1975

The Problem of the Tromba Da Tirarsi in the Works of J. S. Bach.

Horace Monroe Lewis Jr

Louisiana State University and Agricultural & Mechanical College

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The Louisiana State University and Agricultural
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THE PROBLEM OF THE TROMBA DA TIRARSI

IN THE WORKS OF J. S. BACH

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

in

The School of Music

by

Horace Monroe Lewis, Jr.
B.A., Hendrix College, 1967
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May, 1975
ACKNOWLEDGEMENTS

Two people have been of great help in the production of this work. James Giammanico made the photographs which appear as Plates I, IV, and V, and made the photographic reduction of the score of Buxtehude's cantata, *Ihr lieben Christen, freut euch nun*, which appears as Example 13. Stephen Glover, Editor of The Brass Press, was also extremely helpful in contributing the copy of the E. G. Haussmann portrait of Gottfried Reiche which appears as Plate II. The inscription which appears at the bottom of the portrait is seldom seen in reproductions, and I am indebted to Mr. Glover for procuring a copy of the portrait in its original form.
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ABSTRACT

In four of his cantatas, Nos. 5, 20, 46, and 77, J. S. Bach scored for an instrument, the Tromba da tirarsi, which is not mentioned in the musical treatises of the time. From an examination of the parts, it is obvious that the Tromba da tirarsi was a trumpet equipped with some means of altering the pitch of its basic overtone series. Musicologists are generally agreed that the Tromba da tirarsi of Bach's cantatas was the Zugtrompete, or slide trumpet, which was equipped with a single slide capable of lowering the overtone series of the instrument by three semi-tones. The problem is complicated by the appearance of an instrument which Bach designated by the term Corno da tirarsi in two cantatas, Nos. 67 and 162, and the appearance of notes outside of the overtone series in parts marked Tromba or Clarino (trumpet), or Corno or Corno da caccia (horn).

Chapter I deals with the trumpet in the Baroque period, including the less-common forms of the instrument.
such as the Jagertrompeta (coiled trumpet) and the Zugtrompete (the single-slide trumpet used by tower-musicians). Such aspects as range and construction are also considered. The use of extra-harmonic trumpet tones (tones outside of the overtone series of the natural trumpet) in musical sources from the Baroque period is explored in Chapter II. The forty-seven cantata movements which contain parts marked Corno or Corno da caccia that include extra-harmonic notes, and which, according to Charles Sanford Terry, would have required the use of the slide trumpet in performance, are studied in Chapter III. Chapter IV deals with the twenty-six cantata movements with parts for Tromba or Clarino which contain extra-harmonic notes and thus, according to Terry, would have required the use of the Zugtrompeta. The fourteen cantata movements in which Bach specified either Tromba da tirarsi or Corno da tirarsi are studied in Chapter V.

It is shown that the natural horn of Bach's time would have been adequate to perform all of the forty-seven cantata movements studied in Chapter III. Of the twenty-six cantata movements studied in Chapter IV, only seventeen would have required the use of the Zugtrompeta in performance, making a total of thirty-one cantata movements in which the Zugtrompeta would have been required, as opposed to the eighty-seven individual move-
ments listed by Terry. It is further shown that when Bach marked a part *Tromba da tirarsi*, it was invariably the chorale melody, leading to the conclusion that the slide trumpet was primarily used to play the chorale melody in a cantata movement, usually in unison with the sopranos of the chorus.
INTRODUCTION

The problem of the Tromba da tirarsi is one which has troubled musicologists ever since the rediscovery of the Bach cantatas in the nineteenth century. The term Tromba da tirarsi was not a common one, and even Bach's use of the term in the cantatas seems to have been inconsistent. The word tirarsi is a form of the Italian verb meaning "to draw out," which indicates that the Tromba da tirarsi was a trumpet to be drawn out, i.e., a slide trumpet. A slide trumpet did exist in Germany in the seventeenth and eighteenth centuries, but references to such an instrument are spotty at best.

Musicologists now agree, however, that the Tromba da tirarsi in Bach's scores was the Zugtrompete, or German slide trumpet (see below, Chapter I), which was commonly used by town musicians for playing chorale melodies. For many years, though, a great deal of confusion existed regarding the true nature of the Tromba da tirarsi, and there was even some question as to whether it was really a trumpet at all. Moritz Hauptmann, in his critical commentary to Cantata No. 5, Wo soll ich fliehen hin?, in the first volume of Johann Sebastian Bach's Werke, states that the Tromba da tirarsi was a
distant trombone, a mistake that was picked up later by others and passed on uncritically.

A concomitant problem to that of the Tromba da tirarsi is Bach's use of the term Corno da tirarsi in certain of his cantatas; for while a true slide trumpet did exist in Germany during the Baroque period, no such instrument as a slide horn has been discovered. Indeed, the acoustical properties of the horn are such as to make the use of a moveable slide for the purpose of altering the pitch of notes of the overtone series completely impossible. A second concomitant problem is that Bach also scored parts marked simply Clarino, Tromba, Corno, or Corno di caccia, which contain notes outside the overtone series, and which earlier writers about Bach and his orchestration, notably Charles Sanford Terry, have deemed unplayable on the natural (valveless) trumpets and horns of Bach's day without the benefit of an adjustable slide.

Thus, while musicologists are in agreement as to the instrument meant by the term Tromba da tirarsi, what remains of the controversy is the question of just how many of the Great Cantor's cantatas do require a slide trumpet for adequate performance of the trumpet parts.

---

Terry has listed forty-eight cantatas in which the use of a slide trumpet (Zugtrompete) would have been necessary because of the presence of extra-harmonic notes in a trumpet or horn part.\(^2\) In these forty-eight cantatas, ninety individual movements are listed as requiring a Zugtrompete. Tables 1, 2, 3, and 4 (pages 4 through 8), show a breakdown by instruments from Terry's list.

Obviously, Terry used as a basis for his study the premise that the natural trumpet and horn of Bach's time were restricted to the tones of the overtone series, a premise that will be shown to be not entirely true. The questionable horn and trumpet parts of these cantatas have been studied to determine which parts would actually have demanded the use of a slide trumpet, and which could have been performed on the natural instruments of the time. As can be seen in Table 1 (page 4), Terry stated that many parts marked Corno or Corno di caccia were actually meant to be performed on the Zugtrompete, because they include notes foreign to the harmonic series of the natural horn.

No attempt is made in the present study to set forth an authoritative history of the slide trumpet from the middle ages to the time of Bach; however, an attempt

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</tr>
<tr>
<td></td>
<td>6 Choral</td>
<td>Corno</td>
</tr>
<tr>
<td>140</td>
<td>1 Coro</td>
<td>Corno</td>
</tr>
<tr>
<td></td>
<td>7 Choral</td>
<td>Corno</td>
</tr>
</tbody>
</table>
TABLE 2

CANTATA MOVEMENTS IN WHICH TROMBA OR CLARINO PARTS APPEAR WHICH, ACCORDING TO TERRY, WOULD HAVE BEEN PLAYED ON THE ZUGTROMPETE

<table>
<thead>
<tr>
<th>Cantata No.</th>
<th>Movement No.</th>
<th>Instrument</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>1 Coro</td>
<td>Tromba</td>
</tr>
<tr>
<td></td>
<td>5 Duetto (A.T.)</td>
<td>Tromba</td>
</tr>
<tr>
<td></td>
<td>7 Choral</td>
<td>Tromba</td>
</tr>
<tr>
<td>12</td>
<td>6 Aria (T.)</td>
<td>Tromba</td>
</tr>
<tr>
<td></td>
<td>7 Choral</td>
<td>Tromba</td>
</tr>
<tr>
<td>24</td>
<td>3 Coro</td>
<td>Clarino</td>
</tr>
<tr>
<td></td>
<td>6 Choral</td>
<td>Clarino</td>
</tr>
<tr>
<td>43</td>
<td>11 Choral</td>
<td>Trombe I, II, and III</td>
</tr>
<tr>
<td>48</td>
<td>1 Coro</td>
<td>Tromba</td>
</tr>
<tr>
<td></td>
<td>3 Choral</td>
<td>Tromba</td>
</tr>
<tr>
<td></td>
<td>7 Choral</td>
<td>Tromba</td>
</tr>
<tr>
<td>70</td>
<td>7 Choral</td>
<td>Tromba</td>
</tr>
<tr>
<td></td>
<td>11 Choral</td>
<td>Tromba</td>
</tr>
<tr>
<td>74</td>
<td>8 Choral</td>
<td>Tromba</td>
</tr>
<tr>
<td>75</td>
<td>8 Sinfonia</td>
<td>Tromba</td>
</tr>
<tr>
<td>76</td>
<td>7 Choral</td>
<td>Tromba</td>
</tr>
<tr>
<td></td>
<td>14 Choral</td>
<td>Tromba</td>
</tr>
<tr>
<td>103</td>
<td>5 Aria (T.)</td>
<td>Tromba</td>
</tr>
<tr>
<td></td>
<td>6 Choral</td>
<td>Tromba</td>
</tr>
<tr>
<td>126</td>
<td>6 Choral</td>
<td>Tromba</td>
</tr>
<tr>
<td>137</td>
<td>4 Aria (T.)</td>
<td>Tromba</td>
</tr>
</tbody>
</table>

4 Capital letters in parentheses indicate the voice part, i.e., S. = Soprano, A. = Alto, and T. = Tenor.

5 In the parts, the instrument is designated Clarino.
TABLE 2.—Continued

<table>
<thead>
<tr>
<th>Cantata No.</th>
<th>Movement No.</th>
<th>Instrument</th>
</tr>
</thead>
<tbody>
<tr>
<td>147</td>
<td>6 Choral</td>
<td>Tromba</td>
</tr>
<tr>
<td></td>
<td>10 Choral</td>
<td>Tromba</td>
</tr>
<tr>
<td>167</td>
<td>5 Choral</td>
<td>Clarino</td>
</tr>
<tr>
<td>185</td>
<td>1 Duetto (S.T.)</td>
<td>Oboe (Tromba)</td>
</tr>
<tr>
<td></td>
<td>6 Choral</td>
<td>Tromba</td>
</tr>
</tbody>
</table>

TABLE 3.

CANTATA MOVEMENTS IN WHICH TROMBA DA TIRARSI PARTS APPEAR

<table>
<thead>
<tr>
<th>Cantata No.</th>
<th>Date (Neue Bach Ausgabe)</th>
<th>Movement No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>1735</td>
<td>1 Coro</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7 Choral</td>
</tr>
<tr>
<td>20</td>
<td>c. 1725</td>
<td>1 Coro</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7 Choral</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11 Choral</td>
</tr>
<tr>
<td>46</td>
<td>c. 1725</td>
<td>1 Coro o</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 Aria (B.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6 Choral</td>
</tr>
<tr>
<td>77</td>
<td>c. 1725</td>
<td>1 Coro</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(6 Choral)</td>
</tr>
</tbody>
</table>

6 The part is marked Tromba o Corno da tirarsi in all three movements given of Cantata No. 46.

7 Capital letters in parentheses indicate the voice part, i.e., B. = Bass.

8 This movement is not listed by Terry.
### TABLE 4
CANTATA MOVEMENTS IN WHICH CORNO DA TIRARSI PARTS APPEAR

<table>
<thead>
<tr>
<th>Cantata No.</th>
<th>Date</th>
<th>Movement No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>46</td>
<td>c. 1725</td>
<td>1 Coro⁹</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 Aria (B.)¹⁰</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6 Choral</td>
</tr>
<tr>
<td>67</td>
<td>c. 1725</td>
<td>1 Coro</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 Choral</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7 Choral</td>
</tr>
<tr>
<td>162</td>
<td>1715</td>
<td>1 Aria (B.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6 Choral</td>
</tr>
</tbody>
</table>

has been made to discover how the instrument was used in the seventeenth and eighteenth centuries. In addition, the problem of the use of extra-harmonic tones, tones outside of the normal overtone series of the natural trumpet, in the brass writing of the Baroque period will be studied, not only through the compositions of that period, but also by examining trumpet method books of the time.

The system of indicating pitches in the written

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⁹The part is marked Tromba o Corno da tirarsi in the three movements given of Cantata No. 46.

¹⁰Capital letters in parentheses indicate the voice part, i.e., B. = Bass.
text is that shown in Example 1 below.

Example 1.—System of pitch notation used in the written text
CHAPTER I

THE TRUMPET IN THE BAROQUE PERIOD

The brightest era in the history of the trumpet was the approximately 180 years from c. 1600 to c. 1780, which encompasses what is commonly termed the Baroque period. The art of playing the natural, or valveless, trumpet in its highest, or clarino, register flourished during the Baroque period and even continued into the following Rococo period. However, with the decline of the Rococo, the demand for virtuoso playing in the clarino register also declined, and the trumpet, as an instrument of concert music, was reduced to playing occasional fanfare figures and supporting the harmonic and rhythmic structure of the composition.

The natural trumpet of the Baroque period was a tube of brass or, more rarely, silver, seven to eight feet in length, depending on the pitch of the individual instrument, equipped with a cup shaped mouthpiece at one end, and terminating in an exponential bell at the other. The instruments were constructed in three main sections, with the sections connected by two U-bends or elbows. The first two horizontal sections, the mouth-
pipe (or leadpipe) and middlepipe, were called channels or yards; the third major section was the bell. Of the three main sections, only the bell was conical. The tubing in the rest of the instrument was cylindrical.

The completed trumpet was held in its flat oval shape by the simple expedient of binding a piece of wood in place between the mouthpipe and bell by means of a cord. A loop of wire was used to secure the first U-bend to the rim of the bell, and the joints of the instrument were left unsoldered. The Baroque trumpet, then, was not rigidly fastened together like the modern instrument, possibly because Baroque instrument makers believed that a trumpet so constructed would vibrate more freely, and thus produce sound more freely.

Most of the trumpets of the Baroque period were ornamented with a ball in the middle of the bell section, which performed a useful as well as a decorative service. In addition to giving the trumpeter a place to grip the instrument and balance it in his hand, it also covered the joint between two sections of the bell. A tight-fitting sleeve covered the joint, and the ornamental ball surrounded the sleeve. Other prominent decorations were the garnishes, or ferules (the engraved tubes which covered the joints between the sections and which protected the mouthpiece end of the leadpipe), and the garland, which was the decorative band that encircled the rim of the bell. Cast angel's heads may also
appear on the ball or bell as an added decorative feature.¹

Both the characteristic flat oval shape of the Baroque trumpet and the ornamental ball in the center of the bell section can be seen on the Meinl-Lauber trumpet.

¹The construction of the natural trumpet of the Baroque period has been described by several authors, among them the following:


in Plate I (page 14). The decorative garland around the rim of the bell can be seen on the coiled trumpet (Jägertrumpete) held by Gottfried Reiche, Bach's first trumpeter at Leipzig, in Plate II (page 15).

Trumpeters and instrument-makers in the Baroque period realized that the weight of the tubing used in constructing a trumpet would have an effect on the instrument's tone quality and response. The German trumpeter and organist Johann Ernst Altenburg (1734-1801), writing in 1795, commented that a trumpet made of heavy tubing would respond well for playing field-pieces in the lower register, and that a trumpet made of thin tubing would respond better in the high clarino register. For common use, however, he recommended a trumpet of medium weight, and further recommended the trumpets of J. W. Haas of Nuremberg as being the best.²

The range of the natural trumpet of the Baroque period was exceptionally wide, although the instrument was restricted, with certain exceptions which are discussed below, to notes of the harmonic or overtone series. In an early treatise on the art of trumpet playing, the Italian trumpeter Girolamo Fantini (c.1600-after 1638), writing in 1638, gave the range of the trumpet as a harmonic series from C to c'''' (Example 2, page 16). Although he gave c'''' as the top note of the

²Altenburg, Versuch, p. 10.
Example 2.—Range of the trumpet as given by Fantini

Example 2.—Range of the trumpet as given by Fantini

It is noteworthy that Fantini did not present any of the out-of-tune harmonics in his example of the notes possible on the natural trumpet. Many of the compositions in Fantini's method, however, do include both out-of-tune harmonics and notes completely foreign to the overtone series. His use of such extra-harmonic notes is discussed below (see Chapter II).

More than a century and a half later, Altenburg gave the range of the natural trumpet as a harmonic series from C to g"", including several out-of-tune harmonics (Example 3, page 17). Altenburg indicated that the trumpet could be called upon to sound up to

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4Ibid., p. 23.
Example 3.—Range of the trumpet as given by Altenburg the $g'''$ and even higher. German and Austrian composers of the eighteenth century, particularly Michael Haydn and Georg Reutter, utilized the notes of the trumpet's range above $c'''$ in their compositions, although such trumpet parts were probably written with specific virtuoso trumpeters in mind.

Each of the lower partials of the trumpet's overtone series had its own name. According to Fantini, the fundamental (C) was called *Sotto*, the second partial (c) was called *Basso*, the third partial (g) was called *Vurgano* (*Vulcano*?), the fourth partial (c') was called *Striano*, the fifth partial (e') was called *toccata*, and the sixth partial (g') was called *quinta*. Fantini's names for the lower partials are illustrated by the *Toccata* to Monteverde's *L'Orfeo* of 1607. The *Toccata* is a short fanfare for five trumpets with the parts marked, from the highest to the lowest, *Clarino, Quinta*,
Alto e Basso, Vulgano, and Basso. Of these, the Vulgano and Basso each play only one note, the g and c respectively, and thus they each fall into Fantini's classification. The second part, called Quinta, centers around g', which Fantini called Quinta. Thus it is probable that the names for the lower trumpet parts were standardized among Italian trumpeters and composers in the seventeenth century.

