The Structure of the North German Organ in Its Historical Development

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In North Germany there are today many more fine historic organ façades than old instruments which have been tonally preserved. The reason for this is that the exterior of an organ with its usually richly carved casework and bright, shining pipes has tended to be more highly valued than have the musical capabilities of the organ itself. Often considerably more money was spent on those portions which were visible than on the parts which served to make music. It is now apparent from the study of old documents that many of the monumental organs of the earlier periods would never have been built, had not their very appearance afforded such an overpowering aesthetic effect on the viewer. Over the years, as the style and taste in organs changed, people were far more inclined to preserve the outer appearance of an old organ than the functioning portions inside, (i.e., pipework, windchests, and action.) Thus many of the extant old organ cases are only shells, behind which are modern organs. Nevertheless, these remaining portions provide us with invaluable clues to the original tonal construction, because the outer and inner arrangement of pipes in the classical North German organ — the layout of pipes in facade and on the chest itself — were usually identical. This (along with the consistent ordering of divisions or Werke so that each manual had, as its own, a separate portion of the case with windchest and pipes) can be considered among the most important characteristics of North German organ-building style from the earliest period.

Historical Discourse

Soon after its first introduction into Western Europe in 757 AD as a gift from the emperor of Byzantium to the king of France, the organ underwent changes in its function. In the ancient world it was a purely secular instrument, used for entertainment at the imperial games in Roman arenas and later at ceremonies of the Byzantine court. In France, because of the close connection between the official functions of the court and the church, the organ was soon brought into church use. A report from the year 824 AD describes in some detail an organ in the Münster at Aix-la-Chapelle, the residence of Charlemagne. In the following decades an increasing number of reports referred to organs in churches, first small instruments, but then ever larger ones as the years passed. Of special note was the cathedral organ in Winchester, England in the tenth century, for it required two organists.

The first reported monumental organ in North Germany was built in 1361 at the Cathedral in Halberstadt. It was one of the largest and most technically advanced in all of Europe. The longest pipes in the façade measured approximately 32'. These were played by the pedal and stood in the outer portions of the case on either side of the central pipes, which were played by the manuals. By 1400 the design used in Halberstadt appears to have found wide favor throughout continental Europe. Extant examples are found today in the case designs of the gothic organ in Sion, Switzerland (Fig. 1), ca. 1380, and in the Norrlanda organ from the island of Gotland, Sweden (Fig. 2), ca. 1400. This instrument is presently in the Nordiska Museum at Stockholm. Here, as in Halberstadt, the large pipes on the side belonged to the pedal. The pipes in the central portion were

arranged chromatically (Fig. 3). Many North German organs of the period must have been of similar design, for it is known that a "Meister Werner" from Brandenburg was working on the island of Gotland at the time of the organ's construction. Moreover, this arrangement of pipes is mentioned in the theoretical sources of that day, for example in the writings of Henri Arnaut von Zwolle, ca. 1420. This traditional construction was continued into the 15th century in North Germany, as can be seen in the gothic cases in Rysum near Emden (Fig. 5), 1457 — here the central field of pipes was divided into two parts — and in the Totentanz organ of the St. Marien Kirche in Lübeck (Fig. 6), Hauptwerk of 1477 — here the central field was divided into three parts. Around 1500 the design of organ cases became considerably more complex. Examples are the small organ in the St. Jakobi Kirche at Lübeck (Fig. 7), Hauptwerk ca. 1500, and the organ in Garding near Husum (Fig. 8), Hauptwerk of 1512.

A totally different arrangement of pipes was also to be found throughout Europe in the 15th century. This design placed the longest bass pipes in the center of the case. The tenor or middle-sized pipes stood in towers on the outer extremities of the case and the small trebles were placed in two fields between the three larger sections. As examples:

Salamanca, Spain - the old cathedral organ (Fig. 9), 1380.

Kiedrich am Rhein, Germany - (Fig. 10), built after 1400; the case was somewhat altered during the 19th century.

Malmø, Sweden - (Fig. 11), Hauptwerk of 1500, presently in the Malmø museum.

Lübeck, Germany - main organ in the St. Marien Kirche (Fig. 12), 1518, destroyed in the Second World War.

