THE ACOUSTICAL CONSULTANT

by R.J. Weisenberger

There are those who may dismiss my approach to organ building as too scientific and overly complicated, but, from letters I have received and from conversations I have had, I have seen that there are also those who appreciate more than just the traditional aspects of the art. There are a growing number who are beginning to show interest in such aspects as the relationship of cut ups and scaling to pressure, harmonic development, acoustical output, etc.

In a recent question and answer column (Feb./Mar. '81) someone asked Lance Johnson if there was any way to tell from the mouth or scale, what wind pressure certain pipes are designed for.

Lance gave an answer that there is no way to determine upon inspection of mouth cut ups, what wind pressure is proper. He also said that scaling will not tell you much about pressure either, and that larger scales usually mean less harmonic development and more power.

At first glance this might appear to be in direct conflict with my writing that pipe performance can be accurately predicted when the design parameters are known. But, on closer inspection, the reason for Lance's answer should become apparent.

Lance mentioned that large toe holes could indicate low pressure while small ones could indicate high pressure. This is the big point.

It is true, that by reducing the toe holes and flue area, low pressure pipe designs with low cut ups can be made to operate at much higher pressures — but the point is that this cannot give such pipes the performance characteristics of true high pressure pipe designs. They will still perform much the same as they would if the pressure were lowered and the toe holes increased, with the exception being increased wind noise.

In designing pipes there are certain flue widths that will give optimum performance with the least wind pressures. Such flues typically have slits from 1/16" to 1/32" wide (depending on the size of the pipe). To design pipes to predictably perform at a given pressure, this factor must be taken into account, as well as the size of the toe hole.

In all of the pipe designs I have written about so far, I have assumed an efficient flue design, where the toe hole area is equal to or greater than the slit area.

For example, if a pipe has a slit area of 1/16" x 4", this would be a total area of .25 square inch. To choose a toe hole area equal to this, you would use the formula for the area of a circle ($A = \pi r_2$).

Transposing the formula to find the radius:

$$r = \sqrt{\frac{A}{\pi}}$$

$$= \sqrt{\frac{.25}{\pi}}$$

$$= \sqrt{\frac{.25}{3.1416}}$$

$$= .282$$

Since the diameter is twice the radius, the diameter would be 2 x .282 or .564" or slightly larger than 9/16".

Any toe hole smaller than this would require raising the pressure above what I can predict by knowing the scale of the pipe and cut up alone.

However, at this increased pressure, the pipe would again perform essentially the same as it would have at the lower, predicted pressure, with possibly a slight increase of wind noise.

What I am saying is that if *all* the design parameters of a pipe are known, its performance characteristics can be accurately predicted.

Apparently there is a need for various organ builders to agree on some standards so that organ building will no longer be based on the conflicting viewpoints of past builders but on the underlying factual information common to all builders designs.

I have upcoming projects in this series that will show those who attempt them, that it is indeed possible to build pipes that will perform within close tolerances to predictable results. (One such project appeared in the Feb./Mar. '81 issue.)

I also offer a series of pipe performance graphs that are available on request. □

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is a perfect example of slapstick comedy. Here it all is; mistaken identity, accidental involvement, frantic efforts to get away — a feast for anyone who enjoys fast, inventive agitated music with a big chase sequence to wind it all up. I love *Cops*.

When all the ten minute segments have been scored and recorded they are assembled into the complete film — being sure that all the musical segues make sense. It is most important that movie music not only fits the scene but makes musical sense too. Dramatic changes of key and abrupt shiftings of style — so long as they fit — help keep the listener from tiring of the sound. Wide dynamic variations and careful adjustments of tone color are also most important — bearing in mind that the picture comes first and the music is there only to heighten the dramatic impact.

The advent of sound did not bring an end to movie music. It only changed the way it is used. Instead of always being there in the clear it dips down under dialogue or stops completely for dramatic effect. Look at the impact of the music from *The Sting* and *Star Wars*. The same thing was true in the days of the silents. Theme songs like "Jeannine I Dream of Lilac Time" or "Charmaine" live as classics and are heard today not as relics but as examples of good song writing.

Scoring and recording music for Blackhawk films is one way of preserving the kind of music we were playing during the silent era. By 1930 silent films were history. The screen had found its voice. But in offering silent movies with authentic organ accompaniment I feel that we are not dredging up old relics, but are offering a kind of entertainment that still has tremendous impact and vitality — due to the quality of the writing, directing and acting of the talented people involved. Then there is the added dimension of music that is original, exciting and dynamic in a way that only silent movie music can be. □