

finger will sometimes show up a loose element. A slight ringing noise may be produced on tapping the valves, but this is normal. If tapping a particular valve results in crackling or sputtering, examine the socket contacts and examine the prongs.

#### Minor Defects.

**DEFECTIVE** socket springs are another source of noise. Socket spring contacts are made of phosphor, bronze or nickel silver. Such contacts are designed so that they exert pressure against the valve prongs. These springs may make good contact at the start and then later on develop poor contact for various reasons. Heat from a soldering iron may cause the spring to lose its "temper" and continual pushing and pulling the valve out of its socket may result in pushing the socket spring so far away that it does not make contact with valve prongs. Or the contact may be intermittent and we have another source of noise. Socket contacts and valve prongs should be cleaned if corrosion has formed or if they are dirty. Sand paper prongs and scrape socket prongs with a small pen-knife. Bend the socket prong with a pair of small nose pliers so that it will make good contact with the valve prong.

#### Volume Control.

If a scratching noise is heard on any station as the volume control is rotated throughout its range, the noise is due to the volume control and may be in the form of a defective resistance winding or poor contact between the rotating arm and the resistance winding. There may be an oxidised contact. Poor mechanical contact may be made by the contact arm being bent away from the winding. It can be bent with a small pair of pliers so that it makes firm contact. A dirty winding or an oxidised winding should be cleaned. First use sandpaper lightly and then apply cigarette-lighter fluid to the winding by means of a small toothbrush.

#### Defective Insulation.

**SPUTTERING**, hissing and frying noises are frequently caused by poor insulation. If a breakdown occurs between two points, noise in the receiver results. Poor insulation in a power transformer may cause flash-overs and sparks. A frequent offender is the bakelite terminal strip which generally carries all the metal terminals.

The presence of soldering flux and acid results in leakage between terminals and consequent noise. The terminal strip should be thoroughly cleaned and dried. If there is leakage due to the breakdown of the insulating material, parts of the strip have most likely been carbonised or charred. This may be scraped away with a knife. Dirt between posts at high potentials causes the same trouble and should be removed in a similar manner. Power transformers, choke coils, and filter condensers are the worst offenders in this respect since they are in the high voltage circuits. The rectifier valve socket should also be carefully examined for signs of leakage.

Failure of wire insulation may be caused mechanically. For example, if a high voltage wire is caught under a metal clamp or another wire which is tightened by a screw, the insulation may be broken though to such an ex-

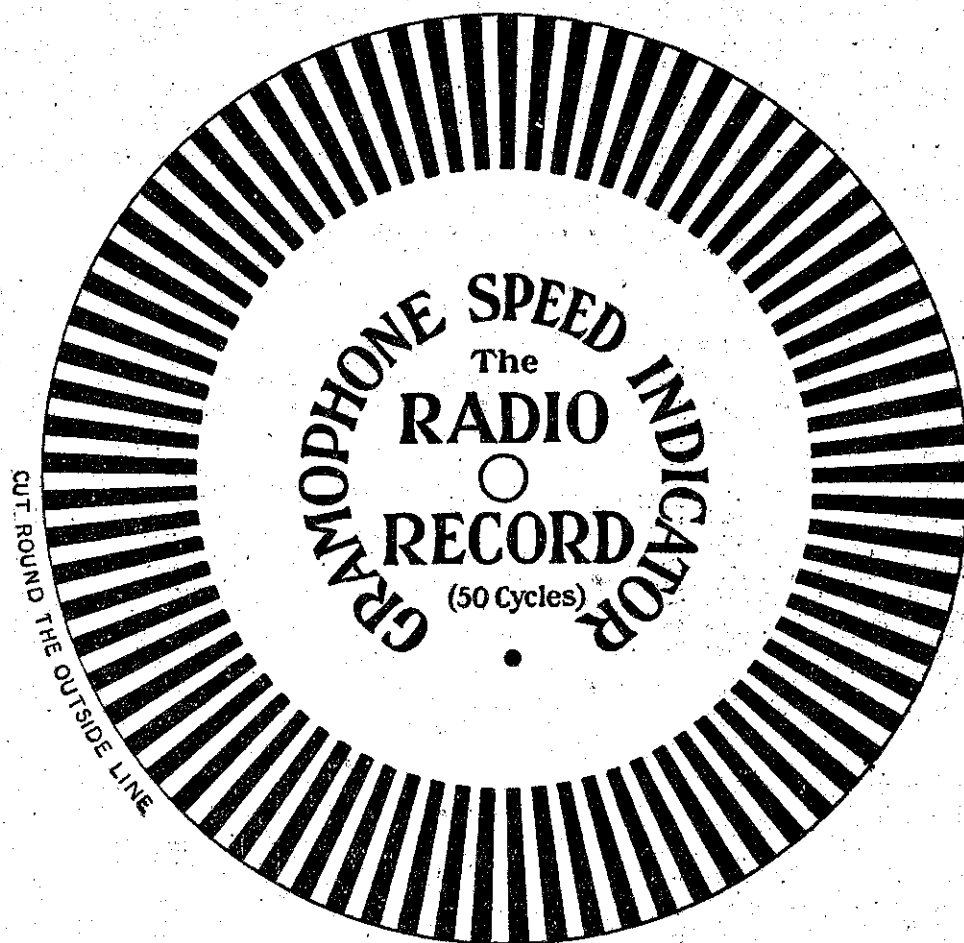
tent that there will be mechanical strain and the wire may ground intermittently. Examination of the wiring will show up these causes of noise trouble.

Variable condensers are often a source of noise. The plates may touch as the rotor is rotated and produce a clicking noise. Fine particles of dust between condenser plates will also cause noise and it is often very hard definitely to trace noises to the variable condensers. One should always clean the condenser plates of noisy receivers carefully. This is accomplished by drawing ordinary smoking pipe cleaners between separate plates of both rotor and stator plates.

#### Noise Due to Feed-Back.

Much has been written in regard to feed-back oscillations. We do not intend to go into this subject too deeply here as most constructors are familiar with the general procedure to be followed in correcting for undesirable regeneration.

When a set oscillates at radio frequencies, the characteristic squeal or whistle is heard. The pitch of this whistle, going up and down in scale as the variable condenser is rotated from one end of the dial to the other. In general, if we are investigating a neodyne set this means that the receiver must be neutralised. This same condition may also be caused by an unbalanced condition of the main tuning condensers in tuned t.r.f. receivers.



#### STROBOSCOPIC GRAMPHONE SPEED INDICATOR.

In response to requests we are reprinting this speed indicator from the 1930 Guide. Cut out the disc and mount it on cardboard. Place it on the gramophone turntable and set the motor revolving. When viewed under electric light the bars should appear stationary. Adjust the speed regulator till this is so.

Here is an easy method of neutralising. Obtain some drinking straws, which you can obtain at most sweet shops or chemists. Place a portion of one of the straws on one of the valve filament prongs then insert it in the

socket in which it operates. It is the usual practice to begin at the valve preceding the detector and work back toward the aerial stage. A broadcast or modulated oscillator signal at (Continued on page 29.)

## SILVER-MARSHALL RADIO M EXTRAORDINARY

These complete console receivers are now available. The receivers employ the most modern features in radio design, incorporating:—

FOUR SCREEN GRID BAND PASS  
SELECTOR, DYNAMIC SPEAKER,  
BUILT-IN AERIAL, FREE FROM  
"HUM."

Official S.M. franchised dealers for Wellington City

ELECTRICAL SUPPLIES, LTD.,  
37 LOWER CUBA STREET.