



**SECOND TYPE OF IMPEDANCE-MEASURING DEVICE** was developed by Josef Merhaut. It differs from the apparatus illustrated on the preceding page only in the way that the flow stimulus into the mouthpiece is controlled. Here the acoustic stimulus produced by a loudspeaker moves an aluminized Mylar diaphragm that in turn pumps air into the mouthpiece. The diaphragm also acts as one electrode of a condenser microphone to produce a signal pro-

portional to the diaphragm's velocity and thus proportional to the oscillatory flow of air at the mouthpiece cup. The velocity signal adjusts the attenuator in order to maintain constant excitation at a particular frequency. The pressure response of the instrument is monitored by a microphone on the cup side of the diaphragm. A phase meter shows the relation between the phase of the input stimulus and the phase of the pressure response of the instrument.