The Theatre Organ and its Tonal Design

. . . *G. Edgar Gress*

When the Rudolph Wurlitzer Manufacturing Company bought out the business and patents of the bankrupt Robert Hope-Jones in April 1910, an interesting chapter in the history of American organ building was opened. Neither party could foresee just how and when it would end, much less what would be contained in the pages between. But in 1943, when Wurlitzer liquidated its pipe organ department, over two thousand of its instruments all over the world gave evidence that something had indeed been started in 1910. Moreover, several other builders had taken up the tonal mantle of Hope-Jones. Though none of these ever seriously threatened Wurlitzer's vast output figures, many—such as Marr & Colton, Kimball, Barton, and Robert Morton, as well as Compton and Christie in England—built organs of excellent quality. However, it was the Wurlitzer company which most thoroughly exploited the new tonal ideas.

The many ingenious inventions of Robert Hope-Jones are too well-known to recount in detail here; but among them may be mentioned countless features of the modern electro-pneumatic organ action, second and pizzicato touch, the unit system of tonal design, the extensive use of percussion tone in the organ, and a whole family of radically-voiced stops on high wind pressures. At any rate, almost all the distinctive features of the Wurlitzer theater organ were the work of this man—not to mention also a number of developments in the communications field, a new type of storm warning signal used by the Canadian Government, and a clever new method of committing suicide, which he himself unfortunately saw fit to use in 1914.

While Hope-Jones's inventions were originally conceived as improvements in the field of legitimate organ construction, it was left to the Wurlitzer company to adapt them to the needs of a swiftly-growing new market: the motion picture theatre. Movies in those days were all of the silent variety (indeed, the appearance of talking pictures in 1927 sounded the death knell of the theatre organ). Orchestral music to accompany them had been tried and found wanting, and it was left to the versatile unit organ to fill the gap. After all, an orchestra was tied to its score, but not so the resourceful organist who was free to improvise a running accompaniment always in keeping with the mood of the flickering images on the screen. Later the organ was used extensively as a solo instrument and so found its way into the movie palaces of the late twenties, as well as into radio stations, ballrooms, and other places of entertainment.

Artistic Value

It is unfortunate that the present-day organist usually has a low regard for the artistic merits of the theater organ and its music. While, to be sure, in many cases such opinions were more than justified, we venture the observation that even today too much artistically valueless music is heard—in many cases played by the very same critics who consider the theatre organ beneath their dignity. To be sure, the latter instrument was useless for the performance of most of the traditional organ literature, which being largely polyphonic in texture and not relying so heavily on the element of tonal color, requires an instrument designed on the basis of contrasting manual and pedal flute and principal choruses. But certainly the careful tonal work of Wurlitzer, and less yet the excellent playing of such men as Reginald Foort, Jesse Crawford, Stuart Barrie, Richard Leibert, Quentin Maclean and many others can not so lightly be cast aside. Entertaining, often highly orchestral, and yet more often extremely romantic it was to be sure, but nevertheless always carefully thought out and eminently musical. To hear such an artist as Emil Velazco (who had studied composition with Leo Sowerby) improvise an accompaniment to a silent picture was said to be a revelation, and we are fully prepared to believe it.

Now exactly what were the tonal resources demanded by this new school of organists? They can be summarized as follows:

1. Highly characteristic primary tone colors capable of being freely mixed to provide a wealth of subtle effects.
2. The extreme flexibility offered by the unit system.
3. Rapid and responsive key, stop, and expression control.
4. Second-touch keyboards, making possible hitherto impracticable uses of counter-melodic effects.

The tonal palette of the theatre organ may be conveniently divided into two distinct classes: foundation stops, and color-producing stops. The foundation stops provide a smooth, sonorous sub-structure with which the various registers of the color-producing group blend to produce the rich, many-voiced ensemble effects typical of the theatre organ.

At this point it must be clearly understood that these diverse elements are perfectly capable of blending into a homogeneous whole, previous writers to the contrary notwithstanding. The tonal glue which makes them cohere is the free use of the tremulant or more correctly, many tremulants beating against each other in such a way that the regular, mechanical pulses of each are lost to the ear in the vibrant sound resulting. In theatre playing, the normal use of the tremulants is to keep them on all the time, taking them off only for special effects. Moreover, every rank in the organ will be affected by one tremulant or another, and many of the more important stops will have ones of their own.

This free use of the tremulant may not seem quite so

vulgar when it is observed that many other instruments —for example, the violin or the human voice—depend to a large extent on the vibrato for their most beautiful string bowed without the vibrato, the greater part of and characteristic tones. Like a high-pitched violin the theatre organ's voices tend to sound quite metallic and unsympathetic without a fairly heavy tremulant.

With this factor in mind, let us now proceed with our classification and description of the instrument's tonal resources. We shall then be in a position to consider just how they are disposed between the various divisions of the organ.

Class I. The Foundation Stops.