In seventeenth-century Germany the lower partials also had names, although the German names were different from the Italian ones. According to Daniel Speer (1636-1707), the fundamental was called Flattergrob, the second partial Grob-Stimm, the third partial Faul-Stimm, the fourth partial Mittel-Stimm, and the fifth partial Principal. The range of the sixth through the twelfth partials (g' to g'') was called das ander Clarin, and the range of the eighth through the sixteenth partials (c'' to c'''') was called das erste Clarin.

Other trumpets than the standard, once folded, natural trumpet were used in the Baroque period, although they did not appear as frequently as the normal flat-

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7 Smithers, Baroque Trumpet, p. 79.
oval instrument. In one form, the sounding tube was coiled like a post horn, in which shape it was known as the "Italian" trumpet, Jägertrompete, or Inventions-Trompete. Altenburg listed the coiled trumpet in his second class of trumpets, and said of it:

Here the so-called invention (Inventions-) or Italian trumpet presumably merits first mention, since the construction (inventirt) of this instrument, with its more frequent coils, [makes it] comfortable [to hold]. It is used mainly in Italy, has the same trumpet sound . . . , and comes in various sizes.

It is not used by the cavalry trumpeters, but [rather] by the so-called oboists and regimental fifers of the infantry.⁹

The first pictorial appearance of the coiled trumpet was in the illustrations accompanying the second book of the Syntagma Musicum of Michael Praetorius (1571-1621), published in 1619 (see Plate III, page 20). The instrument was captioned Jäger-trummet, and it appeared with what looks like a detachable crook, indicating that it was intended not for use in the hunting field as its name implied,


Plate VIII from the second book of Praetorius' Syntagma Musicum. Number 11 is titled Jäger Trommet; number 10 is titled Trommet.
but rather for use in the concert hall.\textsuperscript{10}

The most famous appearance of the coiled trumpet in art, however, occurs in E. G. Haussmann's portrait of the Leipzig \textit{Stadtpfeifer} Gottfried Reiche (1667-1734), who was also J. S. Bach's first trumpet player (see Plate II, page 15). Reiche's trumpet is coiled four times, and from exact measurements taken from the portrait by Walter H. F. Blandford (1864-1952), it has been concluded that Reiche's instrument was pitched in D at a pitch standard somewhat below that of modern concert pitch, and was provided with a C crook.\textsuperscript{11} Terry refers to this coiled trumpet as a high \textit{tromba da caccia}, and mentions three such instruments extant in 1932. One was a Pfeifer instrument pitched in D and dated 1697, another was a Haas trumpet, probably by Johann Wilhelm Haas (1648-1723), also in D, and the third was an instrument in E, or perhaps the F of its day, dated 1713, by the Viennese instrument maker Michael Leichamschneider.\textsuperscript{12} A modern reconstruction of the \textit{Jägertrompete} may be seen in Plate IV, page 22.


\textsuperscript{11}Terry, \textit{Bach's Orchestra}, p. 48.

\textsuperscript{12}\textit{Ibid.}, p. 49.
Modern reconstruction of a Jägertrompete
made by Meinl-Lauber
The second unusual form the natural trumpet assumed was that of the Zugtrompete, or slide trumpet. The slide trumpet was not mentioned as frequently in contemporary accounts as the natural trumpet or the Jägertrumpete, but, nevertheless, references to the instrument do exist. Altenburg, who has become the standard reference on matters relating to the history of the trumpet in the eighteenth century, put the Zugtrompete in his "Zwente Klasse" of trumpets, along with the Jägertrumpete, and gave the following definition:

The slide trumpet, which is commonly used by tower watchmen and city musicians for playing chorales, is constructed almost like a small alto trombone because it is pulled back and forth during playing, whereby [the player] can easily bring forth the missing tones [of the harmonic series].

Altenburg's definition of the instrument brings out several points: one, that the Zugtrompete was mainly used by civic musicians and not by court and military trumpeters; two, that it was built like the alto trombone, with the same slide principle and perhaps the same pitch; three, that it was mostly used for playing chorale melodies, because the slide enabled it

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to produce all of the required tones; and four, the slide allowed the player to correct the intonation of the out-of-tune partials.

It is unfortunate that the only slide trumpet to survive from the seventeenth and eighteenth centuries into the twentieth century was destroyed in World War II. That sole survivor, however, was well documented by several writers before the war, and much is known about it. The trumpet was in the collection in the Berlin Hochschule fur Musik, and was described by Terry.

The Berlin Zugtrompete (slide trumpet) has the appearance of an ordinary natural trumpet. But, unlike the latter, its mouthpiece is prolonged by an inner tube, which, at the player's will, slides out and in within the topmost of the instrument's parallel branches. The length of the slide is 56 cm. (22.050 in.). The tubing, apart from the slide, is 143 cm. (roughly 56 in. = 4 ft., 8 in.) long, and the conical length of the instrument is 57 cm. (roughly 1 ft. 10½ in.). Thus, with the slide drawn to its fullest extent, the trumpet measures roughly 112 cm. (3 ft. 8 in.) from mouthpiece to bell. Its internal diameter at 25 cm. of length is 12.8 mm. (under half an inch), and at the bell-end 98 mm. (roughly 4 in.).

The Veit trumpet was examined by Adam Carse, Charles Sanford Terry, Curt Sachs, Francis W. Galpin, and Werner Menke, all of whom have left descriptions of it. A drawing of the Veit trumpet may be seen in Plate V, page 25.

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14 Terry acknowledges Curt Sachs for these measurements.
Zugtrompete by Hans Veit, dated 1651, after a drawing in Terry
Canon Galpin also experimented with a Haas trumpet in his own collection by fitting it with a slide like that of the Berlin Zugtrompete. Terry reported on the experiment:

Experimenting with a slide on his Haas trumpet, Canon Galpin found that it had three positions: (1) When 5 inches of the slide are withdrawn, the pitch is lowered from d' to c#, with a corresponding fall throughout the scale. (2) When 10½ inches of the slide are exposed, the pitch falls two semitones, from d' to c', and by an equal interval all over. (3) When the slide is at 17 inches, the fall of yet another semitone follows, and d' becomes b natural. These positions indicate considerable movements of or along the slide, first of 5 inches, then of 5½ inches, and again of 6 inches, owing to the slide operating in a single, and not, as with the trombone, a double slide.16

Based on a system of slide positions similar to that used for the contemporary trombone, it would be better to say that the Haas trumpet of Canon Galpin had four positions, with the normal position of the trumpet, i.e., with the slide closed, counting as the first position.

The player of the Zugtrompete would have had to hold the mouthpiece of the slide trumpet to his lips with one hand while the instrument itself was moved back and forth upon with the other—a very cumbersome procedure. Also, the very length of the slide positions would work against any quick changes from one position to another. A mitigating factor, however, is the fact

16 Terry, Bach's Orchestra, p. 32.
that the Zugtrompete was played in the trumpet register, which could be defined as the third and fourth octaves above the fundamental of the instrument, and in that area slide changes could probably have been kept to a minimum by an accomplished player.

Thus three forms of the trumpet existed side by side during the Baroque period: first, the standard natural trumpet in its flat oval form—the instrument of military and court trumpeters (see Plate I, page 14); second, the coiled trumpet, known as the Italian trumpet, Inventions—Trompete, Jägertrompete, and Tromba da caccia (see Plate IV, page 22), and which is thought by Smithers to have been the favorite instrument of the virtuoso performers; and finally, the slide trumpet, known as the Zugtrompete and Tromba da tirarsi (see Plate V, page 25), which was the instrument of the tower musicians and church performers, and which was used primarily for the playing of chorale melodies. The use of the first of the above instruments is well documented, and needs no further comment. The other two, however, were not so well documented during their own time, and often inferences as to their use must be drawn from the music of the time. It is known that Bach had at his disposal both the coiled trumpet and the slide trumpet, for it is

17Smithers, "Trumpets of J. W. Haas," 41.
recorded that Reiche, his first trumpet player, left, on his death, both a Jägertrompete (probably the one he holds in the Haussmann portrait, Plate II, page 15), and a Zugtrompete. The fact that Bach had both of these less common trumpets at his disposal may explain some of his more unusual trumpet parts.

CHAPTER II

EXTRA-HARMONIC TRUMPET TONES IN THE BAROQUE

The problem of extra-harmonic notes, i.e., notes occurring outside of the overtone series for the natural trumpet, is one that has been touched upon lightly or not at all by most writers on the subject of the Baroque trumpet (the term "extra-harmonic" has been used to indicate notes foreign to the trumpet's overtone series rather than "non-harmonic" because of the latter's connotations in music theory). Nevertheless, instances of trumpet writing containing extra-harmonic notes do exist, and not all of those instances can be explained by the possibility that the part in question was composed for the Zugtrompete.

Example 4.—The overtone series for the natural trumpet in C (black notes indicate out-of-tune partials).
The overtone series of the natural trumpet, as shown in example 2 above, does not form a complete scale in the first three octaves of the instrument's range. Only in the fourth octave does the natural trumpet produce a diatonic scale. Half-steps are possible in the fifth octave, but the notes are so high that they are of limited utility for most players. However, by the early part of the seventeenth century, trumpeters had evidently discovered that other notes than those of the pure overtone series could be produced by lowering one of the harmonics with the lip. This lowering process, called "lipping," is still used today to correct faulty intonation on the trumpet.

The first chromatically altered notes to appear in trumpet music were the tones b♯', f♯', and f♯''. The naturally out-of-tune eleventh partial is a bit too high to serve as a true f♯'', and a bit too low to serve as an f♯'. However, by lipping that partial up, the trumpeter can produce an acceptable f♯''. By lipping the same partial down, he can produce an f♯', which is somewhat less acceptable, due to the fact that the eleventh partial is nearer to the pitch of f♯'' than f♯'. This is one of the few cases in which it is practical for a trumpeter to lip a note up. The b♯' is easily produced by lipping down the eighth partial, c''', and not by lipping up the seventh partial, b♭'.
Trumpeters have long realized that pitches on their instruments could be altered by relaxing the embouchure, thus producing a drop in pitch. In fact, a note can be lipped down approximately half the distance between it and the next lower partial of the overtone series. The reverse does not hold true, however, as tightening of the embouchure tends to make the tone "break" and sound the next higher partial rather than producing a gradual sharpening of the pitch. For this reason, then, it is easier for a trumpeter to lip a note down in pitch than up.

Other partials than the seventh and eleventh are naturally out of tune in an equal-tempered tuning system. The thirteenth partial, usually written as a''', is actually a bit too flat to be a true a''', although it is too sharp to serve as g#'''. By lipping this partial down, a trumpeter can produce g#''' while it takes a slight adjustment up for the partial to sound as a'''.

The fourteenth partial, just like the seventh an octave below, is too flat to serve as b♭''' and too sharp for a''''. However, it was normally used as b♭''' since the thirteenth partial could easily be made to serve as a''''.

The out-of-tune partials of the overtone series, then, gave rise to certain extra-harmonic trumpet notes. The only missing semi-tones in the trumpet's fourth octave scale were c#'' and e♭''', both of which
were quickly added to trumpeters' repertoires. As early as 1665, in the sonatas of Maurizio Cazzati (c.1620-1677), the trumpet was called upon to produce c₄#. In that year the twelve sonatas of his Sonate à due, tre, quattro, e cinque, con alcune per tromba, Op. 35, were published by Monti at Bologna. The last three of these sonatas, subtitled "La Caprara," "La Bianchina," and "La Zambecari," respectively, were scored for trumpet, strings, and continuo. Opus 35, No. 11, in C major, "La Bianchina," makes use of the c₄# one time, and it is approached by leap from e₄.

Appearing sometime later in the seventeenth century than the Cazzati sonatas was a Sonata à 4 G Moll (actually à 5) for trumpet, strings, and continuo, by the Bohemian trumpeter and composer Pavel Josef Vejvanovsky (1640-1693). It was not published in the composer's lifetime, but was preserved in manuscript form in the Archiepiscopal library at Kroměříž. Vejvanovsky's sonata is unusual because it calls for the c₄# and e₃⁵ quite frequently. In each case the c₄# occurs as a lower neighbor to d₄, but the e₃⁵ is treated very freely. In most cases Vejvanovsky wrote the e₃⁵ as a

1Smithers, Baroque Trumpet, p. 225.
passing tone, but occasionally he calls for the trumpeter to approach it by leap.

It might be said that by the end of the seventeenth century the trumpet, at least in the hands of a competent soloist, was capable of producing every half-step between \( b^\flat \) and \( c''' \). To say that the instrument was completely chromatic would be overstating the case. It is true, however, that more chromatic alterations were available than present-day authors have conceded. It should be stressed that the ability to lip notes outside of the overtone series was probably always the exclusive property of outstanding soloists. Ordinary, or even better-than-average trumpeters must have found such alterations beyond their powers, for, while they occur in music often enough to provoke interest, they do not occur often enough to be considered a general rule.

A case in point might be the Sonata for trumpet, strings, and continuo, from the Sonate Tam Aris Quam Aulis Servientes of 1676 by Heinrich Ignaz Franz Biber (1644–1704), a composer extremely interested in discovering new ways of exploiting instrumental sound, particularly that of the strings. This work, like the Vejvanovsky sonata discussed above, is in G minor, but, although both sonatas have the Dorian signature of one flat, Biber made no use of the \( e^\flat''' \) and used the \( e^\flat'' \) only once, as a lower neighboring tone.
in a cadence. Perhaps the difference was that Vejvanovsky was a trumpeter, and therefore knew the possibilities of his instrument, while Biber was a violinist, and was, perhaps, less familiar with the trumpet's capabilities. Or Biber's trumpeter may not have been able to produce $e^b''$ and $c^#''$ with ease. In any case, the Biber sonata is a good example of the use of the trumpet in the dominant minor of the key of the instrument (G minor for the trumpet in C), without resorting to many extra-harmonic notes.

Heinrich Schütz (1585-1672) provided other examples of extra-harmonic trumpet notes. In No. 4 of his Symphoniae Sacrae II of 1647, Meine Seele erhebt den Herren, SWV 344, he wrote parts for two trumpets in C. The eleventh harmonic is used frequently as $f^#''$, which was quite common. What was uncommon, however, was his use of $d^#''$ and $c^#''$, both approached by a downward leap of a diminished fourth. Smithers states that the leaps to $d^#''$ and $c^#''$ coupled with the rarity of extra-harmonic notes in other works by Schütz are indications that Zügtrompeten might have been used in performance of these parts. Another early example of the use of $e^b''$ occurs in a cantata by one of Bach's predecessors at Leipzig,

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3Smithers, Baroque Trumpet, p. 142.
Example 5.—Heinrich Schütz, *Meine Seele erhebt den Herren*, SWV 344, measures 81-83 of the Trombetta II part and measures 85-87 of the Trombetta I part.

Sebastian Knüpfer (1633-1676). Knüpfer scored for two trumpets (marked "*Clarini*") in his cantata *Ach Herr, straffe mich nicht*, and the parts are unusual for a variety of reasons. The cantata is in the key of C minor, with the Dorian signature of two flats in all the parts. The *Clarini* are in C and have the same key signature as the other parts. Both *Clarini* are frequently called upon to produce *e♭''*, which is often approached by leap from *g''*. The thirteenth partial is frequently used as *a♭'*, occasionally approached by leap from *f'*, and even *a♭''* occurs twice in the second trumpet part as an eighth note lower neighbor to *b♭'*. Excerpts from the second *Clarino* part which include extra-harmonic notes may be seen in Example 6 below.

Altenburg mentions the use of *e♭''* in connection with trumpet pieces in the key of G minor, "Although *e♭''* is not a natural note on the trumpet, it can be
Example 6.—Sebastian Knüpfer, Ach Herr, strafe mich nicht, Clarino II part, measures 9-10 and 157-158. used in the tonality of G minor as a passing tone.⁴ He used e₃⁵ nine times in two of his Bicinia for two trumpets, which appeared as part of his trumpet method of 1795. In one case the e₃⁵ is approached by leap from c⁵. In all other cases the e₃⁵ appears either as a passing tone or as an upper neighbor to d⁵.

Half-step alterations in the overtones of the fourth octave must have required fine embouchure adjustments on the part of trumpeters of the Baroque period, but enough alterations appear to indicate that at least a few trumpeters were capable of performing them. The use of extra-harmonic tones below the fourth octave, however, presented greater problems. Such notes outside of the overtone series below b₃⁵ appear much more rarely than do altered notes in the higher octave, and they

⁴Altenburg, Versuch, p. 105. "Obgleich Es kein natürlicher Ton der Trompette ist; so kann er dach, in der Tonart G moll, als Durchgang (Transitus) hingehen."
were probably within the technical capabilities of only the most skilled soloists. It should be noted, as stated above, that it is possible for a trumpeter to lip a partial down approximately half the distance between that partial and the one below it. In the upper range, this makes possible chromatic alterations in the scale of the natural trumpet. It would then seem that even greater possibilities exist for altering overtones in the second and third octaves of the instrument, but few examples of second and third octave extra-harmonic notes have come to light. The fact that lipping requires the sort of embouchure coordination that is to be found only in the most talented soloists explains the lack of lower-register extra-harmonic notes; the fine soloists concentrated on developing the high register, leaving the second and third octaves to the less accomplished players. Thus a certain amount of lipping could be expected from the first and second *clarino* players; practically none could be expected from the *principale* and lower parts.

