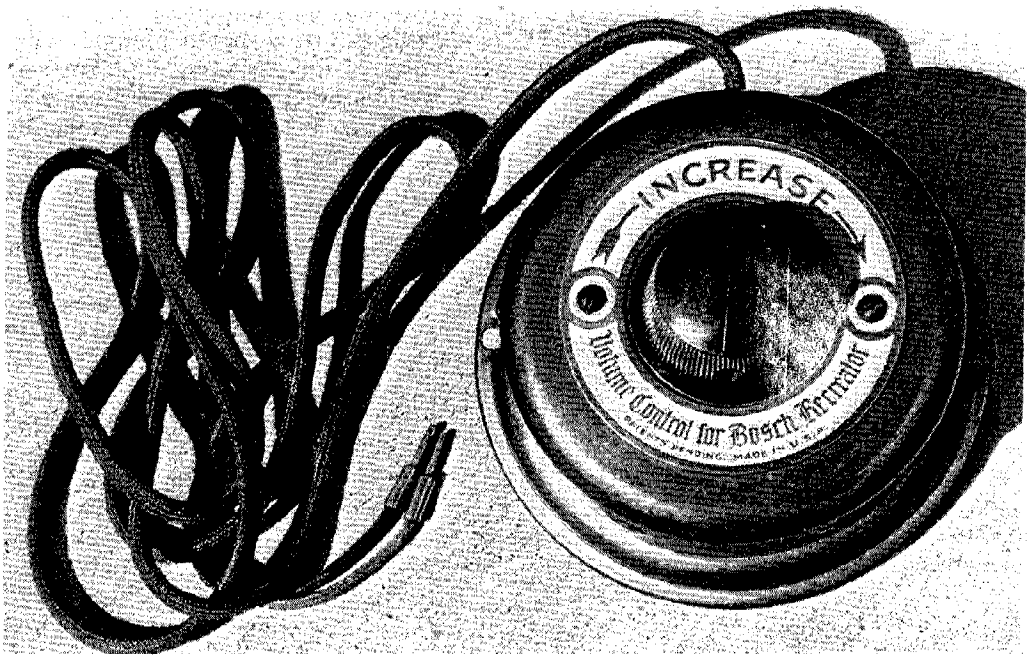
In operation, the audio frequencies produced by the record pickup are fed into the audio section of the receiver. In an old TRF or early superhet receiver, the grid of the detector valve or first audio valve was the place to attach a pickup. But as already explained, any audio grid comes after the receiver's volume control and so the record volume is uncontrollable in such circumstances. In most cases, the sound would be too loud and possibly distorted if the pickup output is too great for the set to handle.

For this reason, the pickups of old came with an external volume control. Although these units were nothing more than a potentiometer, with perhaps a capacitor across it, they were often given names to suggest otherwise. The "ELEC-TRU-TONE" was one such example – see photo.

The pickup connections to radio receivers varied depending on the manufacturer. Some used terminals while others used sockets. Some disconnected the radio section using a switch while others did not bother. With the latter arrangement, the set's volume control needed to be turned down to prevent radio signals from coming through and interfering with the pickup signal.

Early radiograms

The first radiograms made an appearance during the late 1920s and



Early pickups required a separate volume control because the radios of the day had their volume controls in the RF section of the receiver, not in the audio stage where it was needed. The unit shown here was made by Bosch.

these had a few variations too. Some had clockwork turntable motors while some were electric, or sometimes an electric motor was an optional extra.

These old radiograms still had the same volume control arrangements as before, with the pickup having its own external volume control. This control was usually mounted somewhere near the turntable. There was also an on/off switch and a speed controller.

It would appear that the radiogram idea wasn't all that popular at the time, as anyone who could afford to buy a radio would most likely already have a phonograph. A radio with a pickup was a much cheaper record playing option if you already had a turntable. However, a complete radio/record player in one would be far more convenient to operate.

