

How Needles Affect Tone

THE subject of needles is one of vital interest to the gramophone enthusiast, whether he be a constructor, experimenter or solely a listener. Considerable research work upon the subject is being done in England and many interesting and important conclusions are being disclosed. Under the heading of "Practical Points," the latest issue of "Modern Wireless" contains an account of some of the results disclosed by their research department in this respect. Some important conclusions are drawn in the article, and we reproduce portions herewith.

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No radio-gram enthusiast nowadays uses an ordinary steel needle more than once on a record which is of any value. The habit of using a steel needle for more than one side of a record has long ago been shown to be a very injurious one.

Many Types of Needles.

THE radio-gramophonist has an ample choice in the variety of needles which are marketed nowadays, and although the "loud," "medium," and "soft" descriptions of these articles apply more particularly to their use in an ordinary sound-box, such needles do give rise to different volumes of sound when employed in a pick-up—a constant degree of amplification being, of course, understood.

Look at the typical loud, medium and soft-toned needles. It will be seen that the loud-tone needle is comparatively



The top illustration shows the tapering point of the soft needle. It can be readily understood why this needle will have less effect on the grooves of the record than the loud needle shown underneath. The lowest photograph depicts a rusty needle seen through a powerful magnifying glass. Its effect on the records is quite apparent.

short and stubby, whilst the soft-toned needle has a thinner shank and a more gradually tapering point; the medium-tone needle, of course, effecting a compromise between these two extremes.

It is not merely the actual mass of the needle which governs the tonal volume of the reproduction, but its actual shape also. The thinner the needle and the more tapering its point the less will be the intensity or amplitude of its vibrations.

Effect of Length.

CONSEQUENTLY, the feebler will be the vibrations which are communicated to the pick-up mechanism or the diaphragm of the ordinary sound-box. And, conversely, the thicker the needle and the shorter and stubbier its point the greater will be the amplitude of its vibrations. Hence such a needle will exert a stronger effect upon the pick-up or sound-box.

It is not so generally known that various degrees of tonal volume can be obtained from one type of needle merely

by altering the distance the needle is allowed to protrude from its socket.

For instance, if a loud-tone needle is extended as far out of its socket as the needle-screw will permit, a considerably reduced volume of sound will be obtained at any given amplification of the pick-up system.

Sometimes when a maximum volume of tone is required needles of the collar type are used, the collar on the needle serving to increase its mass.

Examine the Points.

ALTHOUGH steel needles are very hard, they are fairly brittle.

Due to the brittleness of the needles, one or two of them may be found with their points broken away. It is a good plan to make a habit of running the finger over the point of the needle before use in order to feel if the point is intact.

Sometimes, also, a rusty needle finds its way into the box. The point of one of these is illustrated here, and from a glance at the photograph it will be obvious that such needles are unfit for use.

The Best Policy.

It is always the best policy therefore to examine, either by sight or by touch, every needle before it is used, so that record wear may be kept down to the minimum.

When wear does ultimately set in on the record it is always the outer playing grooves which show the first signs of wear by becoming scratchy. This is due to the fact that the tip of the needle never fits the track quite accurately at first.

Recorded Music

THERE are numerous recordings of the item to be broadcast by the Royal Dunedin Choir next week. The excerpts are all well known standard works, and listeners will be able to obtain almost any item on a record.

"Your Tiny Hand is Frozen."

THERE is a splendid Columbia record of this well-known excerpt from Puccini's famous opera "La Boheme." It is an electric recording of the great tenor Lomanto, who sings in Italian. The song places a severe test upon the artist, as it has many difficult passages and not a few sustained bars well up the scale, but the artist takes them all without effort or strain. The tone is remarkably clear and true throughout. The other song by the same artist is "Il Lamento di Federico," a song abounding in tender, sympathetic passages and working to a brilliant conclusion. It is a splendid record. (04095 12-inch blue-light).

Organ Solos.

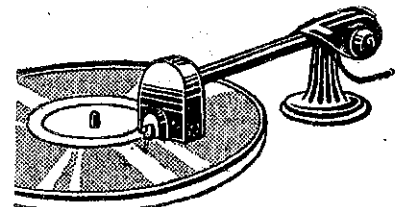
THE fourth item on the programme is a bracket of the organ solos, one of which is recorded on Columbia (Continued on page 21.)

The needle-point has to be rounded off slightly, and this "grinding in" is accomplished during the first few grooves of the record. However, wear at this portion of the record can be reduced considerably by getting into the habit of allowing the needle to run on the plain edge of the record for half a dozen revolutions or so, and then gently pushing it into the track.

The steel needle is a tried and trusted article. During the playing of an average twelve-inch record it has to traverse approximately 750 feet of playing grooves, and to bear upon its point a weight of anything from three to six ounces, which, in the former instance, represents a pressure of nearly twelve tons per square inch.

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The counter-balanced tone arm is shown in the above illustration of the Model 124A De Luxe. Ask your nearest agent for a demonstration.

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