One of the earliest sources containing third-octave extra-harmonic notes was Fantini's *Modo per imparare* .... of 1638 (see Plate VI, page 38). His method was one of the earliest written for the trumpet, and it contains the astounding total of fifty-five notes outside of the normal overtone series below b♭. Of these, forty-four are a', seven are f', three are d',
Girolamo Fantini, Trumpet-major to the Duke of Tuscany, at the age of thirty-six.
and one is b. In the preface to the method, Fantini commented on the extra-harmonic notes, saying, "It will also be found that there are some notes, not pointed out at the beginning of the work, which are very imperfect if they are held, but which can be used where they pass quickly." Edward Tarr, American-born trumpeter and musicologist, commenting on Fantini's extra-harmonic tones, says,

To be sure, Fantini did have a gift for producing tones foreign to the harmonic series, but by the simple means of "lipping," and concerning only passing notes . . . "Lipping," or pulling out-of-tune notes into pitch (generally downwards, which is considerably easier than upwards), was then and is now a perfectly normal trumpet technique.

An example of Fantini's treatment of one third-octave extra-harmonic note, a', can be seen in Example 7.

Example 7.—Girolamo Fantini, Sonata detta del Gonzaga for trumpet and organ, trumpet part, measures 14-17.

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5Fantini, Modo per Imparare, p. 6. "Si troveranno alcune note, che nel principio dell'opera a non sono accennate, che a voler fermate sono imperfette, ma perch'esse passano presto possono servire." Translated in Smithers, Baroque Trumpet, p. 84.

As Tarr correctly states, such extra-harmonic notes are quite possible, due to the fact that the seventh partial, which is usually given as $b^\#$, is actually too flat for that pitch, and thus is easily lipped down to $a'$. This is particularly true if the $a'$ happens to occur as an unaccented upper neighbor between two $g$'s, which is most often the case with Fantini.

Although Fantini did make use of extra-harmonic notes other than $a'$, he did not write them with such great frequency, probably because the other diatonic notes in the trumpet's third octave are much more difficult to produce. The $f'$, for example, must be lipped up a half-step from $e'$, and $d'$ must be lipped down a whole step from $e'$. Both operations are very difficult. In spite of the difficulty with which both notes are produced, Fantini did write both $f'$ and $d'$, although he almost always used them as neighboring tones. Note the use of $f'$ and $d'$ coupled with the unique use of $b$ in Example 8.

Example 8.—Girolamo Fantini, Sonata detta del Adimari for trumpet and organ, trumpet part, measures 12-13.
A performance by Fantini with the organist and composer Girolamo Frescobaldi (1583-1643) was recorded at second hand by Marin Mersenne (1588-1648) in his Harmonicorum, libri XII, quoted by Hermann Eichborn.

I imagine that the most skillful trumpeters can control their breath in such a way that they can produce one by one all the notes from the third, or from the fifth, upwards; that is, they can go upwards step by step. This belief of mine is supported very strongly by a letter which the learned master Bourdelorius Medicus sent to me from Rome; in this he says that he has heard from Girolamo Fantini, the most excellent trumpet player in all Italy, that he is able to play all the notes on his trumpet, and that he has played them with the organ of Cardinal Borghese, on which Girolamo Frescobaldi, organist of the Duke of Etruria and of the church of St. Peter in Rome, played very skillfully. But the Duke of Créqui was at that time performing an extraordinary diplomatic mission in Rome on behalf of our most Christian King Louis XIII, and Bourdelorius Medicus tells me that the Duke's trumpeters said that the notes produced by the trumpet player in question were false, confused, and utterly disordered.

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Whether Fantini's tones were, indeed, "false, confused, and utterly disordered," or the Duke of Crecqui's trumpeters were merely indulging in a bit of professional jealousy, is difficult to determine from the vantage point of the twentieth century. Nevertheless, it seems clear that Fantini was able to produce, in some fashion, certain extra-harmonic notes on the natural trumpet. He also expected others to be able to do likewise; otherwise he would not have included the extra-harmonic notes in his method book, whose avowed goal, according to the title, was to teach others to play the trumpet.

Fantini was not the only composer of the seventeenth century to make use of third-octave extra-harmonic notes on the trumpet. One of Schütz' last works, Herr Gott, dich loben wir, SWV 472, includes parts for four trumpets, two Clarini and two Trombetti. All four instruments are notated in C at sounding pitch. The Trombetta I part was originally written in the alto clef, and was entitled Altus Trombetta Principal. The Trombetta II part was originally written in the tenor clef, and was entitled Tenor Trombetta. Both parts contain extensive material outside of the overtone series, as can be seen in Example 7, page 43.

Schütz included in the set of parts one entitled Cantus pro Organo, which is essentially the same as the upper vocal part throughout the motet. The extra-
Example 9.—Heinrich Schütz, Herr Gott, dich loben wir, SWV 472, Altus Trombetta Principal part, measures 230-238.

harmonic notes in the Trombetta parts, as in Example 9, are the same notes found in the Cantus pro Organo part but an octave lower. Smithers states that both of the Trombetta parts were probably written for Zugtrompeten and were intended to be played an octave higher. In fact, as Werner Breig points out in Volume thirty-two of Heinrich Schütz: Neue Ausgabe sämtlicher Werke, the trumpets were never intended to play the extra-harmonic notes. A note at the end of the Altus Trombetta Principal part states, "N. B. Where the Trombetta cannot play the inscribed notes, it may remain silent, or the part can be played on the trombone or viola." A similar note exists at the end of the Tenor Trombetta

8 Smithers, Baroque Trumpet, p. 144.

part.

At the end of the composition, however, a true extra-harmonic note does exist. It is possible that this note, too, was intended by the composer to be played either by the trombone or strings, or left out, but it occurs twice in a long passage in which the trumpets are playing constantly. The e, a very unusual extra-harmonic tone, occurs once as a whole note and once as a half note in the Tenor Trombetta part in the Clausula finalis.

Example 10.—Heinrich Schütz, Herr Gott, dich loben wir, SWV 472, Clausula finalis, Tenor Trombetta part, measures 264–270.

A trombone is playing at this point, but it does not double the e.

Although other examples of extra-harmonic notes in the trumpet’s third octave do appear from time to time, they are not as plentiful as in the Fantini book. Another early example occurs in the treatise Harmonie Universelle by Marin Mersenne (1588–1648), published in 1636. Mersenne composed a "Chanson" for three trumpets which contains so many rhythmic discrepancies that it cannot be transcribed. In the second trumpet part,
however, which is marked "second treble," the note a' occurs as a passing tone between g' and b'. The clef was mistakenly printed as the mezzo-soprano clef; in reality it should have been the treble clef. It is unlikely that the second trumpet part in a piece specifically written to show normal use of the trumpet would be written in the key of A minor, as would be the case if the second trumpet part were to be played in the mezzo-soprano clef. Example 11 shows the entire second trumpet part; the a' is the sixth note from the end.

Example 11.—Marin Mersenne, Chanson, second treble part. The original form is given first, with the corrected version given beneath.

A Suonata à 7 con due trombe in D major for two trumpets in D, strings, and continuo, by Petronio Franceschini (c.1650-1680) contains three instances of
the use of a' for the natural trumpet. The manuscript, which is dated 1680, is in the Archivo di San Petronio in Bologna. In all three cases, the a' comes as a passing tone between g' and bb', and it always occurs on the fourth sixteenth note of a beat.

Example 12.—Petronio Franceschini, Suonata à 7 con due trombe. 2nd movement (Allegro), first and second trumpet parts, measures 27-28.

The cantata by Sebastian Knüpfer, Ach Herr, straffe mich nicht, quoted above, also contains two examples of the a' occurring in the second Clarino part. Example 6, page 36, shows the appearance of the a' in measure 157 of the second Clarino part.

Dietrich Buxtehude (1637-1707), in his cantata Ihr lieben Christen, freut euch nun, wrote some unusual trumpet parts. In the first movement, the Sinfonia, Buxtehude called for two Clarini in sordino. The parts are written a tone lower than sounding pitch, indicating the use of C trumpets, which would be raised to D by the insertion of mutes. In the eighteenth measure of the Sinfonia, Buxtehude wrote an f' approached by skip from c'' for the second Clarino. Such writing was highly un-
usual, but the note is correct, for the harmony at that point is a G major triad, and the written note f' on a trumpet in D would sound g'. Example 13 shows the score at the point in question.

Example 13.—Dietrich Buxtehude, Ihr lieben Christen, freut euch nun, 1st movement (Sinfonia), full score, measures 15-20.

Smithers takes issue with the idea that f' is the correct note.

Seiffert's edition of Ihr lieben Christen . . . probably has a misprint at bar eighteen. The f natural on the second beat is spurious. A written g (a at sounding pitch) was probably intended. Seiffert's edition has the f approached by leap from a written c'. A leap to a non-harmonic tone,
particularly as wide as the interval of a fifth, has not been encountered before. On the other hand, a written $g'$ (sounding $a'$) would clash with the G major triad sounding at that point. Smithers is not correct when he says that a leap to an extra-harmonic tone has not been encountered. Examples 5 and 6 both show leaps to extra-harmonic tones, although both extra-harmonic tones are in the trumpet's fourth octave. Several interpretations are possible. One may assume that Buxtehude was aware of the fact that $f'$ was an extra-harmonic note, but that his trumpeters were accomplished enough to play it anyway. It is also possible that a Zugtrompete was used to play the second Clarino part, although there is no other indication of its use in the Sinfonia. Or the trumpeter may have simply played the next "legitimate" partial which would, however, have clashed with the G major triad. Buxtehude would certainly have known about the last case, and he could easily have written $c''$ in the second Clarino part instead, which would have harmonized with the triad at that point. It is unlikely that the trumpeter would have been allowed to play an $a'$ with a G major triad.

In the last chorus of the cantata the Clarini in sordino become Trombette in sordino, and, again, the part arouses some controversy. The first two entrances of

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10 Smithers, *Baroque Trumpet*, p. 162.
the Trombetta are in the low register, and include frequent use of d' and f'. These parts seem to be perfect examples of parts for the Zugtrompete except for the fact that from the sixth measure onward they become normal high register clarino parts, with no extra-harmonic notes. The term Trombetta is defined by Praetorius as a term for trombone, so it might be argued that at this point Buxtehude intended that his trumpeters play their parts on Zugtrompeten. Smithers feels that the extra-harmonic notes in the first bars are not to be taken too literally.

The change in the name of the trumpets and the appearance of so many non-harmonic tones raises two questions: (1) are the 'Trombette in sordino' supposed to be variable-pitch, single slide trumpets, i.e., Zugtrompeten, and, therefore, capable of playing the non-harmonic series notes? Or (2) are the first four bars of trumpet music notated in the wrong octave and the name changed only because the terms 'Trombetta' and 'Clarino' were possibly interchangeable? It is the present writer's opinion that the parts are not for slide trumpets and that the omissions of an extra stroke over some of the letters in the original MS. German organ tablature score accounts for the parts being indicated an octave too low. The change in the name of the trumpets should not evoke much comment. Throughout the seventeenth century trumpet parts were frequently referred to by both terms and given exactly the same kind of music, particularly in German church music. Smithers is correct in saying that the terms Trombetta and Clarino were used interchangeably to indicate trumpet parts in the seventeenth century. It is very

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11 Praetorius, Syntagma Musicum, p. 35.
12 Smithers, Baroque Trumpet, p. 162.
Example 14.—Dietrich Buxtehude, Ihr lieben Christen, freut euch nun, 8th movement (Chorus), Trombette in sordino parts, measures 2-5.

unusual, however, to find both terms used for the same part in one composition.

Another instance of the use of a' comes in the cantata Wenn ihr fröhlich seid an euren Festen by the Leipzig Cantor Johann Kuhnau (1660-1722). Kuhnau scored for a large orchestra in the cantata, calling for four trumpets in C, marked Clarino I, Clarino II, Trombetta, and Principal, timpani, strings in five parts, bassoon, and continuo, in addition to a five-part choir. The top three trumpet parts are written in the treble clef; the Principal is written in the soprano clef. Throughout most of the work, the trumpets are scored in a typical Baroque manner with florid Clarino parts. Nine measures before the end of the cantata, the second Clarino has an unusual part in unison with the second violin. It includes an a' approached by leap from c'' (Example 15). The harmony sounding at the point where the a' occurs is
Example 15.—Johann Kuhnau, *Wenn ihr fröhlich seid an euren Festen*, 7th section (Grave), Clarino II part, measures 48-49.

an F major triad, which indicates that the written note is correct.

Altenburg also used the a' in one of his little pieces for two trumpets in his method. The third *Bicinium* is a Bourée in G minor, written with the Dorian signature of one flat, and in it the second Clarino is required to play the a' three times. The first time it occurs as a passing tone between bb' and g', and the second time it appears as two eighth notes in a lower neighbor formation below bb', and forms the leading tone of a cadence on bb'.

Example 16.—Johann Ernst Altenburg, *Bicinium* (Bourée) for two Clarini in C, Clarino II part, measures 5-6 and 10.

What makes this example more unusual is the fact that
Altenburg felt that the use of e♭'' in the same composition was unusual enough to require a note, which is quoted above (see page 36). There is no explanation at all, however, of the a', leading the reader to conclude that either the note was too common to require comment, or that its nature was self-explanatory.

Some more light has been shed on Baroque performance practice with regard to the use of extra-harmonic trumpet notes. In the addendum to a recent article on performance techniques on Baroque brass instruments, Tarr gives a series of exercises designed to help the performer master the technique of the valveless Baroque trumpet. Even though the modern reconstructions of Baroque trumpets, which were designed by Tarr, have nodal vents to allow the production of a more or less pure f'' and a'', Tarr himself advocates doing the exercises with the lip alone, without using the nodal vent. His so-called "bending exercises" are designed to aid in the production of extra-harmonic notes. The "bending exercises" may be seen in Example 17, page 53. It would be ridiculous to assume that the trumpeters of the Baroque period were unaware of the possibilities of these lipped notes.

Yet another facet of the problem of extra-harmonic

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notes in Baroque trumpet music is the coiled trumpet, or Jägertrompette. From time to time it has been suggested that the virtuoso trumpeters of the Baroque used the Jägertrompette and the technique of hand-stopping to produce notes foreign to the overtone series. No proof of this practice has come to light; however, there are some indications that the theory of hand-stopping was not unknown. R. Morley-Pegge, an authority on the history of the horn, writes concerning the origins of hand-stopping:

It has been generally assumed that this new use of the hand in the bell was 'invented' by Anton Joseph Hampel, or Hampl, second horn in the King of Poland's famous orchestra at Dresden. What seems more likely is that Hampel extended and codified a technique about which at least something must have been known much earlier, even if little or no practical use had been made of it, at any rate so far as the horn was concerned. For it is by no means impossible, nor even improbable, that certain trumpet players who used the so-called Italian (circular) trumpet—such, for instance, as Gottfried Reiche, Bach's principal trumpeter in Leipzig—put their fingers in the bell of the instrument in order to improve the intonation of the 11th, 13th and 14th harmonics.14

Eichborn suggests that Fantini's phenomenal playing and production of extra-harmonic notes might be due to the use of a coiled trumpet and hand-stopping, a conjecture which Morley-Pegge says is not "unduly far-fetched." Certainly, whether or not it can be proved that trumpeters were aware of the possibilities of hand-stopping the coiled trumpet, they were very much aware of the fact that stopping their trumpets with a mute raised the pitch of the instrument one whole step. It would be unusual if some, at least, had not realized that hand-stopping provided greater opportunities, not only for correcting faulty intonation, but also for aiding in the production of those notes not already present in the overtone series. Of course, the difference in size between the horn and trumpet bells would make for some difference in the technique of stopping. Horn Bells, being much larger than trumpet bells, permit the introduction of the hand farther into the bell, and thus allow a greater pitch-variation with hand-stopping. A visual comparison of the relative sizes of the bells of the modern Meinl-Lauber Jägertrompete (plate IV, page 22) and the Jägertrompete held by Gottfried Reiche in the guild portrait by E. G. Haussmann (Plate II, page 15), shows that Reiche's trumpet has a larger bell than

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\[Eichborn, \textit{Das Alte Clarinblasen}, p. 20.\]

\[Morley-Pegge, \textit{The French Horn}, p. 89.\]
does the modern reconstruction. The bell not only seems to be wider, but it also seems to have a larger throat, which would allow easier insertion of the hand into the bell. It must be remembered, too, that, in spite of its name, the Jägertrompete was a concert instrument, as evidenced by the crooks that often accompany it. It might well be that the primary reason for making a trumpet in a coiled shape was not to make it easier to carry in the hunting field, but to bring the bell closer to the player's hand.