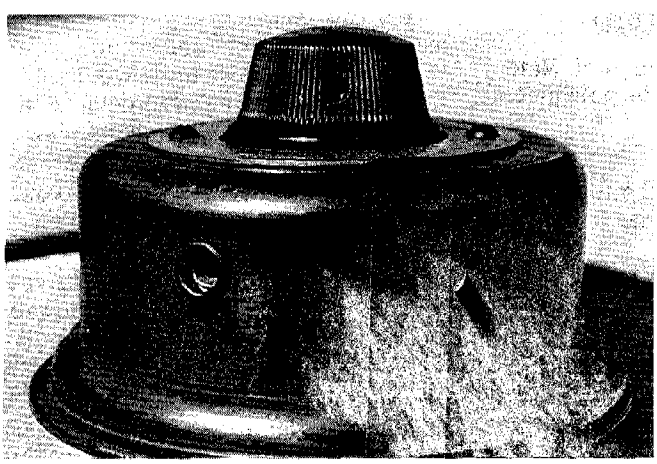
A few headaches

Any collector who finds an early radiogram with a lift-up lid has a really collectable item. If it is in poor condition, however, he may have found himself a few headaches as well, because items such as early turntable motors, pickups and volume controls can be difficult to locate and repair.

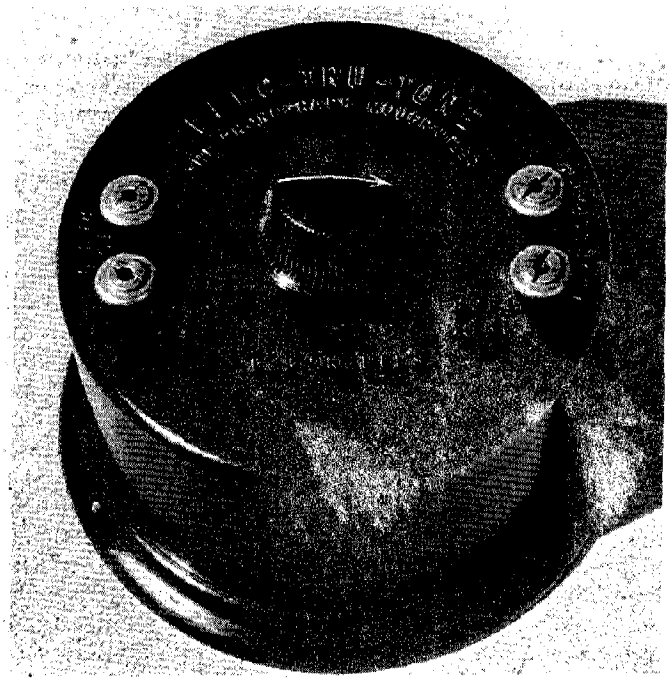
So far, we have described how records were played through a radio receiver. But strange as it may seem, there was a time when the opposite was true and some radios were played through a phonograph!

Back in the days when many radio receivers came only with headphones, there were problems as far as family listening was concerned. Enter the phonograph to the rescue!

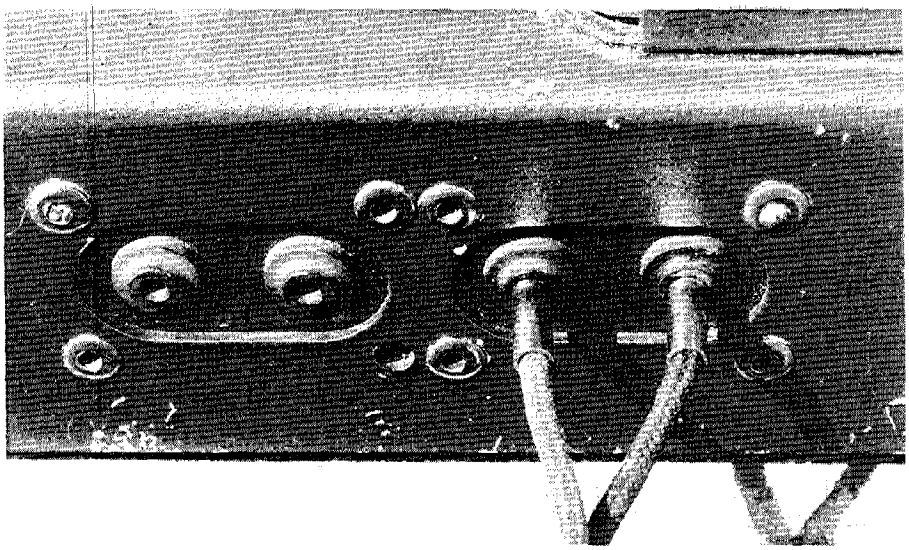
It was found that if a phonograph needle was placed on the earphone diaphragm, the earphone would acti-



