Part II - Leslie, Westinghouse, Hancock

"--o-" Guide

by Deane H. Ellsworth

In the first part of the two-part Guide, Nathan and Airchime horns were described. Credit was given to mechanical engineer R. E. Swanson for having introduced the first true chime horn for railway locomotives in 1949, subsequently manufactured by the Nathan Company of New York. Swanson's horn was not, however, the first vibrating-diaphragm air horn by any means. Probably Westinghouse had the first considering that they put the air brake system on locomotives. It is noted that the first horns of Westinghouse, and those of the Leslie Company, were single-note "honkers", and both companies offered special brackets for combining two or more of the honkers to make a "chime" horn. Swanson invented a chime horn which could be reduced to one of several single noters, and therein lies the distinction awarded his invention. By 1951, the Leslie Company of Lyndhurst, New Jersey --now the major air horn manufacturer in the U.S., located at Parsippany, New Jersey--had adopted this convention also, and had introduced a chime horn and series of derivatives called the Supertyfons.

Leslie is no stranger to the students of railroading. Full page newspaper advertisements in 1892 displayed the Leslie "Patented" steam-rotary snowplow; certainly one of the first of its kind in the world. By 1925, Leslie had developed the Type-A Tyfon whistles (actually diaphragm horns) for marine, industrial, and railway use. Their A-125 and A-200 single-noters were--and still are--two of the most popular horns ever sold. Brackets for combining single-note Tyfons appeared in the late 1940's, and some very interesting and unusual chord combinations were cataloged.

The Leslie chime horn, the Type-S Supertyfon, was ready by 1952 in competition mainly with the Nathan M3 and M5. Unlike all other horns, though, the Supertyfons did not have to be "voiced"--diaphragm tensioning--before leaving the repair shop, and this gained the immediate approval of the railroads' mechanical departments. Equally popular was the fact that all bells of a Supertyfon horn used the same size diaphragm. Nathan, the main competitor in the air horn market, hastened to redesign their product to include such features. It is an interesting sidelight that the prototype Supertyfon of 1952, the S5D, sounded exactly the same fundamentals and chord as the Nathan M5 introduced three years earlier.

The timbre of the Supertyfon horns tends to be trombone-like, and it lacks some of the rich overtones of a Nathan M or a Westinghouse horn. A relative comparison of timbres can be seen with the following diagram:

Hancock "H"	Nathan "M"	Nathan "P"	Westinghouse "E"	Leslie "A"	Leslie "S"

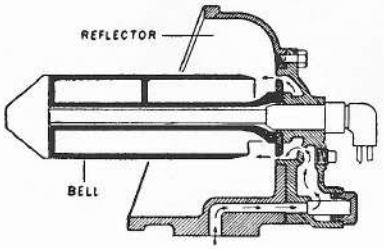
Flute ← Trumpet → Trombone

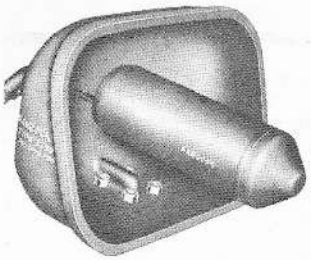
In terms of "as heard" sounds, Supertyfons have an odd propensity for squealing; a characteristic apparently exclusive to this horn series. Whether caused by contaminated supply air, worn diaphragms, or whatever, harmonic overblowing of one or more bells of a Supertyfon horn is often encountered

The Westinghouse Air Brake Company (WABCO), headquartered at Wilmerding, Pa., had multi-toned horn configurations available well before 1949. These were built up from single-note honkers in most cases using special dual- and triple-mount brackets. Although earlier applications of the popular E2 honker, and several of the two-bell AA varieties were extensive, applications of the three-bell horns were apparently quite rare. Westinghouse has never had a large share of the locomotive air horn market.