In the nineteenth century the Prussian court trumpeter Karl Bargans advocated the use of hand-stopping to alter pitches on the natural trumpet, and gave examples of passages playable on the coiled trumpet with the use of hand-stopping (Example 18, page 56).^17 The technical facility available with hand-stopping is almost unbelievable when compared with that required for the natural trumpet. Although the Bargans example dates from a much later period than that under discussion, it does indicate the technical resources that might have been available to a fine performer on the coiled trumpet at an earlier date.

The use of extra-harmonic tones, then, was not totally unknown in the Baroque period. It is doubtful

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^17 Karl Bargans, "On the Trumpet, as at Present Employed in the Orchestra," Harmonicon, 1830, p. 25.
Example 18.—Karl Bargans, passages playable on the natural trumpet by means of hand-stopping.

that many chromatic alterations in the fourth octave of the trumpet, or notes totally outside the overtone series in the third octave, were ever within the capabilities of more than a few virtuoso trumpeters. Nevertheless, the use of extra-harmonic notes cannot simply be ignored. They occur too frequently to have been the exclusive property of a single player, or even of a single "school" of players. The fact that all chromatic alterations in the fourth octave were considered possible at one time or another, and that the extra-harmonic notes in the third octave were written occasionally, should influence
the researcher's judgement in dealing with trumpet and horn parts in Bach's cantatas. It would be far too hasty to assume that notes outside of the overtone series in a trumpet or horn part indicated mandatory performance on a slide trumpet.

Since a' was used so frequently, relative to the other extra-harmonic notes in the third octave, it would indicate that a good trumpeter, such as Gottfried Reiche, would have been able to perform it, particularly if it occurred either as a passing or a neighboring tone, or if it occurred in slower notes when the part was doubled by other instruments. Even though other composers made no use of f#, Tarr's exercises make it clear that this note, too, is not difficult to produce on the natural trumpet by lipping. Thus the appearance of a' and f# in a trumpet part, provided no other extra-harmonic tones appear, should not be considered sufficient grounds for declaring that the part was intended for performance on the slide trumpet.
CHAPTER III

PARTS FOR CORNO OR CORNO DA CACCIA

CONTAINING EXTRA-HARMONIC NOTES

The problem of the Tromba da tirarsi is complicated by the fact that not only trumpet parts, but horn parts as well, in some of Bach's cantatas, include third-octave extra-harmonic notes. Terry, in studying Bach's instrumentation, assumed that if the notes d', f', or a' appeared in one of Bach's horn or trumpet parts, then that part must have been intended for the Zugtrompete, because those three notes are not within the overtone series of the natural horn or trumpet.¹ Twenty-six of Bach's cantatas contain parts for Corno or Coro da caccia with one or more of the three extra-harmonic third-octave notes (see Table 1, page 4), which, according to Terry's analysis, means that the Corno or Coro da caccia parts in question would have to be played on the Zugtrompete.

Table 1 shows that in the twenty-six cantatas there are fifty movements in which questionable horn

¹Terry, Bach's Orchestra, p. 30.
parts appear. Of these fifty cantata movements, twenty-seven are chorales in which the horn doubles the soprano part. In most of the rest, the horn either doubles the soprano on the chorale melody in a chorus, or it has the chorale melody obbligato. Since cases in which Bach doubled one of the upper voices in a chorale at the lower octave have not been found, it must be assumed that the horn in each case is to double the soprano at the unison.

The horn of the Baroque period was, for the most part, pitched an octave below the trumpet, e.g., a horn in D was pitched an octave lower than the trumpet in D. A horn in D and a trumpet in D playing the same written part would sound that part in octaves. Thus, if a horn in C basso were to play a part written for a soprano, the horn player would have to transpose the part to the upper octave in order for his notes to sound in unison with the soprano.

Terry appears to have assumed that the horn parts in question would have either been played on a horn in high C (C alto), sounding the written pitch, or on a horn in low C (C basso), sounding an octave lower than the written part. In other words, he assumed that the player would be sounding the horn in its third octave instead of its fourth octave.

According to Terry, Bach called for the Corno to be crooked in seven keys, D, F, G, A, Bb, D (high), and
F (high), and for the *corno da caccia* to be crooked in five keys, low C, D, F, G, and B♭. The difference between the two instruments was that the *corno*, or Waldhorn, produced a mellow tone, while the *corno da caccia*, or Jagdhorn, produced a more strident tone, more in keeping with the traditions of the hunt. In any event, Bach made little actual distinction between the two instruments as far as range was concerned. In fact, most of his horn parts in the Leipzig cantatas would have been played by his first trumpeter, Gottfried Reiche, who at his death left, among other instruments, a Waldhorn.

Terry was not alone in thinking that the horn parts in unison with the soprano would have been played in the third octave of a horn in C, presumably one in C alto. Moritz Hauptmann, who edited the first volume of the Bach cantatas for the Bach-Gesellschaft edition, pointed out that instead of calling for *corno* in the last movement of Cantata No. 3, *Ach Gott, wie manches Herzeleid*, Bach meant to call for the *cornetto*.

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2 Terry, *Bach's Orchestra*, p. 44.
3 Ibid., p. 45.
4 Schering, "Leipziger Ratmusik," 34.
A *Cornetto*, however, would not have been necessary to realize the *Corno* part in the Chorale. As can be seen in Example 19, the part could easily have been played on either the horn in E or the horn in D of the time.

According to Terry, Bach did not score for the horn in E; however, the horn in F could easily have been crooked down a half-step to E. On the other hand, Bach did score for the horn in D, so it might be more logical to assume that the Chorale was played on the D horn.

Another example of a horn part that looks as if
it involves third-octave extra-harmonic notes is the opening movement from Cantata No. 60, O Ewigkeit, du Donnerwort. Scored for alto and tenor soloists, Corno, two Oboes d'Amore, strings, and continuo, the movement is in D major, with the Corno written as a transposing instrument in D. That the horn was not supposed to play the part at written pitch is obvious from the fact that throughout the movement the horn doubles the alto part. If the horn were to read its part as written, the result would be a doubling of the alto part at the lower octave, a sonority that, as has already been stated, was foreign to the Bach style. Terry lists this movement as one in which the horn carries the chorale melody obbligato, but actually the horn and alto soloist carry the chorale melody in unison. The sounding range of the horn part is from d' to d'', which would have been easily within the range and technique of the natural horn in D. A section of the original Corno part and its transposition for the horn in D can be seen in Example 20, page 63.

In the final Chorale of Cantata No. 60, Bach again called for the Corno, this time to double the soprano on the chorale melody. The movement is in A major, and the sounding range of the unison Corno/soprano part is from a' to e''. This, too, would have been within the range and technique of the natural horn in D. The D horn part would have had a written range of
Example 20.—J. S. Bach, Cantata No. 60, O Ewigkeit, du Donnerwort, 1st movement (Duetto), Corno part and transposition for horn in D.
g'' to d''' (the horn in D sounds a minor seventh below written pitch), with a key signature of one sharp and frequent use of c#'. Or, if it is granted that Bach might have made use of the horn in E, the range of the part would have been f'' to c''' (the horn in E sounds a minor sixth below written pitch), with a key signature of one flat. In either case, the Chorale would have been playable on the natural horn of the Baroque period. It should be noted that the original title page, in Bach's own hand, does not mention a part for horn:


However, a horn part was included with the set of original parts, even though it was not named on the title page.6

In the first movement of Cantata No. 89, Was soll ich aus dir machen, Ephraim?, scored for Basso solo, two oboes, Corno, strings, and continuo, Bach again wrote the horn part at sounding pitch. The movement is in C minor with the Dorian signature of two flats, and the Corno part has a range of c' to f'''. The

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part would have been easily playable on the natural horn in F, however, because no notes occur which are outside of its harmonic series. Example 21 shows a portion of the original *Corno* part and the transposition for horn in F.


In the last movement of the same cantata (a chorale), the *Corno* is in unison with the soprano on the chorale melody. The key is G minor, again with a signature of two flats, and this time the range of the
soprano and **Corno** part is from **g''** to **f'''**, well within the range and technique of the natural horn in **F**. The written range for the **F** horn would be **d''** to **c''''**. The part would include no extra-harmonic notes, and would have a key signature of one flat.

In the first movement of Cantata No. 95, **Christus, der ist mein Leben**, Bach called for **Corno**, two oboes d'Amore, strings, continuo, and a four-part choir. The movement is in two sections; the first in **G** major, with the normal key signature, in three-four time; the second in **G** minor, with the Dorian signature of one flat, the time signature of **alla breve**, and the tempo marking of allegro. The soprano carries the chorale **cantus firmus** throughout the movement, and the horn doubles the soprano at the unison when the soprano is singing. The **Corno** part is written at sounding pitch with the key signature first of one sharp and then of one flat. The range of the **Corno** in the first movement is **c'** to **a''**, which is wider than usual.

It is possible that this movement, particularly the first section, could have been played on the natural horn in **D**, particularly since **c'** could have been taken as the seventh partial on the **D** horn. However, since Bach did score for the horn in **C basso** (sounding an octave below written pitch), it would be much more logical to assume that he intended the part to be played on the low **C** instrument. The top written note for the horn
in C basso would have been a'', which might seem quite high, but the actual sounding pitch of the note, a'', was not very high at all. It should be remembered that the Corno part would probably have been played by either Gottfried Reiche or his successor, who, as an artist in the Clarin register of the trumpet, would not have had much to fear from a mere a''. Example 22, page 68, shows twenty-one measures of the Corno part and the transposition for horn in C basso.

An unusual part for the horn occurs in Cantata No. 105, Herr, gehe nicht in's Gericht. The first movement, scored for Corno, two oboes, strings, continuo, and four-part chorus, contains an extremely wide-ranging horn part. The horn and first oboe are scored in unison with the first violin; the range of the unison part is d' to d'''. The movement is in the key of G minor with a key signature of two flats. The use of a horn in unison with the first violin was not a usual combination with Bach, unless both instruments were doubling the soprano in a chorale. The style of writing is more suggestive of a part for cornetto than it is of the natural horn.

Four sources for Herr, gehe nicht in's Gericht exist: 1) the autograph score, 2) a copy of the original score by S. Hering dated about 1760, 3) a few later individual parts to the first chorus by C. P. E. Bach dated about 1780, and 4) an incomplete score in the Amalienbibliothek des Joachimstales in Berlin. Of these
Example 22.—J. S. Bach, Cantata No. 95, Christus, der ist mein Leben, 1st movement (Coro), Corno part and transposition for horn in C basso, measures 89-110.
four sources, the Hering copy omits the horn part, both in the first movement, and in the fifth movement, where it is, in the other sources, an obbligato instrument in a tenor aria. The omission of the horn in the Hering copy may be no more than an oversight, but it might also indicate that the horn was not considered necessary to the performance of this cantata.

Yet another possibility to be considered is that the horn did not perform the entire movement, but joined the orchestra at a certain point. The first movement is divided into two sections, both of which are in G minor. The first section is marked Adagio, and continues until the second beat of measure forty-seven, in common time. On the third beat of measure forty-seven the tempo marking changes to Allegro, and, at the beginning of the next measure, the time signature changes to alla breve. At that point a fugal section starts with entries in the vocal parts. In the first section, the unison horn, Oboe I, and Violin I parts lie in a high tessitura and are quite chromatic, in a style that was not usual for brass instruments, particularly the horn. In the fugal section, the combined part is more diatonic, and certainly more in the style of the horn. The range is

still extreme, but the d''' occurs as a single note, approached by leap of an octave and left by leap of an octave in the opposite direction, and the tessitura of the part is not as high as in the first section. The next highest note is a'', which occurs only once. It is possible in this case that the horn played the d''' an octave lower, since at that point the sopranos are singing d''. No other orchestral or vocal part has a note between d'' and d''', so by playing d'' the horn would not be guilty of doubling an upper voice at a level which would be beneath a lower one. In other words, the horn might simply have played that one note, d''', an octave lower without changing the basic texture of the movement.

If one assumes that the horn was used only for the second section of the first movement, which is indicated by the style of the part, the use of the natural horn becomes more logical, particularly since the horn part could have been played on a horn in E♭. Only the d''' would have presented a problem, and, as stated above, it is quite possible that the horn player merely played that note down an octave. Even the first section could have been played on the natural horn in E♭, although the highly chromatic style of the music makes it less likely that the horn would have been used in that section. The Corvo part in question can be seen in Example 23, page 71.

The fifth movement of the same cantata is scored for tenor solo, *Corno*, strings, and continuo. The movement is in B♭ major, with the key signature of two flats, and the horn is notated at sounding pitch with the same key signature. Again, Terry has designated this movement as an example of the use of the *Zugtrompete*, but in actual practice the natural horn in F or E♭ would have been able to play the part, with its range of f' to b♭′′.
The part is high, but it probably would have been played by Reiche, or, if not by him, by another of the Stadt-
pfeifer, all of whom were expected to be trumpeters as well. In any case, there are no extra-harmonic notes in the Corno part for a horn in F or a horn in B♭.

Another unusual horn part occurs in the first movement of Cantata No. 109, Ich glaube, lieber Herr, hilft meinem Unglauben. The movement is in D minor, with the usual key signature of one flat, and is scored for Corno da caccia, two oboes, strings, continuo, and four-part chorus. The Corno da caccia part is written at sounding pitch, with the key signature of one flat, and it plays in unison with the soprano when the soprano is singing. When the soprano rests, the Corno da caccia either plays in unison with the first oboe and first violin, or has a separate part of its own. The Corno da caccia part has an extremely wide range: c' to c'''. It is a questionable part, since it exists in the set of parts in Bach's hand, but not in the original score.8

It is the extreme range of this horn part that makes it unusual, for Bach rarely scored for the horn above the sounding pitch of a''. The note c''' would have been most unusual, particularly since, unlike the case in the first movement of Cantata No. 105, discussed

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above, here there is no easy way for the horn to avoid playing the c''' without doing violence to the composer's part-writing style. J. Murray Barbour, however, cites an example of the use of c''' (sounding pitch), written for the horn in G as f''', in a minuet by Johann Stamitz (1717-1757).\(^9\) At least one eighteenth-century horn player was apparently capable of sounding c'''. In any event, the Corno da caccia part in Cantata No. 109 has fewer wide leaps and extra-harmonic tones than the corresponding horn part in the first movement of Cantata No. 105. In other words, it is more characteristic of the horn, and of brass technique in general.

Except for a single measure, the Corno da caccia part in the first movement of Cantata No. 109 would have been playable on the horn in F. In measure fifty-one, the horn has the following part:

\[\text{Example 24.---J. S. Bach, Cantata No. 109, Ich glaube, lieber Herr, hilft meinem Unglauben, 1st movement (Coro), Corno da caccia part, measure 51.}\]

The sounding pitch d' would be written as a' for the horn in F, which is not a note within the harmonic series of the natural instrument. It has been shown, however, that composers occasionally did write the a' for trumpets in the Baroque period, although never approached by an octave leap. If one does not believe that the horn in F was used, all of the notes in the part could have been played on the horn in C basso (which would have read its part an octave higher than sounding pitch), or even the horn in D. In any case, wide-ranging though the Corno da caccia part may be, it would have been playable on the natural horn.

The final chorale also includes a part for Corno da caccia, but it is similar to other final chorales found in the examination of cantatas on Terry's list. The chorale is in A minor, with the customary key signature, in common time, and is scored for the same ensemble as the first movement. This time the Corno da caccia is in unison with the soprano on the chorale melody, and both parts have a range of d' to e''. The Corno da caccia part moves almost exclusively in half notes and whole notes, and the part would have been easily playable on either the horn in D or the horn in C basso.

It would be of more value to make a new table to replace the one given by Terry (see Table 1, page 4) than to discuss each separate cantata and horn part listed by him. In Table 5 the same cantatas and movements listed
in Table 1 are shown, together with the range of each Corno or Corno da caccia part and the probable key or keys of the natural horn(s) that could have been used to play the part. As can be seen, in no case does any part in Table 1 require the use of a Zugtrompete.