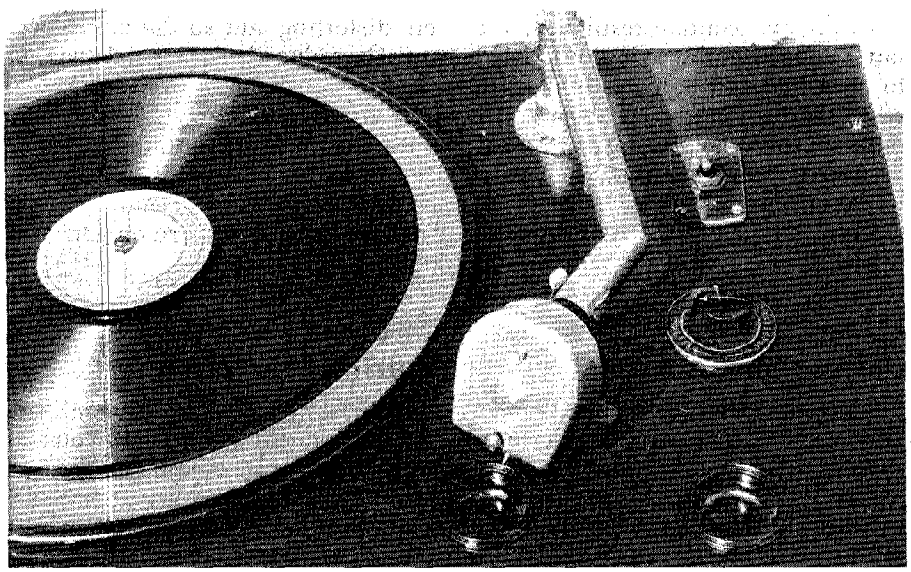
Above: this side view of the Bosch volume control clearly shows the sockets for the pickup connectors.



Right: this "ELEC-TRU-TONE" volume control is similar to the Bosch unit but the case is made of bakelite (the Bosch control's case is pressed steel). Note the four socket connections.



Shown here is the rear of an old AWA Duo Forte radiogram. The pickup plugs into the righthand sockets, while an extension loudspeaker can be plugged into the lefthand sockets.



The Duo Forte's turntable and pickup are crude by today's standards. To the right of the pickup arm is the turntable's on/off switch and speed controller. Once again, note the extremely heavy pickup and the lack of counterbalancing at the far end of the arm.

vate the diaphragm in the phonograph's sound head. As a result, the phonograph's sound horn would reproduce the radio program for all to hear. One can only guess at the volume level and sound fidelity of such an arrangement.

Of course, this would only work on an Edison type sound head, meant for vertical (hill and dale) recordings. If the sound head was of the lateral type, a special adapter could be bought (this adapter was originally intended to convert a lateral type machine to play Edison vertical cut records).

The invention of the phonograph preceded the first practical radio demonstration by 11 years. Although they both evolved separately for quite some time, the two eventually became interwoven. Radio technology was used to improve recording techniques and the improved recordings could only be heard at their best when played through a radio receiver.

It was therefore only logical that the record playing radiogram would evolve to become the centre of household entertainment and it remained that way for many years until the advent of television, modular sound systems and the compact disc. **SC**