The gothic façades were characteristically flat and two-dimensional in their nature. In the large Lübeck organ this style was developed into a grandiose design, but on a simpler scale it was also found in small organs of the day.

Oosthuizen, Holland (Fig. 13), 1521.

Krewerd, Province of Groningen (Fig. 14), 1531.

As can be seen, there was great similarity between the organs of the various countries of Europe at that time. In North Germany the late gothic style with its picturesque forms reached an especially high level of development.

Lübeck, St. Jakobi Kirche - the large organ (Fig. 15), Hauptwerk of 1504.

Scheemda, Province of Groningen - (Fig. 16), 1526, today in the Rijksmuseum, Amsterdam. This organ, built by Meister Johann von Emden, shows clearly the traditional scaling methods of the medieval organs, narrow in the bass pipes and wide in the trebles.

Discourse on Scaling

In the first organs all pipes from bass to treble had the same diameter. This method of scaling was only possible when a limited keyboard compass was intended. During the gothic period the manual compasses were enlarged, which made a scaling progression necessary. Customarily a specific proportion (such as 2:1 or 3:1) was assigned to the diameters of the largest and smallest pipes. An example of such scaling is to be found in the façade pipes of the Scheemda organ. Tonally, this method (with its wide scale in the small pipes) results in a powerful treble, corresponding to the emphasis placed on the treble in the organ compositions of that day. The manner of "classical" scaling as we know it was not developed until the middle of the 16th century, when the attempt was made by varying proportions

of pipe diameters to approach an equality of timbre and power throughout the compass of a given register. To understand this idea one should consider the polyphonic choral works of the period, in which each voice was treated as equal to the others in importance. One such progression of pipe diameters from one octave to the next, which was typical, stood in the proportion of 3:5.

A decisive turning point in the development of the North German organ came with the incursion of organ-building from the Netherlands, beginning around 1530. The most important Dutch case built in Germany in this period stands in the St. Johannis Kirche in Lüneburg. The organ was built by the most famous Dutch builders of that day, Niehoff and Johansen, between 1551 and 1553 (Fig. 17).

Lüneburg, St. Johannis Kirche - (Fig. 18 & 19) Hauptwerk and Rückpositiv, 1551-53.
- (Fig. 20) pedal-towers built by Dropa, 1712-14.

Originally the Niehoff case had large doors for the façade. The exterior construction was very highly complex, one of belonging to the most intricate designs in the entire history of organ-building. Here one can sense something of the rich and indeed fantastic creativity which permeated all the technical and tonal forms of classical organ-building.

The pipes of the Lüneburg organ were arranged in the following manner. In the main case the largest pipes stood in the outer fields, as in Halberstadt. They were C,D,E,F,G,A,B,H (the so-called "short octave" without the half-tones $C^{\#}$, $D^{\#}$, $F^{\#}$, and $G^{\#}$) beginning at 16'. These could be played either from the manual or the pedal. ~~Between these were two windchests for the Hauptwerk~~ Between

~~Duncen~~ these were two windchests. The lower one was the Hauptwerk, built as a Blockwerk — a full plenum division without the possibility of changes in registration. Above it there was a chest for the Oberwerk with various flute and reed stops which could be drawn separately. Wind was carried to the upper chest by means of conductors. This inner construction no longer remains in the Lüneburg organ. There is however one extant example of such an organ, built for the St. Nikolai Kerk in Utrecht. Today the organ stands in the Koorkerk at Middleburg, Holland. A nineteenth century organ-builder by the name of _____ _____ made a complete drawing of this organ (Fig. 22).

In contrast to the designs of Niehoff, the cases of the contemporary North German builders, notably of the Hamburg family Scherer, represent a greater sense for clarity, directness, and logic. The Scherers created the definitive form of the classical North German arrangement of divisions (Fig. 23) with the Hauptwerk placed in the center (its bass pipes in the middle, flanked on the outside by the tenor pipes, and between these the trebles, as mentioned above.) The Rückpositiv stood in the balcony rail and reflected on a smaller scale the design of the Hauptwerk. The two pedal towers were placed on either side of the Hauptwerk case. This exceptional emphasis on the pedal, giving it cases of its own, was unparalleled in the organ-building of any other country.