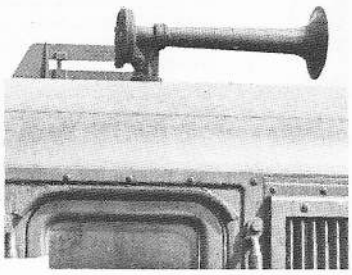
The Hancock Manufacturing Company, now a division of Manning, Maxwell, and Moore, is no stranger to railroading either. Their 18", three-chime "steamboat" whistles, for example, graced many a steam engine of the UP, SR, and many other roads. A little redesign of their steam whistles resulted in the type 4700 air whistle for use on diesels and electrics. The whistles enjoyed great popularity with railroads operating in territory where the melodious tone of the whistle was just right, and where noise abatement was desirable. The 4700's became virtually the signature of the intraplant yard goats at steel mills and factories. No longer manufactured today, the 4700 remains still in service, a reminder of the extent to which the industry went to gain public approval of the switch from steam to diesel. With the increase in public awareness of environmental noises, perhaps these beautiful whistles should be reissued.

With the Hancock whistle, this treatise on modern horns and whistles for railway locomotives is concluded. This could not be more than a very brief look at specifically the "chime" types, and thereby limited to North American railway practice. A similar listing of single-note honkers and two-bell horns would take as much more space, and the dozens of standard steam whistles and scores of variations would require another installment. Thus, the line is drawn here, and these other subjects shall be saved for another time.

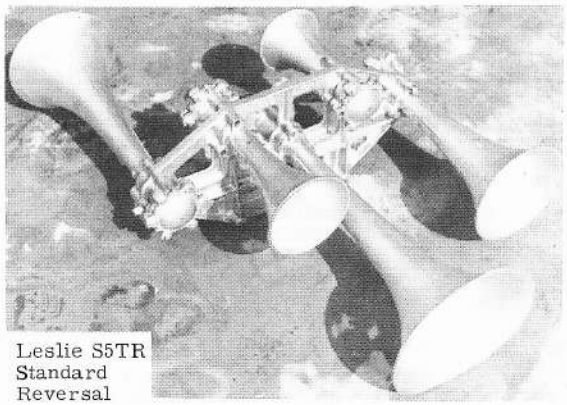




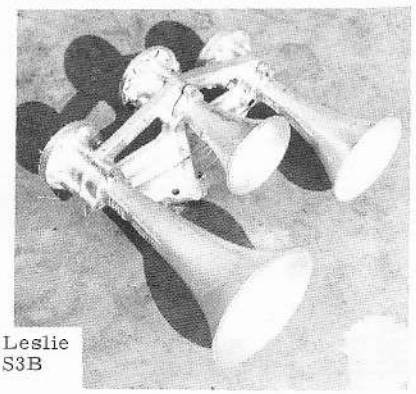
Hancock 4700



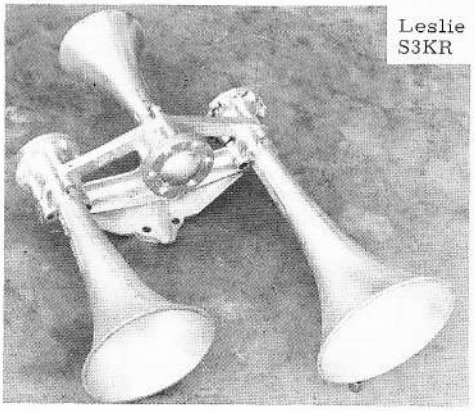
WABCO "E"



