rises. Partials 1, 3, and 5 start with even strength at the bottom, and No. 3 retains a position just under the fundamental up to the beginning of the highest octave. No. 5 falls slowly in importance. No. 2, after it comes in, rises until in the highest tones it occupies the second position; for these tones the strengths of the partials arrange themselves in the order of the partial numbers. Over the range of the instrument, partials Nos. 4 and 6 rise and then fall. Partials below No. 10 do not appear above the lowest register. In the transition range above it, Nos. 1 and 2 are abnormally weak, but 3, 4, and 5 are not much affected.

These results agree on the whole, but not in detail with the work of McGinnis, *et al.*[2] They found some twelve tones in which the fundamental is not listed as "very strong," while we had only two in which it was not the strongest of all. The partials which they list as medium, or weak, do not agree at all closely with ours.

usual *B*-flat clarinet, going down semitone. It has a full Boehm key sy

There is a widely held belief t instruments owe their individual qua presence of formants. A formant ma as a region of frequency such that e tone that falls within it is relativel matter what fundamental it belongs reinforcement could hardly be caus action but resonance. The resonanc column are fairly sharp, especially quencies, if we define the sharpness a of the response in semitones. It is d single sharp resonance could exert effect on tone quality; at least, th happen in violin tones.

A search was made for formants instruments here considered, witho Looking over the clarinet analyses, instance, a strong partial No. 11 for 196 c.p.s., and the frequency of th

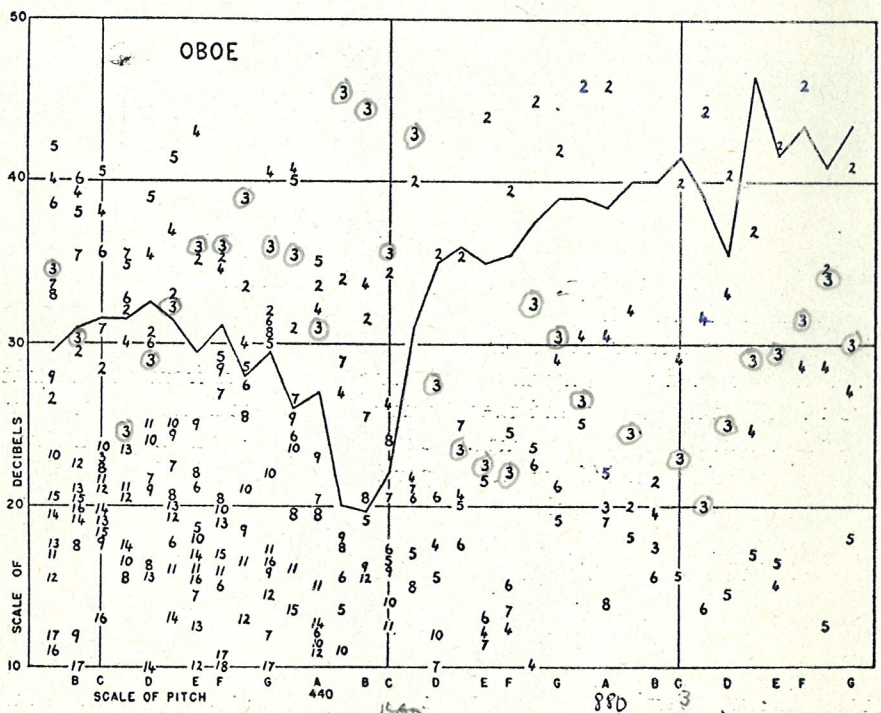

FIG. 2.