A. *The Tibia family.* "Sobbing Tibia" tone is to the theatre organ what principal choruses are to the legitimate organ. It can be described as extremely hollow, smooth and pervading flute tone.
B. *The Diapason family.* The theatre diapason is much fuller and smoother than the traditional principal. Usually the range below is composed of diaphonic (valvular reed) pipes, which speak much more promptly than low-pitched flue pipes.
C. *The Flute family.* This group also includes the dulciana and quintadena, and provides neutral foundational accompaniment tone.
D. *The Smooth Reed family:* Tubas, Oboe Horn, French Horn. These stops are characterized by sonorous horn tone.
E. *The Full-Toned Percussions:* Piano, Marimba, and Harp Chrysoglott.

Class II. The Color-Producing Stops.

A. *The String family:* Theatre strings are generally of very keen intonation.
B. *The Brass family:* Trumpet and English Post Horn. The theatre organ trumpet has resonators of spun brass, and is a close imitation of the orchestral trumpet played *mf*. The Post Horn is a development of the Hope-Jones "Double English Horn" producing a loud, tearing sound closely resembling that of the orchestral trumpet played *ff*. It is constructed with large "duckbill" shallots and thin tongues, and serves as a dominating solo reed.
C. *The Orchestral Reed family:* Clarinet Orchestral, Oboe, Cor Anglasis, Saxophone. The Wurlitzer reed voicers turned out some amazingly characteristic stops in this group. Their Clarinet was pretty much standard. The Saxophone was a quarter-length Brass Trumpet. The Orchestral Oboe was $\frac{2}{3}$ length, of very small scale, and had Kinura type tongues and shallots. The Cor Anglasis was like the Orchestral Oboe, but of larger scale and of $\frac{1}{3}$ length. An example appears at the Fisher Theatre, Detroit, and is an excellent stop indeed.
D. *The Piquant Reed family:* Kinura, Krumet, and Musette. These bear a striking resemblance to the *schnarrwerk* of the old German baroque organ. The Kinura, having thin tongues and shallots and almost no resonators, produces a sharp, buzzing sound not unlike that of the jews'-harp. The other two stops are modifications of the first. The Krumet has full-length medium-scale cylindrical resonators and emits a hollow, wailing tone; the Musette has eighth-length cylindrical resonators and is probably the best blender of the three.
E. *The Vox Humanas.*
F. *The Thin-Toned Persussions:* Xylophones, Bells, and Chimes.
G. *The Non-Tonal Percussions:* Drums, Traps, and various sound effects for silent picture accompaniment.

Organization

Now that we have classified and described the contents of our tonal paintbox, the next step is to see how they are organized into a useable pattern. After an examination of several hundred instruments, the writer believes that a unit organ is best balanced tonally if its pipe work is distributed as follows: 10 per cent Tibias, 10 per cent Diapasons, 10 per cent Flutes, 20 per cent Strings (half unisons and half celestes), 10 per cent Smooth Reeds, 10 per cent "Brass," 15 per cent Orchestral Reeds, 5 per cent Piquant Reeds, and 10 per cent Vox Humanas. Of course few instruments will follow these percentages exactly; but an ideal scheme of 20 ranks will be given below.

In the so-called "straight" organ, each manual controls a separate department; if enclosure in swell boxes is desired, no problems arise as to what should be contained in each. However, in the case of the unit organ, in which the entire instrument is treated as a single pool of tonal material made playable from several manuals and pedal, any division of this material into separate chambers must perforce be an arbitrary one. In his early organs, Hope-Jones used a system of five chambers patterned after the instrumental sections of the orchestra: Foundation, String, Woodwind, Brass, and Percussion. Such a scheme, however, had two serious defects. In the first place, it was impossible to control separately the volume of solo and accompaniment parts when both were played on voices of the same tonal family. Secondly, the instrument pretty much had to be located in one place, whereas most theatre organs were installed divided on opposite sides of the proscenium. It would not do to have the listeners near one side of the auditorium hear nothing but string and woodwind tone, while those on the other side were bombarded with all the foundation, brass, and percussion stops. The logical solution was to provide a representative selection of voices at each side of the theatre. This soon became standard practice.

Probably nine out of ten Wurlitzer organs are found divided fairly equally into Main and Solo chambers located on opposite sides of the building, and in the few instruments large enough for a more elaborate scheme, two more chambers are added—a Foundation to go with the Main, and an Orchestral to share the other side with the Solo. Although the tendency was to place the more colorful voices in the Solo and Orchestral chambers and the tones of the accompanimental material in the Main and Foundation, the distinction was never very clear-cut.

Sample Specification

At this point in our discussion a sample stoplist may profitably be presented.