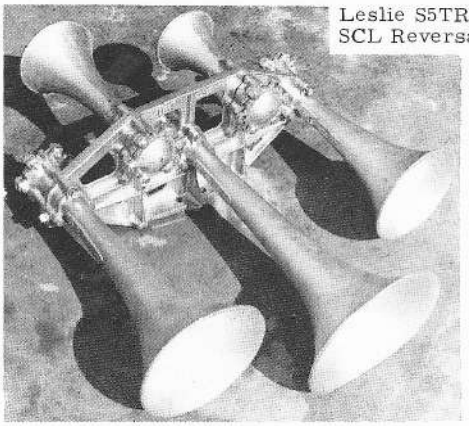
Leslie S5TR
Standard
Reversal



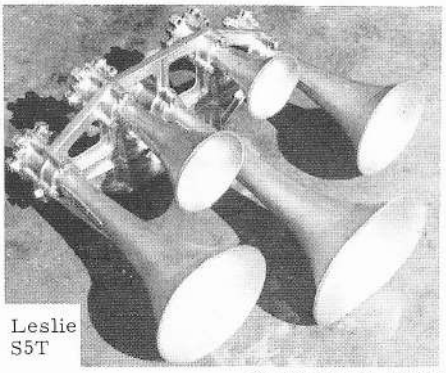
Leslie
S3B



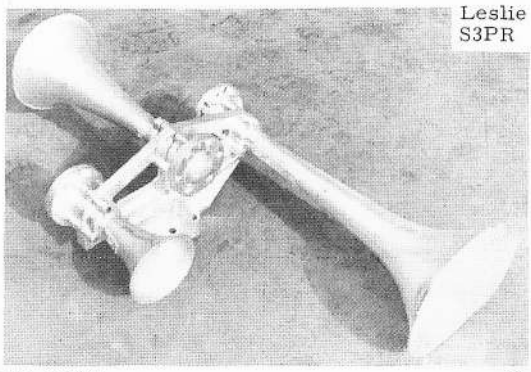
Leslie
S3KR



Leslie S5TR
SCL Reversal



Leslie
S5T



Leslie
S3PR

Visual Spotting Features

Leslie Company
403 Jefferson Road
Parsippany, N. J. 07054

Leslie "Tyfon" A-series

1. Rugged, yet relatively streamlined appearance.
2. Bells are of moderate length and well-flared at ends.
3. Diaphragm heads are of one of two diameters and are not cast integral with bells.
4. End caps are flat but have 4 "half-moon" projections at perimeter.
5. Diaphragm heads of multiple-tone Tyfons are not in the same vertical plane.
6. Each bell forms its own mounting bracket.

Leslie "Supertyfon" S-series

1. Rugged, yet relatively streamlined appearance.
2. Bells are long and well-flared at ends.
3. Diaphragm heads are the same in diameter for all bells and are not cast integral with bells.
4. Pre-1970 horns have mounting tabs cast at the periphery of caps which mate with similar tabs on heads. Post-1970 horns have no tabs as such. Caps are attached to heads with machine bolts.
5. Heads and caps are in the same vertical plane.
6. All multiple-tone Supertyfons have mounting brackets of open, truss-frame construction; a key to quick identification of these horns.

The first two digits of the fundamental of a given Supertyfon bell are cast into the side of the bell. For example, the S-55 bell has "55" cast at both sides in the horizontal plane indicating that the bell fundamental is 554 Hz.

The catalog designations for Leslie horns are somewhat involved as there are so many variations of a given horn offered by the company:

Tyfon Designation (typical):

A - 125 - 200 - 3 H

A - 125 - 3 E

- A: Air Horns
- 125: Size or Sizes of Diaphragms in mm.
- 3: Number of Tones
- E: Code for Applicable Chord

Supertyfon Designation:

S L - 5 T - R F

- S L: Prefixes
- 5: Number of Tones
- T: Code for Applicable Chord
- R: R = Bell(s) Reversed
- F: Suffixes

Prefixes:
- S - Supertyfon
- L - Low profile base; 3-, 4-, & 5-chime
- U - Very low profile base; 3-chime
- M - Low profile base; 2-chime

Number of Tones: 2 through 5

Code for Chord: See Guide

Suffixes:
- R - Bells are reversed. Leslie does not indicate which bells are pointed to ward the rear of the configuration; any number of bells may be reversed on the mounting bracket.
- F - All bells fitted with largest (0.125") orifices.
- O - Positions of bells on bracket differs from standard horn arrangement.
- J - Special, very narrow mounting bracket.