A well preserved example of the so-called "Hamburg" cases of the Scherer family is found in the St. Ägidien Church in Lübeck (Fig. 24). The organ was built in 1623 by Hans Scherer the Younger. The organ has three manuals, the third playing a Brustwerk ~~directly~~ directly in front of the player above the keyboards. This

no pipes in the case and is blocked from sight by the Rückpositiv case. Another fine example of a North German case from that period which is still in excellent condition is in the St. Martini Kirche at Bremen (Fig. 25). That organ was built between 1616 and 1619 by Christian Bokelmann, a pupil of the Scherers, at the time when such important musicians as Scheidt, Praetorius, and Scheidemann were most active as organ composers. In the sweeping lines of the Rückpositiv case of the Bremen organ are definite traces of the Dutch school. Unfortunately, as with the St. Ägidien organ, there is no longer anything left of the old St. Martini instrument behind the case.

In the decades following 1600 a new influence reached North German organ-building through the builders of Saxony, who in turn had learned from the builders in Bohemia. Esaias Compenius and Gottfried Fritzsche were the most important figures in this development. Michael Praetorius, in his book Organographia (1619), the most comprehensive work on organ-building from that period, gives exact information on the construction of these organs (Fig. 26). It was the attempt of these builders to free the organ in a baroque spirit from the strict and logical relationships of stop disposition and case design, which had been established by the Scherers and their contemporaries. The new cases were given lines with motion, curves, and architectonically free forms; the dispositions lost their rational foundation on the principal chorus and retained little more than flutes, strings, and reed voices of various constructions. The reed stops were on occasion even placed in the façade. An extreme example of this style, in which the voicing is more instrumental than vocal in its character (and relatively weak in tone) is the small Compenius

has only wooden pipes and was conceived not as a church organ but as a secular instrument for the accompaniement of court dancing and entertainment. Its extraordinarily complex visual design and execution make it one of the truly priceless organs which have survived to the present (Fig. 27).

The construction of Gottfried Fritzsche's organ at the Schlosskirche in Dresden where Heinrich Schütz worked is not only interesting but also exceptional. Although the organ (1614) is no longer in existence, it was pictured in a drawing of the Dresden court choir under Schütz's direction/(Fig. 28). The Rückpositiv was divided into two cases with reed pipes showing in the façade. Fritzsche's largest case (1619-21) still stands in the St. Marien Kirche at Wolfenbüttel, where Michael Praetorius was active (Fig. 29).

Because economic conditions of Central Germany continued to worsen under the effects of the Thirty Years War (1618-48), Gottfried Fritzsche travelled to Hamburg where he became acquainted with the large North German organs. He introduced to the area a new alloy of pipe-metal with 23% tin and 76% lead (along with several trace elements.) Heretofore the North German builders had always used alloys of 95-99% lead. Fritzsche specialized in building reeds. He developed the important conical shallots with lead plates, which he covered in the basses with leather (Fig. 30) This manner of reed construction was later adopted by Arp Schnitger and his school. Fritzsche remained in Hamburg only ten years, but he had a large number of apprentices who continued to build in his style after he left. A typical case of the Fritzsche school stands in the Klosterkirche at Lüne near Lüneburg (Fig. 31) 1645. The bass pipes of both the Hauptwerk and Rückpositiv cases stand in the center of

their respective divisions; next to these are the tenor pipes, progressing outward to the trebles on either side, just as in the Wolfenbüttel organ. Two fields of pedal pipes form the outer sections of the Lüne case. Especially noteworthy is the placement of this organ in the room, which was characteristic in North Germany during the 16th and 17th centuries (Fig. 32). Organs in those days did not stand on the west wall of the church, as became customary later, but were placed instead on a side wall near the altar. Quite often the pedal case in such organs was turned toward the congregation, for the pedal contained important solo stops. The only large extant case representative of this style is the Schnitger organ at Norden, Ostfriesland (Fig. 33).

The most monumental case of the Fritzsche school is to be found in the St. Marien Kirche at Stralsund (Fig. 34). The organ was built in 1653-59 by Fritzsche's son-in-law, Friedrich Stellwagen. Here again the classical construction with free-standing pedal towers is found. The pipes of the Oberwerk as well as those of the Hauptwerk appear in the façade. Such a solution is possible only in rooms of great height.