TABLE 5

CANTATA MOVEMENTS IN WHICH CORNO OR CORNO DA CACCIA PARTS APPEAR WHICH, ACCORDING TO TERRY, WOULD HAVE BEEN PLAYED ON THE ZUGTROMPETE (REVISED)

<table>
<thead>
<tr>
<th>Cantata No.</th>
<th>Mvt. No.</th>
<th>Key</th>
<th>Range</th>
<th>Instrument</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>6</td>
<td>A major</td>
<td>e'-d''</td>
<td>in D or E</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>E major</td>
<td>d#'-e''</td>
<td>in E</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>E major</td>
<td>d#'-e''</td>
<td>in E</td>
</tr>
<tr>
<td>14</td>
<td>1</td>
<td>G minor</td>
<td>f'-d''</td>
<td>in F</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>G minor</td>
<td>f'-d''</td>
<td>in F</td>
</tr>
<tr>
<td>16</td>
<td>1</td>
<td>C major</td>
<td>e'-c''</td>
<td>in C</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>A minor</td>
<td>a'-e''</td>
<td>in C or E</td>
</tr>
<tr>
<td>26</td>
<td>1</td>
<td>A minor</td>
<td>a'-f''</td>
<td>in C or D</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>A minor</td>
<td>a'-f''</td>
<td>in C or D</td>
</tr>
<tr>
<td>27</td>
<td>1</td>
<td>C minor (D)</td>
<td>g'-a#''</td>
<td>in F</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Bb major (L)</td>
<td>g'-f''</td>
<td>in F</td>
</tr>
<tr>
<td>40</td>
<td>3</td>
<td>G minor (D)</td>
<td>g'-d''</td>
<td>in F</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>D minor</td>
<td>g'-f''</td>
<td>in F</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>F minor (D)</td>
<td>f'-f''</td>
<td>in F or E</td>
</tr>
</tbody>
</table>

10 Capital letters in parentheses refer to modal signatures; thus C minor (D) indicates that the movement is in C minor with the Dorian signature of two flats. Bb major (L) indicates that the movement is in Bb major with the Lydian signature of one flat.
<table>
<thead>
<tr>
<th>Cantata No.</th>
<th>Mvt. No.</th>
<th>Key</th>
<th>Range</th>
<th>Instrument</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>1</td>
<td>D major</td>
<td>d'-d''</td>
<td>in D</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>A major</td>
<td>a'-e'</td>
<td>in D or E</td>
</tr>
<tr>
<td>62</td>
<td>1</td>
<td>B minor</td>
<td>a'-f'</td>
<td>in D</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>B minor</td>
<td>a'-f'</td>
<td>in D</td>
</tr>
<tr>
<td>68</td>
<td>1</td>
<td>D minor</td>
<td>d'-g'</td>
<td>in C or D</td>
</tr>
<tr>
<td>73</td>
<td>1</td>
<td>G minor</td>
<td>f'-e'</td>
<td>in F</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>C minor (D)</td>
<td>g'-g''</td>
<td>in F or C</td>
</tr>
<tr>
<td>78</td>
<td>1</td>
<td>G minor</td>
<td>f'-e'</td>
<td>in F</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>G minor</td>
<td>f'-e'</td>
<td>in F</td>
</tr>
<tr>
<td>83</td>
<td>5</td>
<td>D minor (D)</td>
<td>c'-d'</td>
<td>in D or C</td>
</tr>
<tr>
<td>89</td>
<td>1</td>
<td>C minor (D)</td>
<td>c'-f'</td>
<td>in F</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>G minor</td>
<td>g'-f'</td>
<td>in F</td>
</tr>
<tr>
<td>95</td>
<td>1</td>
<td>G minor (D)</td>
<td>c'-c'</td>
<td>in C</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>G major</td>
<td>d'-d'</td>
<td>in D or C</td>
</tr>
<tr>
<td>96</td>
<td>1</td>
<td>F major</td>
<td>d'-c'</td>
<td>in C</td>
</tr>
<tr>
<td></td>
<td>6</td>
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<td>d'-c'</td>
<td>in C</td>
</tr>
<tr>
<td>99</td>
<td>1</td>
<td>G major</td>
<td>d'-a'</td>
<td>in D</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>G major</td>
<td>d'-d'</td>
<td>in D</td>
</tr>
<tr>
<td>105</td>
<td>1</td>
<td>G minor</td>
<td>d'-d'</td>
<td>in Eb</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Bb major</td>
<td>f'-f'</td>
<td>in F</td>
</tr>
<tr>
<td>107</td>
<td>1</td>
<td>B minor</td>
<td>f'-g'</td>
<td>in D</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>B minor</td>
<td>f'-f'</td>
<td>in D</td>
</tr>
<tr>
<td>109</td>
<td>1</td>
<td>D minor</td>
<td>c'-c'</td>
<td>in C or D</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>A minor</td>
<td>d'-e'</td>
<td>in C or D</td>
</tr>
<tr>
<td>114</td>
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</tr>
<tr>
<td></td>
<td>7</td>
<td>G minor</td>
<td>f'-d'</td>
<td>in F</td>
</tr>
<tr>
<td>115</td>
<td>1</td>
<td>G major</td>
<td>g'-g'</td>
<td>in G</td>
</tr>
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<td></td>
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<td>G major</td>
<td>g'-g'</td>
<td>in G</td>
</tr>
<tr>
<td>Cantata No.</td>
<td>Mvt. No.</td>
<td>Key</td>
<td>Range</td>
<td>Instrument</td>
</tr>
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<td>------------</td>
<td>----------</td>
<td>--------------</td>
<td>---------------</td>
<td>----------------</td>
</tr>
<tr>
<td>116</td>
<td>1, 6</td>
<td>A major</td>
<td>g''-e''</td>
<td>D, E, or A</td>
</tr>
<tr>
<td>124</td>
<td>1, 6</td>
<td>E major</td>
<td>e'-f''</td>
<td>in D or E</td>
</tr>
<tr>
<td>125</td>
<td>1, 6</td>
<td>E minor</td>
<td>d'-e''</td>
<td>in D</td>
</tr>
<tr>
<td>140</td>
<td>1, 7</td>
<td>E♭ major</td>
<td>e♭'-g''</td>
<td>in E♭ or F</td>
</tr>
</tbody>
</table>

The problem of the Tromba da tirarsi, then, particularly as it relates to the Corno and Corno da caccia parts listed by Terry as having been written for the Zugtrompete, is principally one of scoring. In almost every case where Terry has questioned the horn parts, Bach wrote them at sounding pitch. Thus, a horn part may look as though it is written in the third octave of the natural horn, when in reality it would have been played in the fourth octave of the instrument. The Zugtrompete, then, would never have been required, in Bach's orchestra, to play Corno or Corno da caccia parts, simply because the proper instrument, the natural horn, could handle them adequately.
CHAPTER IV

PARTS FOR TROMBA OR CLARINO CONTAINING EXTRA-HARMONIC NOTES

Terry lists fourteen cantatas with twenty-six individual movements where parts marked either Tromba or Clarino would have required a slide trumpet in performance (see Table 2, page 6). Unlike the parts for Corno and Corno da caccia discussed above, the Tromba and Clarino parts that contain extra-harmonic notes have no clear solutions. Each movement must be considered separately.

The distinction between Tromba and Clarino was marked in the early part of the Baroque period, but as the period drew to a close the distinction became blurred. In the beginning, each term applied to a different register of the same instrument, with Clarino denoting a trumpet part that utilized a range from the sixth partial upwards, while Tromba denoted a trumpet part ranging between the third and tenth partials. In a strict sense, when three trumpet parts were written in a composition, they were labeled Clarino I, Clarino II, and Tromba Prinzipale (Principale), with the register
designations inherent in the names of the parts strictly observed.\(^1\) Bach, however, did not observe these conventions in his scoring for trumpets, and used the designations \textit{Clarino I}, \textit{Clarino II}, and \textit{Principale} only once, in Cantata No. 15, \textit{Denn du wirst meine Seele nicht in der Hölle lassen}, which has been thought to be an early work, dating from 1704.\(^2\) Throughout the rest of his career, with few exceptions, he designated the trumpets simply "\textit{Tromba}" with no other distinction with regard to the range of the part. It is noteworthy that, with the exception of Cantata No. 15, noted above, Bach used only the term "\textit{Clarino}" for a solo trumpet part containing extra-harmonic notes in the instrument's third octave. The three cantatas, Nos. 24, 48, and 167, in which such \textit{Clarino} parts occur, are discussed below. In fact, the \textit{Tromba III} in many of his works is expected to play in the \textit{clarino} register much of the time.

In the works under discussion, Bach appears to have used the terms \textit{Tromba} and \textit{Clarino} interchangeably, with no special style or register marking either designation. In the twenty-six movements of the fifteen cantatas listed in Table 2, Bach called for \textit{Clarino} in only six movements, and of those the trumpet parts to the

\(^1\) For a more complete discussion of the ranges of the various trumpet parts, see Speer, \textit{Unterricht der Musicalischen Kunst}, pp. 94-96.

\(^2\) Terry, \textit{Bach's Orchestra}, p. 187.
first, third, and seventh movements of Cantata No. 48, Ich glaube Menschen, wer wird mich erlösen, were marked Tromba in the score and Clarino in the parts. Only in the case of Cantata No. 15 does the term Clarino seem to indicate the type of trumpet part involving only the partials from six upward. In fact, in the sixth movement of Cantata No. 24, Ein ungestärkt Gemüte, which is a chorale, Bach calls for the trumpet, called Clarino in this cantata, to descend to f, not once, but several times. Such a Clarino part was definitely not in the Baroque clarino tradition.

Terry set aside certain trumpet and horn parts as having been written for the Zugtrompete, even though there was no indication in the score or parts for the use of such an instrument, by applying the following criterion: since the notes d', f', and a' are outside of the normal overtone series of the trumpets and horns in use in Bach's time, then any trumpet or horn part containing the notes d', f', or a' must have been written with the Tromba da tirarsi in mind. As is shown above (Chapter III), however, it is not possible to apply this particular criterion to horn parts written at sounding (concert) pitch. The application of the above criterion to trumpet parts has much more validity, since the trum-

3 Terry, Bach's Orchestra, p. 192.
pet in C reads the same note it sounds, and the trumpet in D sounds a tone higher than the note it reads. Thus, if d' were written for the trumpet in C, it would have to play d', a note that is clearly foreign to its overtone series.

To state categorically, however, that the presence of d', f', or a' in one of Bach's trumpet parts signalled the use of the slide trumpet is an oversimplification. As is seen in the discussion of extra-harmonic trumpet notes in the Baroque period, certain trumpeters were capable of sounding these three extra-harmonic notes under certain circumstances. The note a' is the easiest of the three extra-harmonic tones to produce. As long as the a' passed quickly, on an unstressed portion of the beat, as a neighboring or passing tone, it was possible and useable on the natural trumpet, particularly in the hands of a fine performer.5

Terry's criterion should be modified, then, in the case of the questionable Tromba and Clarino parts. It would be more accurate to say that the presence of d' or f' in one of Bach's trumpet parts indicates the

5The writer has been able to produce an acceptable a' on a Meinl-Lauber natural trumpet in C. In a lecture-demonstration given at the convention of the American Musicological Society, November 2, 1974, Don L. Smithers produced both an acceptable a' and a d' (written pitch) on a Meinl-Lauber natural trumpet in D. The a' and d' on the trumpet in D would sound b' and e', respectively.
probable use of the Zugtrompete. If a' is the only extra-harmonic note appearing in the trumpet part, that, by itself, is not enough to indicate the use of the Zugtrompete. Only if the a' is used frequently and is unprepared should the probable use of the Zugtrompete be considered.

The Zugtrompete, particularly in Altenburg's time (the late eighteenth century), was associated with the performance of chorales, so the use of a trumpet to play the chorale melody in a cantata movement might be indicative of the use of a Zugtrompete. Some chorale melodies, however, lie within the overtone series of the natural trumpet, and thus would not have required a slide instrument.

The question of hand stopping a coiled trumpet to produce extra-harmonic tones cannot be overlooked. The technique of hand-stopping horns was probably known long before the time of Hampel, since it was well known that the insertion of a mute into a trumpet bell raised the pitch of the instrument by a full tone even as early as 1607, the date of Monteverdi's Orfeo. And there is no other convincing reason for building a trumpet in coiled form, other than to bring the bell closer to the player's right hand. Modern experiments with hand-stopping coiled trumpets by the writer and

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6Altenburg, Versuch, p. 12.
some colleagues have been of limited success, due mainly to the fact that the coiled trumpets made by the Meinl-Lauber Company and Helmut Finke in imitation of the Baroque Jägertrompeten have bells with very narrow throats, not large enough to permit the introduction of a hand to the extent necessary to alter the pitch of the instrument to a significant degree. A comparison of the Meinl-Lauber Jägertrompete (Plate IV), with the coiled trumpet held by Reiche in the Haussmann portrait (Plate II), will show that the trumpet depicted by Haussmann has a bell with a wider throat than does the modern reconstruction. Although the bell of Reiche's trumpet would not have been as wide as that of a horn, it still might have been wide enough to allow hand-stopping to produce d', f', and a'.

The question of whether a particular trumpet part would have been played on the slide trumpet can only be answered by examining the trumpet part in question. While the use of the third-octave extra-harmonic tones d' and f' is a strong argument that the trumpet part in question would have required the use of a slide trumpet, other factors enter into consideration as well. The Zugtrompete, according to Altenburg, was mainly used for the playing of chorale melodies,7 probably because the process of moving the body of the instrument along the

7Altenburg, Versuch, p. 12.
single slide was so cumbersome and awkward that movement in fast note values was considered either very difficult or impossible. Thus, the appearance of extra-harmonic tones in a trumpet part that doubles the chorale melody would indicate the use of a Zugtrompete, while the appearance of extra-harmonic tones in a trumpet part written in a more florid style, with fast-moving notes throughout, would indicate the use of hand-stopping on a coiled Jägertrompete.

No documentary proof, however, has been forthcoming in the more than two centuries since Bach's time to show that the process of hand-stopping was actually known in the early eighteenth century. Various authorities on the history of the trumpet and horn, notably Morley-Pegge and Smithers feel that the main purpose in coiling the tube of the Jägertrompete was to facilitate hand-stopping. Because of the paucity of contemporary documentary evidence, the use of hand-stopping by trumpeters and horn players of Bach's time must remain only a probability, and not an established fact.

In analyzing the Tromba and Clarino parts in question, the presence of extra-harmonic notes in the third octave of the natural trumpet, d', f', and a' was noted first. If the only extra-harmonic note present was

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8 Morley-Pegge, The French Horn, p. 89.

9 Smithers, "Trumpets of J. W. Haas," 41.
a', the part was further examined to determine how that a' was used. If it occurred only as a passing or neighboring tone on an unstressed beat, or on the unstressed portion of a beat, then the trumpet part was assumed to have been playable on the natural trumpet of the time. If d' or f' were present, the part was assumed to have required the use of a Zugtrompete, particularly if the trumpet part in question was part of a chorale. If the questionable trumpet part contained extra-harmonic notes in the third octave, but was written in a florid style with many fast-moving notes, the possibility that the extra-harmonic notes were played by hand-stopping a Jägertrompete was considered. The entire cantata was examined to determine whether the trumpet played in any other movements than the one or ones in question, and if so, in what keys the trumpet was pitched in those other movements.

Bach scored for one trumpet in Cantata No. 10, *Meine Seel' erhebt den Herren*: The trumpet part is written in C, at sounding pitch, and appears in three movements. The first movement, a chorus, is scored for two oboes, Tromba, strings, continuo, and four-part choir. The tempo indication for the first movement is Vivace, and the movement is in common time. The key of the movement is G minor, and all parts, including the Tromba, have the key signature of two flats. The range of the Tromba part is c' to f''.
Throughout the first movement, the Tromba plays the chorale melody, sometimes in unison with the Soprano, sometimes in unison with the Alto. The chorale-like nature of the Tromba part, coupled with extensive use of d' and f', particularly with note values of long duration, makes it very likely that this cantata movement was played on the Zugtrompete. A typical phrase from the Tromba part in the first movement can be seen in Example 25.

Example 25.—J. S. Bach, Cantata No. 10, Meine Seel' erhebt den Herren!, 1st movement (Coro), Tromba part, measures 62-69.

The fifth movement is scored for two oboes and Tromba in unison, Alto and Tenor soloists, and continuo. The movement is in D minor, and all parts have the key signature of one flat. The oboes and Tromba have the chorale melody in unison; the use of f' and d' in long note values, the appearance of a' unprepared and in a stressed position, and the fact that the melody proceeds
in relatively long note values make it probable that this movement, too, was played on the Zugtrompete. Here the range of the Tromba part is d' to c''.

The seventh and final movement of Cantata No. 10 is a four-part chorale of the type that so frequently closes Bach's cantatas. The scoring is for Violino I, Oboes I and II, and Tromba in unison with the Soprano, Violino II in unison with the Alto, Viola in unison with the Tenor, Bass, and Continuo. The chorale is in G minor, and all parts have the key signature of two flats. The range of the Soprano part is from g' to f''. The a' always appears as a passing tone, so the part would have been possible on the natural trumpet in C. It is much more likely, however, considering the high probability that the Zugtrompete would have been used to play the Tromba parts in the first and fifth movements, that the Zugtrompete was also used in the final chorale.

Cantata No. 12, Weinen, Klagen, Sorgen, Zagen, contains a part for Tromba in the sixth and seventh movements. Both movements have been listed by Terry as requiring a Zugtrompete. The sixth movement is an aria for Tenor, Tromba, and Continuo, in the key of G minor. The range of the Tromba part is from g' to b'''. The note a' occurs only three times in the course of the movement (if the repeat is taken), and it always appears in the same context. As can be seen in Example 26, the a' appears as the third sixteenth note of the beat, as a
passing tone between b♭ and g'. It should be remembered that b♭, although slightly out of tune in equal temperament, was considered usable by Baroque trumpeters. Thus, the sixth movement of Cantata No. 12 could have been played on the natural trumpet in C.

Example 26.—J. S. Bach, Cantata No. 12, Weinen, Klagen, Sorgen, Zagen, 6th movement (Aria), Tromba part, measures 10-13.

The last movement of Cantata No. 12 is the usual four-part chorale with strings and continuo doubling the vocal parts. A high obbligato part is present, however, marked Oboe o Tromba. This obbligato part has a range of a' to c'', but a' is used only once, as a lower neighboring tone to b♭. The Chorale, then too, would have been playable on the natural trumpet in C. The Oboe o Tromba part can be seen in Example 27.