Because of the several possible listings for the same type of Leslie horn, only the bare designations are used in the Guide. For example, the Supertyfon described above is shown as the S5TR.

Westinghouse Air Brake Company
Wilmerding, Pa. 15148

WABCO "Pneuphonic" E-series

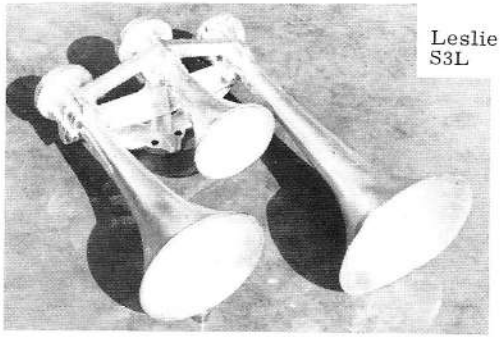
1. Rugged, yet relatively streamlined in appearance.
2. Bells are long and well-flared at ends.
3. Diaphragm heads are of different diameters for each bell, and heads are not cast integral with bells.
4. Heads and end caps are not in the same vertical plane.
5. Each bell forms its own mounting bracket.
6. The two outer bells angle away from the center bell 3° each in the horizontal plane; a key to quick identification of these horns.
7. End caps are flat but have 4 rectangular projections clustered at the midpoint of each cap for use in unthreading caps from heads.
8. No 4- and 5-chime models offered.

RESEARCH SOURCE AND PHOTOGRAPHER:
Stephen J. Hoskins

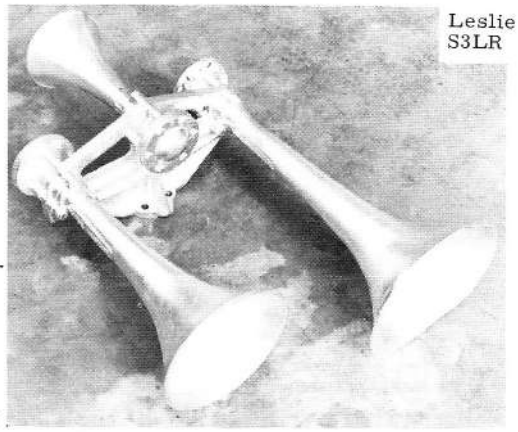
Hancock Manufacturing Co., Div. of
Manning, Maxwell & Moore, Inc.
Boston, Mass. 02118

Hancock "4700" Air Whistle

1. Closely resembles a steam locomotive whistle, being 14" long and 4" in diameter.
2. The Type 4700 was supplied with a 7" W. and 17½" L. x 12" H. reflector, oriented vertically and mounted at the base of the whistle, with the whistle oriented in the horizontal plane. The type 4710 whistle was supplied without a reflector.