An important comparison with organs of the Fritzsche school and contemporary with them is the work of the Bader organ-building family in Westphalia and Friesland. Here a contrasting style is apparent. The highly baroque, free-form case designs which had found so much favor up to 1645, were tempered (especially in Friesland at the point of contact with northern building) by stricter and more logically restrained lines (Fig. 34a). Strong influence of this Westphalian style can be found in organ cases built by the Kröger family, who came to North Germany from

stands in the Schlosskirche at Celle (Fig. 35) 1653. The design is close indeed to the earlier work of the Scherers. A well preserved organ by Harmen Kröger is to be found in Langwarden at the mouth of the Weser river (Fig. 36). It consists of a Hauptwerk, Brustpositiv and free-standing Pedal in two towers. This organ still contains its original spring-chests, the construction of which was customary in Westphalia until the beginning of the 18th century.

Discourse on Windchests

Few examples of windchest construction in the medieval period have survived to the present day. Of the remaining traces, the chests of the gothic organ of Norrlanda, Sweden and the Nikolai organ in Utrecht, Holland (presently in Middelburg) are the most important. These chests, known as Blockwerke, were built from large oak logs into which the wind passages (tone-channels) were chiseled. There were no possible changes of stops for the invention of slider-chests and spring-chests had not yet occurred. In other words, all the pipes over a given tone-channel sounded whenever that key was played (Fig. 37).

In the late medieval period two types of windchests were invented for controlling the stops. The one, known as the spring-chest, contained within the tone-channels (as described for the Blockwerk above) little valves covering each toe-hole separately from underneath. When the stop was off these valves were held shut by springs built into the channels — thus the name spring-chest. To turn the stop on, a bar was lowered slightly above the chest, so that it pressed open all the valves of that stop. These pipes would then sound when wind entered the tone-channels below.

The second method of construction, with which we are for better acquainted today,

was that of the slider-chest. A thin strip of wood was placed between the toe-boards and the chest-grid under each set of pipes. Holes were made in the sliders to correspond with the tone-channels below and the pipes above them. If the holes were aligned, the stop was playable, but if the slider were moved slightly to one side, then none of its holes permitted entry of wind to the pipes above.

The advantage of the Block chest was that by optimal entry of wind into the pipes the best cohesiom of tone in the plenum was made possible, at the expense of changes in registration. Of the two chest-types which allowed for variations in the stops used, the spring-chest had the advantage that no wind leaks could occur, causing air to run to adjacent pipes, which was always a problem with sliders. The pipes on a spring-chest consistently received the same amount of wind, a matter of considerable importance for maintaining good tuning in the organ. However, the great advantage of the slider-chest was its simple construction which required little space.

The Dutch builders often used Block chests. When changes in registration were desired, they used spring-chests almost exclusively. In North Germany 16th century builders adopted the Dutch spring-chests, but all the while continued to build slider-chests as well (for example, the Scherers). The windchests built by Compenius and Fritzsche and his school were especially complicated; they often built transmissions, primarily in the bass, so that large pipes could be used in the manuals as well as in the pedal. This was made technically possible through the use of double sliders when slider-chests were used. On the other hand, Arp Schnitger gave up construction of spring-chests altogether, choosing to build only chests with sliders. Since Schnitger's time no more spring-chests have been built in North Germany.

It is important to mention here the organ at the St. Cosmae Kirche in Stade, for it contains the last large spring-chest to be built in northern Germany (Fig. 38). This instrument, constructed between 1668 and 1673 by Schnitger's master, Berendt Hus, is still in practically original condition. It can be considered the first instrument of Schnitger's career. The young master craftsman worked closely with his uncle, Hus, on this organ. The case design, altered slightly at the end of the 18th century, shows the Hamburg construction used subsequently by Schnitger in nearly all of his cases. In the manual divisions the same layout is to be found again and again: tenor pipes, then trebles, bass in the center, trebles, and tenor, grouped symmetrically (Fig. 39). In such an arrangement the pipes from the tenor upward stand in major thirds. Tonally, this grouping has the following advantages:

1) The smallest pipes, which suffer the most from acoustical interferences, stand as far as possible from their keyboard neighbors.
2) It is impossible for interferences to occur in the playing of diatonic steps, since the pipes are standing next to their major thirds.
3) Because of the major third placement, optimal blending of tone in chordal playing is made possible.
4) Since pipes which stand on neighboring channels draw together in pitch, and are a major third apart, they tend to cancel out tuning problems inherent in twelve-tone temperaments.
5) The grouping together of basses, tenors, and trebles affords the greatest possible polyphonic clarity to the music.