Cantata No. 24, Ein ungefärbt Gemüte, contains a very interesting and unusual trumpet part, which appears in two movements. The third movement, a chorus, is scored for Clarino, two oboes, strings, continuo, and four-part choir. The movement is in G minor, with the Dorian signature of one flat, and is in two sections, the
Example 27.—J. S. Bach, Cantata No. 12, Weinen, Klagen, Sorgen, Zagen, 7th movement (Choral), Oboe o Tromba part.

first unmarked, and the second marked Allegro e vivace. The range of the Clarino part is from d' to b♭'', and it is very florid throughout. As can be seen in Example 28, the Clarino part is not similar to the chorale-like trumpet parts examined in either Cantata No. 10 or Cantata No. 12. Here the trumpet has been scored as part of the contrapuntal texture of the composition, and the use of extra-harmonic notes makes the Clarino an equal member of the ensemble with the other instrumental parts. Bach's use of unprepared extra-harmonic tones, sometimes
Example 28.—J. S. Bach, Cantata No. 24, *Ein ungefährbt Gemüte*, 3rd movement (Coro), Clarino part, measures 31-36.

repeated, makes it unlikely that this Clarino part was played on the natural trumpet. However, the fast notes and florid passage-work are not indicative of the Zug-trompete either, and thus it is more logical to assume that the third movement of Cantata No. 24 would have been played on a Jägertrompete with the aid of hand-stopping.

The sixth movement of the same cantata also contains an unusual Clarino part, but this time the part is unusual because it contains extra-harmonic notes in the second octave. The sixth movement is a chorale, scored for Clarino, two oboes, strings, continuo, and four-part choir, in F major, with the key signature of one flat in all parts. The Clarino part has a range of f to eb, is written at concert (sounding) pitch, and is in unison with the soprano when the choir is singing. In between
choral entrances, the Clarino plays supporting notes in the low register, f, a, and o'. The strong emphasis on the F major triad in the low register would seem to indicate the use of a trumpet pitched in low F, a perfect fifth below the natural trumpet in eight-foot C. No such instrument, however, is known to have existed during the time of Bach. Scoring a trumpet in the low register on a part that is essentially harmonic background is also unusual, for Baroque trumpet parts in the lower register tend to be fanfare-like and usually musically important. In fact, a solo trumpet part in the lower, or Prinzipale, register usually resembles a military trumpet call. This particular low register trumpet part looks more like a horn part than a trumpet part. If it were written for the horn in F, then the part could easily have been played on the natural horn of the period. The original score is quite difficult to read, and it may well be that the copyist made a mistake, copying Clarino where the composer intended Corno. Yet another possibility is that the trumpeter, either Reiche or his successor, who was expected to be proficient on both the trumpet and the horn, was expected to play the third movement of the cantata on the trumpet, and then to pick up the horn to

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play the final chorale. Since the composer would have been directing the work, there would have been no need for a written indication of the change of instruments. A verbal direction would have been sufficient. A portion of the Clarino part from the Chorale, with the transposition for Corno in F can be seen in Example 29.

In any event, the Chorale to Cantata No. 24 seems more logical if the Clarino part is understood as a Corno part. If one does not accept the proposition that the final chorale was written with the Corno in mind, then it is necessary to assume, because of the large number of extra-harmonic notes in the trumpet's second octave, that it was written with the Zugtrompete in mind. It is unlikely that a trumpeter would have been able to lip the f and a, and equally unlikely that such notes could be produced by hand-stopping.

A rare instance of three trumpets doubling vocal parts in the final chorale of a cantata occurs in Cantata No. 43, Gott fähret auf mit Jauchzen. Bach wrote three trumpet parts for trumpets in C in the first movement of the cantata, and they are normal Baroque trumpet parts with no unusual notes or other abnormalities. In the final movement of the cantata, which is numbered eleven in Johann Sebastian Bach's Werke, and seven in Johann Sebastian Bach: Neue Ausgabe Sämtlicher Werke, both Tromba I and Tromba II double the Soprano at the unison, and Tromba III doubles the Alto at the unison.
Example 29.—J. S. Bach, Cantata No. 24, *Ein ungefärbt Gemüte*, 6th movement (Choral), Clarino part and transposition for *Corno* in F, measures 1-10.
This is the only known case of Bach's requiring the second and third trumpets to double a vocal part in a chorale. There were probably not three Zugtrompeten available in Leipzig in Bach's time, but it is unlikely that all of the parts would have required the slide instrument. The Soprano part has a range of f sharp to g prime (Terry gives this range as from g' to g double prime), and, although both f sharp and a' occur within the chorale melody, the part would not be too difficult to play on the natural trumpet in C. It is unlikely, however, that two trumpeters would have been able to lip the extra-harmonic notes in tune in unison. The Alto part, played by the third trumpet, has a range of b to b sharp, and definitely would have required the use of a Zugtrompete.

More light has been thrown on the scoring of this unusual chorale by Alfred Durr, in the critical commentary on Cantata No. 43 in Johann Sebastian Bach: Neue Ausgabe sämtlicher Werke (Neue Bach-Ausgabe). Durr points out a previously overlooked notation in the parts which indicates that the second and third trumpets were not to play in the final chorale. Probably a part-

11 Terry, Bach's Orchestra, p. 191.

copyist's error was responsible for the Soprano and Alto parts having been copied into the second and third trumpet parts. Only the first trumpet would have played the final chorale, and the fact that the only extra-harmonic notes in the part are a' and f#, indicates that the performer could have used the normal natural trumpet in C, or perhaps a Jägertrompete with hand-stopping. In any case, the use of a Zugtrompete would not have been necessary.

Cantata No. 48, Ich elender Mensch, wer wird mich erlösen, includes a part for one trumpet, marked Tromba, which appears in the first, third, and seventh movements. The first movement, scored for Tromba, two oboes, strings, continuo, and four-part choir, is in G minor; all parts have the key signature of two flats. The Tromba part carries the chorale melody obbligato, and has a range of g' to g'''. The only extra-harmonic note in the part is a', which occurs only three times, each time as an eighth note passing or neighboring tone.

The third and seventh movements of Cantata No. 48 verteuten Wurden, ergibt sich das Problem, welchen Instrumenten die Eintragung des Schlusschorals in den Trompetenstimmen B5 bis 7 zugedacht ist. Hier findet sich nämlich in B5 und 6 die Sopranostimme, in B7 die Altstimme, nicht ohne dass in den Stimmen B6 und 7 ein "Parte Seconde tac[et]" bzw. "Parte 2da tac[et]" vorangeht (in B5 kam eine entsprechende Notiz nicht in Frage, da die Tromba I ja noch in Satz 7 mitzuwirken hat)." The numbers B5, B6, and B7 refer to the original parts; B5= Tromba I, B6= Tromba II, and B7= Tromba III.
are chorales in which the Tromba doubles the Soprano at the unison. The range of the unison part in the third movement is f' to d''; in the seventh movement it is d' to d''. Even though a Zugtrompete would not have been necessary to play the first movement of the cantata, the Tromba parts in the third and seventh movements would have made the use of a slide trumpet necessary.

Cantata No. 70, Wachet, betet, seid bereit alleszeit, includes a prominent part for Tromba in the first, second, seventh, ninth, tenth, and eleventh movements. In all but the seventh and eleventh movements, which are the final chorales of the first and second parts of the cantata, respectively, the trumpet part contains no extra-harmonic notes, and would have required no other instrument than the natural trumpet in C. In the seventh movement, the range of the Tromba part is d' to e''. The Chorale is in G major, and all parts have the key signature of one sharp. The d' occurs only once in the unison Tromba and Soprano part, but it is a cadence note. In the eleventh movement, the Tromba and oboe are in unison with the Soprano, and the range of the unison part is c' to d''. The Chorale is in C major, and the frequent appearance of f' and d' in the combined part makes it very unlikely that it was played on a natural trumpet. The seventh and eleventh movements of Cantata No. 70, then, would definitely have required the use of a Zugtrompete.
One movement of Cantata No. 74, Wer mich liebet, der wird mein Wort halten, the final chorale, has been listed by Terry as having a trumpet part that would have required the use of a Zugtrompete. The first movement of the cantata contains three trumpet parts for Trombe in C, but they are in no way different from the normal natural trumpet parts that Bach wrote. In the final chorale, however, Tromba I doubles the Soprano at the unison on the chorale melody. The range of the combined part is g' to e'', and the chorale is in the key of A minor. The a' is the only extra-harmonic tone in the movement (except for a single eighth note f# that appears as a lower neighboring tone), but the fact that a' occurs in stressed positions, and is often repeated, makes it unlikely that this chorale was played on the natural trumpet. A Zugtrompete would have been necessary to perform the part.

Terry has listed the eighth movement, the Sinfonia to Part II of Cantata No. 75, Die Elenden sollen essen, as requiring the Zugtrompete, but, as in the case of the Corno and Corno da caccia parts discussed above in Chapter III, it is merely a case of mistaken transposition. The Tromba part in the Sinfonia is written as though for a trumpet in high G. The Sinfonia is in the key of G major, and all of the other parts,

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13 Terry, Bach's Orchestra, p. 192.
strings and continuo, have the signature of one sharp. The Tromba part, however, is written a perfect fifth below sounding pitch, and has a range of g' to a'' in written pitch (d'' to e''' in sounding pitch). The part would have been well within the capabilities of a trumpeter playing either a natural trumpet in D or a natural trumpet in C. If the instrument were pitched in D, the range of the part would be c'' to d''', with a key signature of one flat. If the instrument were pitched in C, the range of the part would be d'' to e''', with a key signature of one sharp. Although the tessitura of the part is high, as can be seen in Example 30, it is no higher than many others Bach wrote. In fact, the part might have been playable on a G trumpet, had one existed in Leipzig during Bach's time, because the only extra-harmonic note in the Tromba part as written (in G) is a', and that occurs only once. In any case, the part would have been playable on the natural trumpet in the standard keys of D or C, in spite of Bach's somewhat unusual manner of notating the part.

Cantata No. 103, Ihr werdet weinen und heulen, contains two movements with a part for Tromba. According to Terry, both movements would have required the use of a Zugtrompete. The fifth movement, which is an aria for Tenor, Tromba, two Oboes d'Amore in unison with the

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Example 30.—J. S. Bach, Cantata No. 75, Die Elenden sollen essen, 8th movement (Sinfonia), Tromba part and transposition for trumpet in D and trumpet in C.
first violin, strings, and continuo, was scored for the D trumpet. The Aria is in the key of D major, with a key signature of two sharps in all parts except the Tromba, which is written as a transposing instrument (notated a major second below sounding pitch). The only extra-harmonic note in the third octave of the trumpet is a' (written pitch), which occurs only four times, each time as an eighth note. All four instances of the use of a' occur within the space of three measures, which can be seen in Example 31. It is possible, then, to play this movement on the natural trumpet in D.

Example 31.—J. S. Bach, Cantata No. 103, Ihr werdet weinen und heulen, 5th movement (Aria), Tromba (in D) part, measures 19-21.

The sixth movement of Cantata No. 103 is a different matter. It is the final chorale, and, again, the Tromba, along with the rest of the wind instruments and the first violin, doubles the Soprano part. The range of the unison part is f'' to e''. Since the Tromba in D was used in the preceding movement, it would be logical to assume that the same instrument was used in the final chorale. The key of the Chorale is B minor, which would also bear out the use of the D trumpet. But too many
extra-harmonic notes occur to make it probable that the natural trumpet in D was used to play the chorale. The frequent appearance of b' (a' for the D trumpet), especially at cadences, coupled with the occasional appearance of g' (f' for the D trumpet), indicates the probable use of the Zugtrompete, perhaps in D, in the chorale. The use of a natural trumpet in C might be considered, because the only two extra-harmonic notes in the part, f#' and a' are relatively easy to produce. Such an analysis is unlikely, because f#' frequently occurs as a quarter note in a stressed position. It is, therefore, likely that the sixth movement of Cantata No. 103 would have required a Zugtrompete for the performance of the Tromba part.

Bach scored for one trumpet in Cantata No. 126, Erhalt' uns, Herr, bei deinem Wort. In the first movement, a chorus in the key of A minor, the trumpet part, marked Tromba, is written as a transposed part for the trumpet in D, with the key signature of one flat. The rest of the parts have the key signature of no sharps or flats. The Tromba part in the first movement is in no way out of the ordinary except that the trumpet is used in the dominant minor key of its pitch, as were the trumpets in the Sonata à 4 G moll by Vejvanovsky and the Sonata X by H. I. F. Biber.

The trumpet takes part in the sixth movement of
the cantata, the final chorale, in unison with the two oboes and first violin on the Soprano part. The Chorale is in the key of A minor, and the range of the Tromba part is g' to g''. Were it not for three appearances of g' (f' on the D trumpet) the part would have been playable on the natural trumpet in D. The note g♯' (f♯' on the D trumpet) occurs twice, but it can easily be lipped down from a' (g' on the D trumpet). The three appearances of g', two of which begin a phrase, make it probable that a Zugtrompete, probably in D, would have been used to play the part.

In Cantata No. 137, Lobe den Herren, den mächtigen König, Bach scored for trumpet or trumpets in the first, fourth, and fifth movements. The first and fifth movements both contain parts for three trumpets in C, and present no problems. The fourth movement, an aria for Tenor, Tromba, and Continuo, is listed by Terry as requiring the Zugtrompete. The movement is in the key of A minor, and the trumpet plays the chorale cantus firmus. The only extra-harmonic note in the movement is a', which occurs only twice, both times as an eighth-note passing tone between b' and g'. The passage quoted in Example 32 occurs twice. Since a' was used so infrequently, and only as a passing tone of short duration, it is probable that the Tromba part would have been played

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15 Terry, Bach's Orchestra, p. 193.

Bach scored for one trumpet in Cantata No. 147, Hertz und Mund und That und Leben, calling for Tromba in the first, sixth, and tenth movements. The Tromba part in the first movement is a normal part for the natural trumpet in C, but the Tromba parts in the sixth and tenth movements raise more questions. Musically, the sixth and tenth movements are identical, forming the final chorales to the first and second parts of the cantata, respectively. This concert chorale is popularly known as "Jesu, Joy of Man's Desiring." The Tromba plays in unison with the Soprano when the chorus is singing. The range of the unison part is g' to f'', and the only extra-harmonic note for the trumpet is a', which occurs fourteen times in the course of the chorale. Example 33 shows the Tromba part to the chorale. The writer has been able to play the Tromba part to this chorale on a natural trumpet in C, although the frequency of lipped notes (a' and b') made it difficult. The fact
that the Tromba line would be sounding elsewhere would make it easier for the trumpeter to lip the extra-harmonic notes into tune, but the probable reason for scoring the Tromba in unison with the Soprano was to provide assistance to the boy sopranos, who might not have been too sure of their part, not the other way around. Therefore, although all of the trumpet parts in Cantata No. 147 could have been played on the natural trumpet in C, it is more likely that the chorales were played on the Zugtrompete.

Example 33.— J. S. Bach, Cantata No. 147, Hertz und Mund, und That, und Leben, 6th movement (Choral), Tromba (in C) part.
The final chorale of Cantata No. 167, *Ihr Menschen rühmet Gottes liebe*, contains a part for *Clarino* that was probably written with the *Zugtrompete* in mind. Written in the key of G major, the chorale is scored for *Clarino* (written at sounding pitch), Oboe, strings, continuo, and four-part choir. The *Clarino* plays in unison with the Soprano throughout the chorale, and the part has a range of d' to d''. The *Clarino* is not used in any other movement of the cantata. The many appearances of f' and d', coupled with the chorale nature of the *Clarino* part, make it probable that the *Zugtrompete* would have been used to play the trumpet part.

Cantata No. 185, *Barmherziges Herze der ewigen Liebe*, contains a part for *Tromba* in the first and sixth movements, both of which have been listed by Terry as requiring the use of a *Zugtrompete*. In the first movement, which is in the key of F minor, the questionable part has been marked "Oboe (Tromba)." The movement is a duet for Soprano, Tenor, Oboe (Tromba), and Continuo. The range of the *Tromba* part is e' to f#'', with a' often approached by leap from c#', which makes it probable that, if a trumpet were used to play the part, it would have been a *Zugtrompete*.

The sixth movement of the cantata, the final chorale, is also in the key of F minor, with the usual

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key signature of three sharps. The Oboe and Tromba are in unison with the Soprano, and, again, the range of the combined part is e' to f'''. The frequent appearances of a' and f''', particularly at cadence points, makes it probable that the part would have been played on the Zugtrompete.

One instance of a Tromba part that would have required the use of a Zugtrompete was apparently overlooked by Terry. The final chorale to Cantata No. 110, Unser Mund sei voll Lachens, has a part for Tromba in unison with the Soprano on the chorale melody that contains a significant number of extra-harmonic notes. Three trumpets in D take part in the first movement of the cantata, a chorus, and the sixth movement is an aria for Basso, Tromba in D, strings, and continuo. In neither movement do any of the trumpets have extra-harmonic notes. In the final chorale, however, which is in the key of B minor, the Tromba part has a range of b' to f''' (a' to e'' on the D trumpet). It is probable that the D trumpet would have been used for the final chorale, since it was the instrument required in the other movements. The b' (a' on the D trumpet) occurs six times in the course of the chorale—four times at cadence points. The other two times it is the starting note of a phrase. It is probable, then, that this movement was also played on the Zugtrompete, possibly in D.