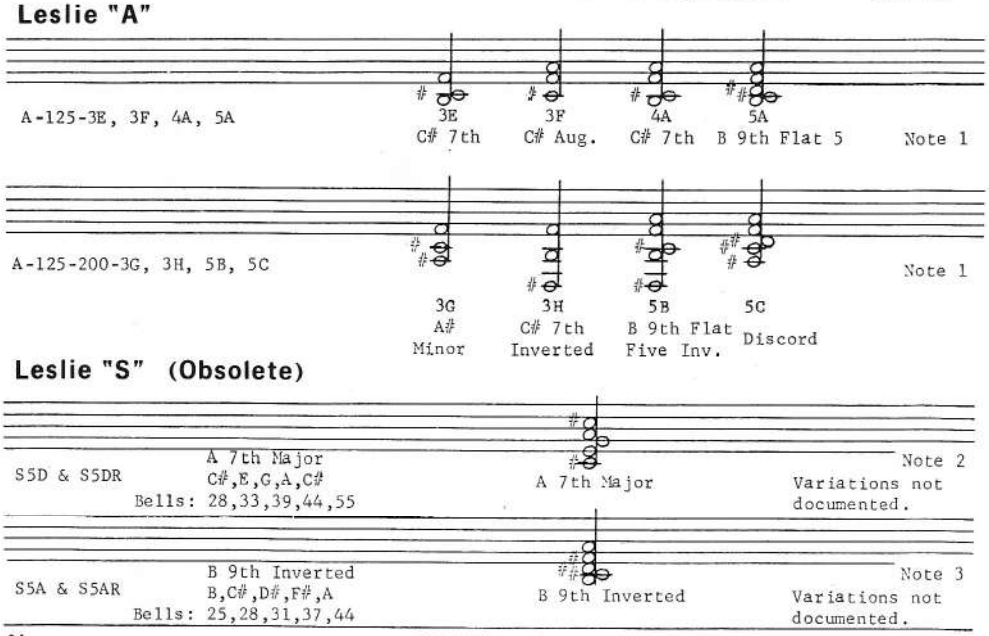
Leslie S3L



Leslie S3LR

Additions & Corrections to Part I
"--O-" Guide - Issue 48

-- (p. 25) Bentor was conductor of the "President's Band" following his tenure as conductor of the US Navy Band.
-- (p. 25, 1st para., 6th sentence): #4 bell was changed to A nat., not Bb, to make the chord an A 7th major.
-- (p. 26, Nathan P12345 musical notation): Chord has an A nat., not A#.



Note 1 Little information is available concerning the railway use of multiple-tone Tyfon whistles. Some may be found in service at this late date, but it will take some searching and would constitute a rare find. Strictly older, first generation cab units and road switchers.

Note 2 The prototype Supertyfon 5-chime formula. Bell frequencies were: 277, 330, 440, 392, and 554. No documentation is available to confirm applications of the S5D or its derivative the 3-chime S3J (C#, E, A). The S5D was dropped from the Leslie cata log with introduction of the S5T.

Note 3 The second Supertyfon 5-chime formula. Bell frequencies were: 247, 277, 311, 370, and 440. No documentation is available to confirm applications of the S5A or its derivative the 3-chime S3E (B, D#, F#). The S5A was dropped from the Leslie catalog with the introduction of the S5T.

Note 4 The S5T is the third Supertyfon 5-chime formula introduced by Leslie and continues in production at the present time. Bell frequencies are: 247, 311, 370, 440, and 554. The bell-forward version has found limited application. Major users: CS(C&O), WM, GM&O among others.

MODEL	DESIGN CHORD	OFTEN HEARD AT TRACKSIDE	NOTES
Leslie "S" (Current Production)			
S5T	B 9th Major B,D#,F#,A,C# Bells: 25,31,37,44,55	B 9th Major S-55 Bell Silent	Note 4
S5TR	Same as S5T	Slightly Discordant C Dim. With Silent S-55 Bell	Note 5
S4T	D# Minor 7th D#,F#,A#,C# Bells: 31,37,48,55	D# Min. 7th D# Minor S-48 Bell Silent	Note 6
S3L & S3LR	B 7th Inverted B,D#,A Bells: 25,31,44	S3L S3LR Variations	Note 7
S3P & S3PR	F# 7th Sus. Four (?) B,F#,C# Bells: 25,37,55	S3P	Note 8 Variations not documented.
S3K & S3KR	D# Minor D#,F#,A# Bells: 31,37,48	S3K	Note 9 Seldom varies.
S3B & S3BR	F# Minor F#,A,C# Bells: 37,44,55	S3B	Note 10 Variations not documented.
S2M & S2MR	Not a Chord D#,A Bells: 31,44	S2M S-37 Bell Overblowing	Note 11
S2A & S2AR	Not a Chord B,D# Bells: 25,31	S2A	Note 12 Variations not documented.
S-37 + 55	Not a Chord F#,C# Bells: 37,55	S-37 + 55 S-37 Bell Overblowing	Note 13
WABCO "E"			
E2B1	F Major F,A,C Bells: B7-21,B7-25,E2	E2B1	Note 14 Variations not documented.
E2B2	B Major B,D#,F# Bells: B7-30,B7-36,E-24	E2B2	Note 14 Variations not documented.
E2B3	B Major, 2nd. Position D#,F#,B Bells: B7-30,B7-36,E-44	E2B3	Note 14 Variations not documented.
Hancock "4700"			
4700 & 4710	A Major, 2nd Pos. E,A,C#	A Major	Note 15 Sometimes overblows one or more flutes.
Popular Single-Bell "Honkers"			
Leslie A-200-156	WABCO E2	Leslie A-125-247	Nathan MS-1 & PS-1	Leslie A-125-311 or WABCO B7-30	Nathan MS-2 Note 16