As has been pointed out above, this arrangement was already customary in the 15th century. The Scherer family integrated such layouts into their large organ designs.

smallest instruments to the largest. Typical cases of Schnitger will serve to clarify this point.

1) Groningen - Der Aa-Kerk (Fig. 40), 1694-97; Hauptwerk, Oberwerk, Rückpositiv, Pedal 16'. The organ was destroyed in 1710 by the collapse of the church tower. Today the der Aa-Kerk houses the Schnitger organ which stood until 1815 in the Groningen Akademiekerk.

2) Magdeburg - St. Johannis Kirche (Fig. 41), 1689-95; Hauptwerk, Oberwerk, Brustwerk, Pedal 16'. The case was destroyed in the Second World War.

3) Hamburg - St. Jakobi Kirche (Fig. 42), 1689-93; Hauptwerk, Oberwerk, Rückpositiv, Brustwerk, Pedal 32' beginning at F. The Oberwerk position is not reflected in the façade of the case for lack of height, but rather stands directly behind the Hauptwerk façade pipes. The case was destroyed in the Second World War, but reconstructed in 1961 with slightly altered proportions.

4) Hamburg-Neuenfelde - (Fig. 43), 1682-88; Hauptwerk, Rückpositiv, Pedal 16' beginning at F. The organ remains today but has suffered some tonal alterations.

5) Steinkirchen - (Fig. 44), 1685-87; Hauptwerk, Brustpositiv, Pedal 16' beginning at F. The organ is tonally well preserved.

6) Uithuizen - (Fig. 45), 1700-01; Hauptwerk, Rückpositiv, Pedal placed behind the organ. The instrument is tonally well preserved.

7) Dedesdorf - (Fig. 46), 1697-98; two manuals on one chest, Vorderwerk and Hinterwerk with pallets at the front and back. The organ had a pull-down pedal and is tonally in good condition. ~~An independent pedal division was~~ added later.

8) Godlinze - (Fig. 47) 1704; Hauptwerk, Unterwerk, pull-down Pedal. The keys are behind the case, and the organ is tonally intact.

9) Nieuw-Scheemda - (Fig. 48) 1698; this is the only extant Schnitger Positiv. It is tonally in good condition.

Arp Schnitger is important because he was able to combine or synthesize the many streams of North German organ-building into an inner logic and symplicity of construction which was never again realized. He was successful in encompassing the entire area along the coasts of the North and Baltic Seas from Stettin to Zwolle with his work in a scope unknown before that time. So important was his work and that of his pupils, that during the 18th century the Schnitger organ became the definitive instrument in North European organ-building. At a time when in South and Central Germany purely architectonic and baroque points of view were increasingly divorcing the exterior designs of organs from their inner planning and function, Schnitger and his school clung to the classical construction. Their organs are built on the most economical of principles with the optimal possibility for resonance of all parts and a carefully balanced disposition of stops. An example of the unity of inner and outer construction is seen in the Hauptwerk of the Schnitger organ in Steinkirchen. The illustrations(Fig. 49 & Fig. 50) show the organ as seen from the front and from behind. In order to be able to house the necessary pipework within the tight quarters of such a case, the scaling of all pipes and of the case itself must use the same point of departure. In this important aspect, there is a consistency in North German organ-building from the 16th through the 18th centuries. Using similar scaling practices, Schnitger was able to use many of the stops which he found in old organs in his new cases, which is totally in contrast to the practice of Gottfried

Silbermann, for example.) Schnitger was able to make these older registers fit perfectly with his new pipes. For example, in the Nasat $2\frac{2}{3}$' from the Hauptwerk of Schnitger's organ in Steinkirchen, the pipes C - g^{o} were made by Dirk C Hoyer in 1581, those of gs^{o} - c''' were made by Schnitger (Fig. 51).