At this point Terry's table of trumpet parts
marked Tromba or Clarino, but intended to be played on the Zugtrompete, can be revised. Table 6 shows the movements which, according to Terry, would have required the use of a Zugtrompete, but which actually would have been playable on the natural trumpet of the Baroque period.

### TABLE 6

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<thead>
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<th>Cantata No.</th>
<th>Mvt. No.</th>
<th>Key</th>
<th>Range</th>
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<td>6, 7</td>
<td>G minor</td>
<td>g'-b''</td>
<td>in C</td>
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<td>43</td>
<td>11</td>
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<td>g'-g''</td>
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<td>G major</td>
<td>g'-f''</td>
<td>in C</td>
</tr>
</tbody>
</table>

A comparison of Tables 2 and 6 shows that Bach was not consistent when it came to naming parts for the

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17 As has been stated above, although the Tromba parts in the sixth and tenth movements of Cantata No. 147 are playable on the natural trumpet in C, it is more logical to assume that they were written for the Zugtrompete.
Zugtrompete. He evidently considered the Zugtrompete a trumpet just like the standard instrument of the time, and did not feel it necessary to designate it specifically each time he required it. In other words, it was up to the trumpeter to decide which instrument was right for the part (a practice which still remains in orchestral works). It will be noticed, too, that of the cantata movements listed in Table 6, only those from Cantata No. 43 and Cantata No. 147 are chorales in which the trumpet doubles the Soprano. It is an indication that the natural trumpet would have been the choice when the trumpet part was obbligato. It is clear, however, that the Zugtrompete would have been necessary in fewer cases than has previously been thought.
CHAPTER V

PARTS FOR TROMBA DA TIRARSI AND CORNO DA TIRARSI

The term Tromba da tirarsi has been something of an enigma to musicologists. It does not appear in orchestration textbooks, and, until recently, there has been much confusion about the term. In fact, tirarsi is a form of an Italian verb which means "to draw out;" thus, the Tromba da tirarsi is a trumpet that can be drawn out, or, in other words, a trumpet equipped with a moveable slide. The Zugtrompete formerly in the collection of musical instruments at the Hochschule für Musik in Berlin, described in Chapter I, is such an instrument. The Berlin Zugtrompete was a trumpet by Hans Veit of Naumberg dated 1651, and pitched in the D of Bach's day. By extending the single slide which was attached to the mouthpiece, the pitch of the instrument could be lowered by three semi-tones. The fact that Reiche possessed a Zugtrompete makes it clear that the Tromba da tirarsi and the Zugtrompete were the same instrument.

Darrell Urban, in a recent study of the Tromba da tirarsi, concluded that Bach's slide trumpet was pitched
in the key of C, with a crook for the key of A. By recording the slide position for each note in a Tromba da tirarsi part, noting the distance traveled between each position, and then dividing the sum of the distances traveled by the number of changes, Urban produced a number which represented the average distance traveled in a slide change, and thus had an index to the facility with which a trumpet in a given key could perform a given cantata movement. A lower number would indicate fewer slide changes and ones of shorter distance, and thus would indicate that the movement would be more easily performed on an instrument in that key. He used as a basis of his computations the three keys of D, C, and A. The results of his study showed that of the three instruments, the Zugtrompete in D would have been incapable of performing the Corno da tirarsi part in Cantata No. 162, Aeh, ich sehe, itzt, da ich zur Hochzeit gehe, and the Tromba da tirarsi part in Cantata No. 77, Du sollst Gott, deinen Herren, lieben, because both parts contain the note bb, which would not be available on a slide trumpet in D with only four slide positions (counting the closed position as first). A slide trumpet in C could play all of the parts which call for a slide instrument.

The A instrument would be most suitable for performing the *Corno da tirarsi* part in Cantata No. 162.²

The key of the *Tromba da tirarsi*, then is something of a mystery. The Veit Zugtrompete was pitched in D, but that may have been only an isolated example. Altenburg, when he said that the Zugtrompete was "wie eine kleine Alt Posaune,"³ was certainly talking about the slide principle by which the instrument varied its pitch, but he may have also been giving a clue as to the pitch of the instrument. The alto trombone of the Baroque period would have been pitched in either F, Eb, or D, and so, if the Zugtrompete was like the little alto trombone, it, too, may have been pitched in one of those keys.

The Zugtrompete owned by Reiche, then, may have been pitched in one of four keys: F, Eb, D, or C. The keys of D and C are those of the natural Baroque trumpet: the keys of F and Eb are the keys of the alto trombone. Example 34 shows the notes that would have been available on a slide trumpet in each of those four keys, based on a slide which would allow the instrument to be lowered three semi-tones in pitch. Note the gap which occurs between the fourth and fifth notes and the eighth and ninth notes in each line of the example.

³Altenburg, *Versuch*, p. 12.
Example 34.—Notes available to the Zugtrompete in F, Eb, D, and C, based on a slide length which would allow the pitch of the instrument to be lowered by three semi-tones. The white notes indicate the overtone series of the instrument when the slide is completely closed.

Crooking the Zugtrompete into lower keys than the one in which it was built would present a problem, since each lower key would require a progressively longer slide position on an instrument that was already severely limited in the number of slide positions it could produce. It is not logical, therefore, to assume that the Zugtrompete was crooked more than a single tone below its natural pitch. It should also be remembered that the trumpeters in Bach's orchestra would have had to use whatever
instruments were at hand, not those which might, in
theory, allow them to perform the parts with more facil-
ity. Since no mention of a trumpet in low A has been
found in sources previous to or contemporary with the
time of Bach, Urban's thesis that the Zugtrompete in
Bach's orchestra was provided with a crook for low A
must be regarded with a certain amount of suspicion.

Bach called for the Tromba da tirarsi in seven
movements from two cantatas, for the Corno da tirarsi
in five movements from two cantatas, and the Tromba o
Corno da tirarsi in three movements of one cantata. In
every case the Tromba da tirarsi was assigned the chorale
melody, usually in large note values. The Corno da
tirarsi was treated somewhat differently. In three move-
ments from the two cantatas in which the Corno da tirarsi
appears, it is assigned the chorale melody in a four-
part chorale in unison with the Soprano. In the other
two movements, however, the Corno da tirarsi was given a
florid obbligato part, which resembles the obbligato
parts Bach wrote for the natural horn. Bach specified
Tromba o Corno da tirarsi in only one cantata, No. 46.
In the first and sixth movements, the Tromba o Corno da
tirarsi plays in unison with the Soprano. In the third
movement, however, it has an obbligato part, which, ex-
cept for one note, f', could have been played on a nat-
ural trumpet in B♭.

It can be safely stated, then, that Bach consid-
ered the Tromba da tirarsi an instrument for doubling the upper part in a chorale, which is almost exactly the definition of the Zugtrompete given by Altenburg seventy years later. Altenburg said that the Zugtrompete was used by the Thürmer and Kunstpfeifer to play chorale melodies, because the slide allowed all of the notes in such melodies to be played. Example 35 shows a typical Tromba da tirarsi part.

Example 35.—J. S. Bach, Cantata No. 5, Wo soll ich fliehen hin, 1st movement (Coro), Tromba da tirarsi part (Tromba da tirarsi col Soprano), measures 19-27.

The Tromba da tirarsi appears in two movements of Cantata No. 5, Wo soll ich fliehen hin. In the first movement, which is a chorus, it doubles the Soprano at the unison on the chorale melody, which is, for the most part, in half notes in Common time. In the last movement, which is a four-part chorale, the Tromba da tirarsi

4Altenburg, Versuch, p. 12.
also doubles the Soprano at the unison. Both movements are in the key of G minor, and the Tromba da tirarsi part has a range of g' to f'' in both movements. The only extra-harmonic note involved in the Tromba da tirarsi part is a', which occurs once as a passing note between g' and b♭', and twice as a cadence note approached by leap from c''. Since the notes in the part move slowly, the trumpeter might have been able to play the part on a natural trumpet in C, but Bach's specific designation rules out the use of the natural instrument. The trumpet also plays in the fifth movement, which is an aria for Basso, Tromba, two oboes, strings, and continuo. The trumpet part was written for a natural trumpet in B♭, and contains no extra-harmonic notes.

Cantata No. 20, O Ewigkeit, du Donnerwort, contains three movements in which a part for the Tromba da tirarsi appears. The first movement, which is a chorus scored for three oboes, Tromba da tirarsi, strings, continuo, and four-part choir, has the Tromba da tirarsi in unison with the Soprano on the chorale melody, mainly in half notes in Common time. The seventh and eleventh movements, which are musically identical, serve as the closing chorales of the first and second parts of the cantata, respectively, and in both movements the Tromba da tirarsi is scored in unison with the Soprano on the chorale melody. The range of the Tromba da tirarsi part in each of these three movements is the same: f' to f''.


The key of all three movements is F major, and the frequent appearance of f' in the trumpet part would have made the use of a slide trumpet mandatory. The trumpet also plays in the eighth movement, an aria for Basso, Tromba, three oboes, strings, and continuo, and, as in the fifth movement of Cantata No. 5, the part is for the natural trumpet, this time in C. No extra-harmonic notes occur in the Tromba part in the bass aria, and there would have been no difficulty in playing the part on the natural trumpet in C.

Cantata No. 77, Du sollst Gott, deinen Herren, lieben, has a part for Tromba da tirarsi in the first movement, which is a chorus scored for Tromba da tirarsi, strings, continuo, and four-part choir, in the key of G major with the Mixolydian signature of no sharps or flats. The only instrument specifically named in the original score is the Tromba da tirarsi, which carries the chorale melody obbligato. The range of the Tromba da tirarsi part is c' to c'''. No instruments are specified in the final chorale, but it is highly probable that the Tromba da tirarsi would also have played in this chorale, playing in unison with the Soprano. Bach scored the final chorales of most of his cantatas for all of the instruments that had taken part in the cantata. In this case, the final chorale is in D minor, and the Soprano part, which would have also been played by the Tromba da tirarsi, has a range of d' to d'''. As in Cantata No. 5
and Cantata No. 20, Cantata No. 77 also contains a solo aria in which the natural trumpet appears as an obbligato instrument. The fifth movement of Cantata No. 77 is an aria for Alto, Tromba, and Continuo, in the key of D minor. The Tromba part has a range of g' to e''', and, in spite of the occasional appearance of e''', the part would have been playable on the natural trumpet in C. The c'' appears twice as a half note approached and left by d'', and once as a dotted quarter note approached by leap from e'''.

The lowest note required in any Tromba da tirarsi part is c', which could have been played on a slide trumpet in any of the four keys shown in Example 34. Since c'' does not appear, there is no way to eliminate even the key of F as the possible pitch of Bach's Tromba da tirarsi. The fact that two of the cantatas in which the Tromba da tirarsi appears also contain obbligato parts for the natural trumpet in C is a strong argument in favor of C as the key for the Zugtrompete. It should also be remembered that Cantata No. 5, the only other cantata in which the Tromba da tirarsi appears, also has an aria with an obbligato trumpet part for the natural trumpet in B♭, which could easily be obtained by crooking the C trumpet down a whole step.

The nature of the Corno da tirarsi is less clear than that of the Tromba da tirarsi. As stated above, the verb tirarsi means "to draw out," or, in other words, an
instrument capable of being drawn out or lengthened to change its pitch. Since the horn is, by definition, an instrument whose bore is completely conical from mouthpiece to bell, a slide as a means of changing pitch is a physical impossibility. Terry postulates the theory that the Corno da tirarsi was merely a Zugtrompete with a deeper, conical mouthpiece like that of the Corno or the Corno da caccia. His thesis is supported by Canon Galpin, who points out that as long as the rim of the mouthpiece remains the same size, the internal dimensions make little difference to a brass player. Thus by using a funnel-shaped mouthpiece like that of the horn, a player could produce a horn-like tone from the Zugtrompete, while the use of a mouthpiece with a shallower cup would produce the more characteristic trumpet tone. The problem with Terry's and Galpin's thesis is that, although the funnel-shaped mouthpiece would produce a tone with fewer high partials present, i.e., a mellower tone, and a mouthpiece with a shallow, bowl-shaped cup would produce a tone with more high partials present, i.e., a more brilliant tone, in both cases the basic tone quality of the instrument would still be recognizable as a trumpet tone and not as a horn tone, no matter which mouthpiece was used. So the theory that the Tromba da tirarsi and the Corno da tirarsi were the

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5Terry, Bach's Orchestra, pp. 35-36.
same instrument, the Zugtrompete, with different mouthpieces, leaves something to be desired.

Bach's manner of scoring for the Corno da tirarsi is different from the style he employed for the Tromba da tirarsi. The Corno da tirarsi was used in only two works, Cantata No. 67, and Cantata No. 162. In both cantatas the Corno da tirarsi takes part in the chorales, doubling the Soprano part, which is a style common to the Tromba da tirarsi as well. However, in both cantatas Bach wrote obbligato parts for the Corno da tirarsi in the first movements in a style completely foreign to the Tromba da tirarsi.

Cantata No. 67, Halt im Gedächtnis Jesum Christ, has a part for Corno da tirarsi in three movements. The first movement is scored for Corno da tirarsi, Flauto traverso, two oboes d'Amore, strings, continuo, and four-part choir. The Corno da tirarsi is not scored in unison with any other part, but has an obbligato part of its own. The movement is in the key of A major, and the Corno da tirarsi is notated as a transposing instrument in A, with a key signature of no sharps or flats. The range of the part is a to b'', but the only extraharmonic notes are d'' and g''' (which appear in the transposed part as f'', a', and b'). The f'' appears only once, as a lower neighbor to g', and a' appears seven times, but in each case it is approached and left by step. The first movement of Cantata No. 67, then,
could have been played without too much difficulty on the natural horn in A.

The fourth movement is a four-part chorale in which the Corno da tirarsi is scored in unison with the Soprano on the chorale melody. The range of the Corno da tirarsi and Soprano part is $f'\,$ to $f''$. The seventh movement of the cantata is also a four-part chorale, and, again, the Corno da tirarsi is scored in unison with the Soprano on the chorale melody. The seventh movement is in the key of A minor with the usual key signature, and the range of the unison Corno da tirarsi and Soprano part is $g'\,$ to $e''$. These three movements are the only ones in this cantata in which any kind of brass instrument is used. Example 36 shows a portion of the Corno da tirarsi part from the first movement of Cantata No. 67.

Cantata No. 162, Ach, ich sehe, itzt, da ich zur Hochzeit gehe, has two movements in which the Corno da tirarsi appears. The first movement, which is an aria for Basso, Corno da tirarsi, strings, and Continuo, is in the key of A minor, and the Corno da tirarsi part is written at sounding pitch, with a range of $c'$ to $c''$. The Corno da tirarsi part is obbligato and very florid, as can be seen in Example 37. If, as Terry argues, this movement were to be played on the slide trumpet, the passages which include $d'$ and $f'$ in quickly moving notes (see example 37) would be extremely difficult to play.
Example 36.—J. S. Bach, Cantata No. 67, Halt im Gedächtnis Jesum Christ, 1st movement (Coro), Corno da tirarsi (in A) part, measures 1-12.

On the other hand, the part could have been played without much trouble on the horn in C basso (the written range of the part for a horn in C basso would be c'' to c$$'$$).

The sixth movement of Cantata No. 162 is a four-part chorale, of the type which Bach normally used to close his cantatas. The Corno da tirarsi is scored in unison with the Soprano on the chorale melody; the unison part has a range of e' to e''. The chorale is in the key of A minor.

Cantata No. 162 exists in two versions; the original was written at Weimar in 1715, and the revised version was written at Leipzig in 1723. The Corno da tirarsi part is the same in both versions, and it is an indication that a slide trumpet or horn was available to Bach at Weimar.

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One cantata exists which has a part for Tromba o Corno da tirarsi: Cantata No. 46, Schauet doch und sehet, ob irgend ein Schmerz sei. In the first movement, which is scored for two flutes, Tromba o Corno da tirarsi, two oboes da caccia, strings, continuo, and four-part choir, the Tromba o Corno da tirarsi doubles the Soprano at the unison. The chorus is in D minor, and the Tromba o Corno da tirarsi part is written at sounding pitch, with a range of e' to a''. Example 38 shows the opening measures of the Tromba o Corno da tirarsi part.

Example 38.—J. S. Bach, Cantata No. 46, Schauet doch und sehet, ob irgend ein Schmerz sei, 1st movement (Coro), Tromba o Corno da tirarsi part, measures 30-39.

The movement is divided into two sections, the second of which has the tempo marking Un poco Allegro; this would indicate that the first section is to be taken in a slow tempo. The nature of the Tromba o Corno da tirarsi part is similar to that found in the Tromba da tirarsi parts.
in that it is fairly slow-moving, which would allow the
player time to adjust the slide between notes.