Note 5 The reverse-bell S5T -- the S5TR -- is extensively used. Any of the bells may be found reversed on the mounting bracket although the standard practice is to reverse only the S-31 and S-44 bells. Bell reversal appears to flatten the "as heard" fundamentals of the reversed bells; more so among Supertyfon horns than other types. Harmonic overblow, also peculiar to Supertyfon horns, results in an almost infinite number of dialects for the S5T and S5TR. Major users: N&W, SCL, WM, AT&SF, UP, CS(B&O), Amtrak.

Note 6 Stipulated by Amtrak exclusively for the passenger SDP40F units. Horn uses the bells of the standard Leslie S3K plus an S-55 bell to produce the rather pleasing and unique D# 7th Minor. The S4T uses a 5-chime bracket on units 500-39, and a pair of 2-chime brackets on units 540-649.

Note 7 The Leslie S3L and, especially, the S3LR are the most widely used horns in the United States, and are listed as more or less standard applications to units by major US locomotive manufacturers. The "L" chord is functional, if not very musical, but has a tendency to mimic automobile horns if the S-44 bell is not sounding. The S3LR usually sounds a minor rather than major chord. Railroads using the S3L and S3LR are too numerous to list.

Note 8 Very unusual and not musical note combination. Applications of the S3P and S3PR have not been documented.

Note 9 The lovely minor-triad S3K was developed for use in Canada in compliance with Board of Transport Ministers' railway regulations. For a time, the S3K was carried as a standard 3-chime horn application in the catalog of the General Electric Co., and a number of GE locomotives used in the U.S. received the horn. Few are used in Canada. Major users: P&LE, PC, BN, UP, CV among others.

Note 10 A very pleasant minor triad once listed in the GE and EMD catalogs as an alternate Leslie horn application to the S3L. Few have been sold, however, and no applications have been documented.

Note 11 A rather distinctive 2-bell horn. The most notable application was to passenger E-units of the former NYC. Horn is often heard with the S-44 bell overblowing to about 740 Hz.

Note 12 Of little beauty but effective. Major users: AT&SF, BN, Milw. The S2A was also used in a unique split-version of the S5T on CS(C&O) GP30's.

Note 13 This combination was selected by Penn Central for the Budd Metroliners. Almost always heard with the S-37 bell squealing to about 700 Hz.

Note 14 Application of the Pneuphonic horns has been rare and not well documented. Now and then one will be found, especially among industrial switchers. The former PRR had a few on GP7's and 9's; these were E2B1 horns.

Note 15 The Hancock air whistles are the only air-operated whistles to have survived to the present time, and these are no longer manufactured. They were quite popular. Major users: PC(NYC & NH), SCL(ACL), FEC, L&N, many industrial shortlines.

Note 16 This is only a partial listing of the single-bell horns as these were the most popular and are most likely to be found in service at the present time. The WABCO E2 and Leslie A-200 and A-125 were extensively used with first generation cab units and road switchers. The higher pitched honkers, namely the Nathan MS-1 and MS-2, are often found on 600, 800, 1000, and 1200 hp switchers. The voice of the Leslie A-200-156 is best characterized as the sound of the classic GG1.