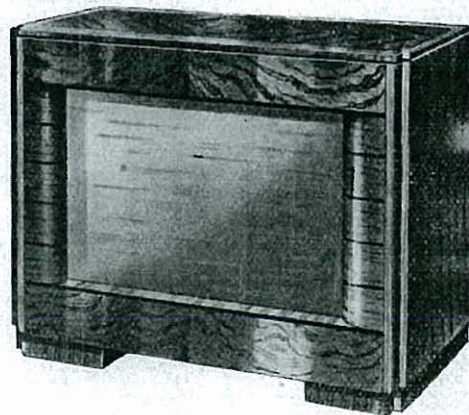


### The Pamphonic Loudspeaker. Model 521A. Price £20.

This new Pamphonic speaker is of the electro-magnet type. The dimensions are somewhat larger than the average: the overall diameter of the diaphragm is sixteen inches and the total depth from front to back is ten and a quarter inches. Careful design of the magnet has resulted in a magnetic flux density of some 17,000 lines per square centimetre. Such a high flux has a controlling influence on the excursions of the speech coil, more particularly at low frequencies, where its damping effect limits the mechanical movement which may otherwise become excessive. This damping also has the effect of minimising low frequency resonances. One has only to listen for a few minutes with the speaker operating at large volume level to realise how effectively controlled are the resonances. For it must be noted that despite the fact that the chassis is mounted in a totally enclosed cabinet (which, by the way, is not acoustically treated) there is little audible coloration of the lower frequencies either by wood or diaphragm resonances. Of course, the dimensions of the cabinet have been carefully chosen in relation to the mass of the diaphragm and of the surrounding air so that effective cancellation takes place.

This is one of the outstanding features of the speaker design as a whole. Admittedly, there is some increase in hardness of tone as the volume is increased, but there is little increase in artificial rotundity. The bass remains firm and definite throughout. A tympani roll as reproduced by this speaker is a roll and not one long blurred note wavering in pitch. Similarly in passages played by the double basses of a large orchestra as in the Berlioz *Symphonie Fantastique* the notes are distinct and well separated. The high frequencies, too, are well portrayed. Massed strings of a large orchestra are most impressive; they have such vitality and a naturalness that at times one can distinctly hear not only the bite of the bows on the strings in spiccato passages, one can hear the buzz of the strings themselves. In the matter of delicacy the speaker acquits itself well; even up to comparatively large outputs there is an attractive wispiness in the treble. The thing we missed most was any real suggestion of a three-dimensional effect. The cabinet in which the speaker is mounted



"Massed strings of an orchestra are most impressive."

efficient as it is, can hardly be expected to produce precisely the same effect as an infinite baffle. We have no doubt, however, that given the opportunity the speaker could give an excellent account of itself as regards spatial effect also.

It is quite obvious that much care in design and in subsequent manufacture has been lavished on this speaker. Mechanically the chassis is an admirable piece of work; clean and robust, its very appearance suggests efficiency. The illustration gives some idea of the physical design of the cabinet which, by the way, also houses the A.C. rectifying equipment. The external dimensions of the cabinet are  $24\frac{1}{2}$  inches wide;  $15\frac{1}{2}$  inches deep;  $23\frac{1}{2}$  inches high. It is finished in a most attractive walnut veneer.

Twenty pounds may seem a high price to pay for a loudspeaker but to the purist even this may seem insignificant compared with the attainment of an ideal.

#### Technical Talk

## THIS NEEDLE BUSINESS—III.

By P. WILSON

ANYONE who wishes to preserve his records indefinitely from wear has two alternatives open. He may keep them in a cool, dry atmosphere (or in a vacuum, if he is really mad) and only bring them out to be looked at, gingerly and exultingly, but never to be played. I sometimes fancy that that is what many of our Collectors do. Even then one cannot guarantee that the discs will not become pock-marked owing to internal defects.

Or he may use needles whose points will break down more readily than the record material. This, of course, is the same principle as having a fuse in your electric light circuit. In both cases it is a confounded nuisance when the fuse blows; but in both cases one can justifiably console oneself with the thought that it is better for the fuse to break down than for a more irreparable disaster to happen. Nowadays, I scatter appropriate fuses about my electrical equipment and I am never really worried when they break down: that is what they are there for! Why then should one get hot and bothered when a non-metallic needle breaks down?

The analogy can profitably be carried a stage further. Thus, every wise man inserts a fuse that will not break down for a slight overload above the normal, though on the other hand he is careful to see that he does not allow such an overload as will endanger the house wiring. Again, when the fuse in a particular circuit persistently blows he does not replace it by a hairpin, but rather asks himself what it is that causes the overload.

The art of using non-metallic needles without breakdown, therefore, lies in two things: first, the choice of a needle such

that all the pressure reactions that can reasonably be expected can comfortably be handled; and second, arranging that external conditions do not introduce unnecessary pressure reactions. The former condition is easily satisfied in these days. Doped fibres, or any of the better known round needles—B.C.N., Universal, IM, R.V.W. and the rest—have the required characteristics. A caveat should be entered, however, against such a material as bone or ivory which is too hard for use as a safety fuse. The second condition demands precisely the same mechanical features that we have previously been discussing in this series: a well-shaped point, low driving-point impedance of pick-up, a dynamically balanced turntable so as to avoid side-pressure, a motor with a strong, even pull, a carrying-arm with a free transverse and a free up and down motion but with a substantial inertia in both directions. (Note this distinction; it is important. Mass in the carrying-arm is an advantage up to a certain point; what that point is depends directly on the driving-point impedance of the pick-up. Friction in the bearings, on the other hand, is always a disadvantage).

Two other external features, of course, are also important. The first is that the records should be clean since dust may actually embed itself into the material of a non-metallic needle and thus act as an excellent record abrasive. The other feature I have left to the last because it is even more important in connection with quality of reproduction. It is that the pressure between needle and record should be nicely adjusted.