Following the above principles in an organ of medium

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TONAL DESIGN OF THEATRE ORGAN

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size—20 ranks—we arrive at this scheme as a fair example of balanced design:

Chamber	Rank	Wind Pressure (inches)	Borrowed At:	Number of pipes:
S	Solo Tibia Clausa	15	16′-8′-4′	85
M	Tibia Clausa	10	Tc 16′-8′-4′-2 2/3′-2′	85
M	Diaphonic Diapason	15	16′-8 -4′	85
M	Horn Diapason	10	Tc 16′-8′-4′-2 2/3′-2′	97
M	Concert Flute	10	16′-8′-4′-2 2/3′-2′-1 3/5′	97
M	Flute Celeste	10	Tc 8′-4′	61
M	Salicional	10	Tc 16′-8′-4′-2 2/3′-2′	85
M	Voix Celeste	10	Tc 16′-8′-4′	73
S	Violin	10	16′-8′-4′	85
S	Violin Celeste	10	Tc 16′-8′-4′	73
S	Tuba Sonora	15	16′-8′-4′	85
S	Trumpet	10	Tc 16′-8′-4′	73
S	English Post Horn	15	Tc 16′-8′	61
M	Oboe Horn	10	8′-4′	73
S	Saxophone	10	Tc 16′-8′-4′	73
M	Clarinet	10	16′-8′	73
S	Cor Anglais	10	Tc 16′-8′	61
S	Musette	10	Tc 16′-8′	61
S	Solo Vox Humana	10	Tc 16′-8′-4′	73
M	Vox Humana	6	Tc 16′-8′-4′	73

Percussions:

M: Chrysoglott and Vibraphone; set of traps and effects.[1]
S: Chimes, Xylophone, Glockenspiel and Orch. Bells, Sleigh Bells, Marimba and Harp.
Unenclosed: Piano & Mandolin, Master Xylophone.

Console Layout

One matter yet remains: that of the organization of manuals and registers at the console. The Wurlitzer scheme, from bottom manual to top, was as follows:

I. *Accompaniment*—providing an equipment of stops, principally at 8′ and 4′ pitch, for accompanimental purposes. The drums and traps play exclusively from this manual and the pedal. A number of solo registers at 8′ pitch appear on the second touch.

II. *Great*—the ensemble manual, commanding the entire tonal contents of the organ, and useful for solo or accompanimental purposes as well. A wide selection of stops appears at 16′, 8′, 4′, 2′ and mutation pitches; also the full complement of tonal percussions.

III. *Bombarde*—playing the dominating solo voices of the instrument at 16′, 8′, and 4′ pitch.

IV. *Solo*—providing a collection of the solo possibilities of the organ, chiefly at 8′ pitch, as well as a group of percussions.

V. *Pedal*—equipped with a group of appropriate 16′ and 8′ stops useful in playing the bass line of a composition, and also operates exclusively the Cymbals, Bass Drum, and Kettle Drum on either first or second touch.

In a three-manual instrument the Bombarde would be omitted, and in a two-manual organ the Solo would also be left out, the Great, however, taking its name. Thus a two-manual's keyboards are named Accompaniment and Solo, though the Solo is really more like a Great.

As must be obvious, couplers are of little use in an instrument in which virtually every voice plays at several pitches on each manual and in the pedal, and so even in large theatre organs few of them are really needed except for sheer playing convenience.

And so we come to the end of our discussion. We have traced the development of the theatre organ, defined and classified its tonal equipment, and seen how its resources are organized for action.

The writer hopes that this brief treatment will be of use to designers of unit instruments and will aid them in achieving well-organized tonal schemes. The importance of such organizations cannot be over-estimated. On them depends whether an organ will easily do what its player wants it to do, or whether it will be an individualist with a one-track mind, suitable for specialized use only and constantly frustrating the attempts of an organist to use it effectively in the performance of all types of music.

[1] The writer looks with disfavor on the usual practice of locating all the non-tonal percussions in the Solo chambers. After all, these stops are used chiefly with the accompanimental part in playing and are more easily controlled if located in the same swellbox as the accompanimental flutes, strings, etc.

FATHER OF THE THEATRE ORGAN

(*from page 7*)

alities might expect. Hope-Jones was hired as a salesman according to Mr. Skinner, but that title could scarcely have described Hope-Jones's estimate of himself. One incident will illustrate. Skinner was chosen to build the organ at St. John's Cathedral, New York, but on the understanding that Hope-Jones would have no part in the project. Technicalities held up delivery to Skinner of the contract, but he wired the good news to the factory and then took the train to Boston. When he arrived the next day he read in the papers that the contract had been given to the Skinner Company because of the admiration of the cathedral authorities for the work of Hope-Jones. Skinner was not willing to concede any virtue whatever, and very little originality to Hope-Jones's work. According to him the Skinner magnet and electric action were taken over by Hope-Jones who claimed them for his own, and the suitable bass was invented by Skinner to comply with one of Hope-Jones's contracts.

Hope-Jones brought in three contracts while with Skinner. The last was for Park Church, Elmira, N. Y. and with it, the curtain goes up on the real story of the Hope-Jones organ, and of his own colorful, fascinating and highly controversial career in the United States.

(*To be continued*)