The third movement of Cantata No. 46 is an aria
for Basso, Tromba o Corno da tirarsi, strings, and
Continuo. The Tromba o Corno da tirarsi part is written
for an instrument in B♭, transposed correctly a whole
step above sounding pitch. The aria is in the key of B♭
major. Only two notes in the entire movement would have
required the use of any instrument other than the natural
trumpet of Bach's time. In measure ninety, after two
measures of rest, the Tromba o Corno da tirarsi enters
with an f' moving to an a'. Extra-harmonic tones treated
in this manner would have been extremely difficult, if
not impossible, on the natural trumpet.

Example 39.—J. S. Bach, Cantata No. 46, Schauet
doch und sehet, ob irgend ein Schmerz sei; 3rd movement
(Aria), Tromba o Corno da tirarsi (in B♭) part, measures
90-91.

The rest of the movement could have been played on a
natural trumpet in B♭.

The sixth movement of Cantata No. 46 is a con-
certed chorale in which the Tromba o Corno da tirarsi
doubles the Soprano at the unison on the chorale melody.
The chorale is in the key of D minor with the Phrygian signature of two flats, and the range of the Soprano and Tromba o Corno da tirarsi part is e' to d''. The part is typical of the brass parts that double the Soprano part in the final chorales of Bach's cantatas.

The appearance of a part for the B♭ trumpet (or horn) in the third movement of Cantata No. 46 is interesting, because Bach called for the trumpet in B♭ only three times in all of his cantatas, and each time it is used in conjunction with the slide trumpet. The first case of the use of the B♭ trumpet was in Cantata No. 5, the fifth movement, which is an aria for Basso. The Tromba da tirarsi was called for in the first and seventh movements of the same cantata. The B♭ trumpet also appears in the third movement of Cantata No. 90, Es reifet euch ein schrecklich Ende, which is also an aria for Basso. The last movement of Cantata No. 90 is a four-part chorale with no indication of the instrumentation, but it would be logical to assume that the trumpet also played in the final chorale, doubling the Soprano at the unison. If the trumpet was used in the final chorale, then the instrument must have been a Zugtrompete, because the range of the Soprano part is d' to f'', in the key of D minor, and the frequent appearance of d' and f' would have made the use of a Zugtrompete mandatory. The third instance of the use of the B♭ trumpet is the third movement of Cantata No. 46.
The fact that parts for the B♭ trumpet are found in conjunction with parts for the Tromba da tirarsi in two cases and possibly a third indicates a strong probability that the same instrument was used to play both the B♭ trumpet parts and the Tromba da tirarsi parts. According to Urban, all of the Tromba da tirarsi and Corno da tirarsi parts could have been played on a Zugtrompete in C; thus it is quite probable that the Zugtrompete used by Reiche was in that key. It might have been provided with a whole-tone crook, which would lower it into B♭. In B♭ the Zugtrompete would not have had three positions, but rather only two, which still would have been sufficient to play the two extra-harmonic notes in the third movement of Cantata No. 46. Altenburg seems to have regarded the B♭ trumpet as an unusual instrument, although he mentioned a trumpet specially made in that pitch. It should be remembered that the normal trumpet in use during the Baroque period was pitched in D, and that to play in C, the trumpeter would use the D trumpet with a whole-tone crook to lower the instrument into the key of C. Thus, if the Zugtrompete were pitched in C to begin with, only a single whole-

7Urban, "Enigma," p. 21
8Altenburg, Versuch, p. 86. "Zu B dur nehme man eine besonders hierzu verfertigte Trompete, wenn man nicht einen Krummbögen und Setzstücke, die Zusammen um zwem Töne erniebrigen, aufsetzen will."
The Corno da tirarsi presents a different problem. According to Urban, Bach wrote 1,097 notes for the Corno da tirarsi and only 271 notes for the Tromba da tirarsi. This, according to Urban, is an indication that Bach preferred the horn-like tone produced by using a funnel-shaped mouthpiece on the Zugtrompete to the natural trumpet-like tone of the instrument.\(^9\) The totally different style of scoring for the Corno da tirarsi found in the opening movements of Cantata No. 67 and Cantata No. 162, in which the Corno da tirarsi plays a florid obbligato part, is in direct contrast to the straightforward chorale melodies that Bach assigned to the Tromba da tirarsi. Since the first movements of Cantata No. 67 and Cantata No. 162 could have been played on the natural horn in A and C basso, respectively, Bach might well have intended that these movements be played on the natural horn, and that the later movements, in which the Corno da tirarsi plays the chorale melody, be played on the Tromba da tirarsi. In any event, it is worth noting that when Bach called for the Tromba da tirarsi he used it in exactly the manner prescribed by Altenburg, but that his scoring for the Corno da tirarsi in the opening movements of Cantata No. 67 and Cantata No. 162 is in a considerably different style. It is a strong indication

of the use of two different instruments.

The only other occurrence of the term Tromba da tirarsi other than in the cantatas of J. S. Bach in the Baroque period is in a cantata by Johann Kuhnau (1660-1722), Bach's predecessor at Leipzig, entitled Gott der Vater, Jesus Christus, der heilge Geist wohn uns bey. The cantata is listed as number twenty-six in the Verzeichnis of Kuhnau's works published in Volumes fifty-eight and fifty-nine of Denkmäler deutscher Tonkunst by Arnold Schering (the score is not included in the volume). It is scored for Oboe ov. Tromba da tirarsi, two violins, viola, continuo, and choir.

The slide trumpet also appears in the Missa S. Caroli of 1734 by Georg Reutter D. J. (1708-1772). Two clarini in C are used throughout the work, and most of the time they have normal natural trumpet parts with no extra-harmonic notes. But in the "Qui tollis" section of the Gloria, the two clarini have parts that could only have been played on Zugtrompeten. The movement is scored for the two clarini, alto and tenor trombones, continuo, and four-part choir. The chromatic and chordal nature of the trumpet parts can be seen in Example 40. The movement is thirty-five measures long, and the clarini play the entire time in eighth notes, with the exception of one measure, the final one, which is a whole note, and one beat in the sixteenth measure, which is a
Example 40.—Georg Reutter D. J., Missa S. Caroli, "Qui tollis (Adagio)," Clarini in C, measures 1-5.

quarter note.

Another possible instance of the use of the Zugtrompete is the final movement of Buxtehude's cantata, Ihr lieben Christen, freut euch nun, discussed in Chapter II. In spite of Smithers' objections, the possibility that the Trombette in sordino parts were intended for performance on Zugtrompeten must be considered.

Bach's style of scoring for the Tromba da tirarsi and the example of Zugtrompete parts by Reutter indicate that the Zugtrompete was primarily useful when it was not required to move with great agility from one slide position to another. In 1769 Bach's successor, Johann Friedrich Doles (1715-1797), wrote of a candidate for a vacancy in the ranks of the Stadtpfeifer, "He cannot
manage the concerted Chorale on the Zugtrompete, and has
to do the best he can on an alto trombone. 10

It is clear, then, that the main use of the
Zugtrompete was to double the melodic line in the con­
certed chorales of church cantatas. The playing of
florid obbligato parts was evidently not within its
technique, and the Corno da tirarsi parts in the opening
movements of Cantatas No. 67 and No. 162 indicate the
use of a totally different instrument than the Zugtrom­
pete. Sach's theory that the term Corno da tirarsi was
adopted to avoid the wrath of the guild trumpeters in
Leipzig 11 is not valid, because Leipzig was a free city,
and as such, had no noble court. The members of the
trumpeters' and kettledrummers' guild were associated
with the court and military, and so in Leipzig, where a
totally different structure existed for providing wind
music, i.e., the Stadtpfeifer, there would have been no
problem with the trumpeters' and kettledrummers' guild.
It is more likely that the term Corno da tirarsi was an
indication to the player, in this case Reiche, that the
first movement of the cantata was to be played on the

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10 Schering, "Leipziger Ratmusik," 45. "Mit dem
concerttrended Choral konnte er auf der Zugtrompete gar
nicht fortkommen und musste er auf der Altposaune
versuchen, so gut es gehen wollte." Translated in Terry,
Bach's Orchestra, p. 36.

11 Curt Sachs, The History of Musical Instruments
natural horn, and the chorales were to be played on the Zugtrompete.
CONCLUSIONS

Instead of the ninety movements from forty-eight separate cantatas listed by Terry as including a part for the Zugtrompete, it was found that only thirty-one movements from sixteen cantatas actually include a trumpet or horn part that would have required the use of the Zugtrompete (with the addition of two movements from Cantata No. 147, which are possible, but not probable, on the natural trumpet). Of those thirty-one movements, three, the sixth movement of Cantata No. 24, the first movement of Cantata No. 67, and the first movement of Cantata No. 162, were quite possibly written for the natural horn, and not for the slide trumpet. All of the other cantata movements listed by Terry would have been playable on the natural trumpet or horn of Bach's time. Two cantata movements not listed by Terry were also found which might have included a part for the Zugtrompete: the sixth movement of Cantata No. 77, and the seventh movement of Cantata No. 110. Table 7, page 133, lists all of the cantata movements which would have required the use of a Zugtrompete in performance of the trumpet or horn part.

All of the cantata movements in Table 7 are play-
TABLE 7
CANTATA MOVEMENTS IN WHICH THE ZUGTROMPETE WOULD HAVE BEEN REQUIRED

<table>
<thead>
<tr>
<th>Cantata No.</th>
<th>Mvt. No.</th>
<th>Key</th>
<th>Range</th>
<th>Instrument</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>1</td>
<td>F major</td>
<td>g'–f''</td>
<td>Tromba da t.</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>F major</td>
<td>g'–f''</td>
<td>Tromba da t.</td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>G minor</td>
<td>e'–f''</td>
<td>Tromba</td>
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<td></td>
<td>G minor</td>
<td>g'–f''</td>
<td>Tromba</td>
</tr>
<tr>
<td>20</td>
<td>1</td>
<td>F major</td>
<td>f'–f''</td>
<td>Tromba da t.</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>F major</td>
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</tr>
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<td>f'–f''</td>
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</tr>
<tr>
<td>24</td>
<td>3</td>
<td>G minor (D)¹</td>
<td>d'–b♭''</td>
<td>Clarino₂</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>F major</td>
<td>f–e♭''</td>
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</tr>
<tr>
<td>46</td>
<td>1</td>
<td>B♭ major</td>
<td>e'–a''</td>
<td>Tromba o</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>D minor</td>
<td>b♭–b♭''</td>
<td>Corno da</td>
</tr>
<tr>
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<td></td>
<td></td>
<td>e'–d''</td>
<td>tirarsi</td>
</tr>
<tr>
<td>48</td>
<td>3</td>
<td>B♭ major</td>
<td>f'–d''</td>
<td>Tromba</td>
</tr>
<tr>
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<td></td>
<td>G minor</td>
<td>d'–d''</td>
<td>Tromba</td>
</tr>
<tr>
<td>67</td>
<td>1</td>
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<td>a–b''</td>
<td>Corno da t.³</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>F♯ minor (D)</td>
<td>f♯–f♯''</td>
<td>Corno da t.</td>
</tr>
<tr>
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<td></td>
<td>A major</td>
<td>g♯–e''</td>
<td>Corno da t.</td>
</tr>
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<td>d'–e'</td>
<td>Tromba</td>
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<tr>
<td>11</td>
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<td>C major</td>
<td>c'–d'</td>
<td>Tromba</td>
</tr>
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<td>74</td>
<td>8</td>
<td>A minor</td>
<td>g'–e'</td>
<td>Tromba I</td>
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<tr>
<td>76</td>
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<td>A minor</td>
<td>c'–e'</td>
<td>Tromba</td>
</tr>
<tr>
<td>14</td>
<td></td>
<td>A minor</td>
<td>c'–e'</td>
<td>Tromba</td>
</tr>
</tbody>
</table>

¹Capital letters in parentheses indicate a modal signature, i.e., D= Dorian, P= Phrygian, and M= Mixolydian.
²Possibly for Corno in F.
³Possibly for Corno in A.
<table>
<thead>
<tr>
<th>Cantata No.</th>
<th>Mvt. No.</th>
<th>Key</th>
<th>Range</th>
<th>Instrument</th>
</tr>
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<tr>
<td>77</td>
<td>1</td>
<td>G major (M)</td>
<td>c'-c''</td>
<td>Tromba da t.</td>
</tr>
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<td>D minor</td>
<td>d'-d''</td>
<td>Tromba da t.</td>
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<tr>
<td>103</td>
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<td>B minor</td>
<td>f#'-e''</td>
<td>Tromba</td>
</tr>
<tr>
<td>110</td>
<td>7</td>
<td>D major</td>
<td>b'-f''</td>
<td>Tromba I</td>
</tr>
<tr>
<td>126</td>
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<td>A minor</td>
<td>g'-g''</td>
<td>Tromba</td>
</tr>
<tr>
<td>162</td>
<td>1</td>
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<td>c'-c''</td>
<td>Corno da t.</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>A minor</td>
<td>e'-e''</td>
<td>Corno da t.</td>
</tr>
<tr>
<td>167</td>
<td>5</td>
<td>G major</td>
<td>d'-d''</td>
<td>Clarino</td>
</tr>
</tbody>
</table>

able on a slide trumpet in C. If the three movements discussed above, which may have been intended for the natural horn, are removed from the list, the range of the Zugtrompete is found to have been from b^ to c'''.

With the single exception of the three movements of Cantata No. 67, which are scored for Corno da tirarsi, Bach did not score a part for the Zugtrompete in a key with more than two sharps or flats in the key signature. Two movements were written in Bb major, one in D major, and one in B minor. The fact that the majority of the cantata movements which include a part for the Zugtrompete are in keys closely related to C major, i.e., differing from it in key signature by no more than one.

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*Possibly for Corno in C basso.*
sharp or flat, is a strong indication that the *zugtrompete* in Bach's orchestra was pitched in the key of C. The appearance of arias in which the B♭ trumpet appears obbligato, in conjunction with other movements for the *tromba da tirarsi* or the *zugtrompete* is a further indication that C was the key of the slide trumpet, because it would have been an easy matter to crook a C trumpet down a whole step to B♭.

There is need for further research on the problem of the use of extra-harmonic tones on the trumpet and horn of the seventeenth and eighteenth centuries, which would bear on the question of the extent of the employment of the *zugtrompete* in the Baroque period. The ever-increasing number of seventeenth- and eighteenth-century works that are available in modern editions or facsimile editions will make this task easier.

Much has been written about the history and development of the trumpet, but until recently most of the research was done by musicologists who were not brass players themselves, and, therefore, did not understand the problems and possibilities of the brass instruments. A new generation of brass players who realize the importance of musicological research to their field, headed by such men who combine performance with research as Edward Tarr and Don L. Smithers, will have a profound effect both on musicology and on performance practice. Historical research and performance
technique should go hand in hand so that the composer's
directions can be fulfilled in the manner he intended.
A musical score is, after all, only the blueprint for the
reconstruction of a composition. It is to be hoped that
the current wave of interest in the history of the trum­
pet by trumpet players will result in more authentic
performances of music from the seventeenth and eighteenth
centuries, including music for the Tromba da tirarsi.
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Horace Monroe Lewis, Jr., was born on November 26, 1945, in Little Rock Arkansas. Although a native of Arkansas, he has also resided in Illinois and Louisiana.

Mr. Lewis received his high school education at Morrilton Senior High School in Morrilton, Arkansas, and was graduated from that institution in May, 1963. He attended Hendrix College in Conway, Arkansas, from 1963 to 1967, and attended State College of Arkansas in Conway, Arkansas, during the summer terms of 1964, 1965, and 1966. While attending Hendrix College, he majored in applied music (trumpet), and performed with the concert band and brass choir, serving as librarian and student conductor for both organizations. He received the Bachelor of Arts degree in music and the Bachelor of Music degree with honors in applied music in June, 1967.

He attended Northwestern University in Evanston, Illinois, from 1967 to 1968, majoring in applied music (trumpet), and during that time he performed with the marching band, concert band, wind ensemble, brass choir, and a graduate brass quintet. He received the Master of Music degree in August, 1968.

Mr. Lewis was employed on the band staff at Northwestern University from 1967 to 1968, and was em-
ployed as band director for the Waldron Public Schools, Waldron, Arkansas, from 1968 to 1970. Since 1970 he has been band director and Assistant Professor of Music at The College of the Ozarks in Clarksville, Arkansas. He has been the principal trumpeter of the Fort Smith Symphony Orchestra in Fort Smith, Arkansas, since 1968, appearing with that group as soloist in 1970 and 1973. He has also been a member of the board of directors of that organization since 1971. While in residence at Louisiana State University, he performed with the LSU orchestra, Collegium Musicum, Brass Guild, wind ensemble, and the Baton Rouge Symphony.

His publications include the following:


"The Community Symphony—Final Outlet for Many." The Instrumentalist, XXV (April, 1971), 33-34.


Mr. Lewis is currently a candidate for the Doctor of Philosophy degree at LSU, expecting to receive that degree at the May commencement exercises of 1975.
EXAMINATION AND THESIS REPORT

Candidate: Horace Monroe Lewis, Jr.

Major Field: Music

Title of Thesis: The Problem of the Tromba da tirarsi in the Works of J. S. Bach

Approved:

[Signatures]

Major Professor and Chairman

Dean of the Graduate School

EXAMINING COMMITTEE:

[Signatures]

Date of Examination:

February 27, 1975