Forms of Pipes

For a survey of the most important forms of pipes in North German organ-building, the following three tables will be helpful.

1. Pipe Table I (Fig. 52) from Micahel Praetorius' "Organographia" (1619): 1. Principal 8' - see the Discourse on Scaling, 2) Octave 4', 3) Quinte $2\frac{2}{3}$', 4) Super Octave 2', 5) Nachthorn 4' open, 6) Quintadena 16', 7) Quihtadena 8', 8) Nachthorn 4' stopped, 9) Grossgedackt lieblich 8' or Spitzgedackt, 10) Gemshorn 8', 11) Spillflöte 4', 12) Blockflöte 2', 13) Querflöte 4' open and overblowing, 14) Querflöte 4' stopped and overblowing in the third partial, 15) Monochord, at that time an important tool of organ-builders. The drawing is even provided with a calibrated measurement.
2. Pipe Table II (Fig. 53) from "Organographia": 1) Dolkan 4', 2) Coppelflöte 4' open, 3) Flachflöte 4', 4) Klein-Bordun 8' or narrow Gedackt, 5) Holflöte 4' open, wide-scaled flute, 6) Gedackt 8', 7) Rohrflöte 8' often called Holpipe - Dutch, Holpijp - sometimes illogically referred to as Holflöte. In regard to this stop many misunderstandings occur; often it has no Rohre or chimneys on the bass pipes, but instead is completely stopped. 8) Trompete 8', 9) Krummhorn 8', first type, 10) Schalmei 4', 11) Sordun 16' stopped, 12) Zink (?) a treble register, 13) Rankett 8' or 16' stopped, 14) Messing Regal, made of brass, 15) Gedacktes Regal, 16, 17, & 18) Krummhorn, second and third types, the last later referred to as Vox Humana, 19 - 23) various types of Bärpfeifen, some appearing to be merely fantasy drawings, 24) Querflöte, showing the upper portions and lower portions of a normal recorder (not an organ pipe.)

3. This photograph (Fig. 54) was made before the Second World War. It shows various pipe forms in the Schnitger organ at the St. Jakobi Kirche in Hamburg.

Below from left to right:

Octave 8' note c, Hauptwerk (Hans Scherer the Elder)
Quintadena 16' note c#, (Fritzsche) Hauptwerk
Viola da Gamba 8' note H, (18th century) Hauptwerk
Spitzflöte 8' note H, (Schnitger) Hauptwerk
Holzflöte 8' note c, (Schnitger) Oberwerk
Holzprincipal 8' note e, (Fritzsche) Brustwerk
Rohrflöte 8' note c, (Schnitger) Hauptwerk
Rohrflöte 4' note c, (1516) Hauptwerk
Bärpfeife 8' note d, (Schnitger) Rückpositiv
Schalmei 4' note c, (18th century) Rückpositiv
Trompete 16' note c#, (Fritzsche) Hauptwerk
Posaune 16' note h, (Schnitger) Pedal
Dulcian 8' note c, (Schnitger) Brustwerk
Dulcian 16' note c, (Fritzsche) Pedal
Dulcian 16' note c, (Fritzsche) Rückpositiv

Middle from left to right:

Vox Humana 8' note c, (Schnitger) Oberwerk
Trichterregal 8' note c, (Schnitger) Brustwerk
Cornet 2' note c, (Fritzsche) Pedal

Above from left to right:

Zimbel III note c, (Schnitger) Oberwerk
Flachflöte 2' note c, (reconstructed in 1926) Hauptwerk
Nachthorn 2' note c, (Schnitger) Pedal
Gemshorn 2' note c, (Scherer) Oberwerk
Mixtur VI-VIII note c (Fritzsche) Hauptwerk

The flue pipes were arranged on the chest so that the largest always stood directly behind the façade, the shorter stops being placed behind, and progressing downward to the Mixtur or Zimbel. The reed pipes stood behind these. An example is seen in a pre-war photograph of the St. Jakobi organ (Fig. 55).

On the basis of these tables it is possible to build an accurate concept of the shapes of the pipes mentioned in the following stoplists. These dispositions, which are intended to trace the development of the North German organ art from the gothic period to approximately 1750 , have the most important dates of the respective organ builders alongside. Here are typical dispositions of North German builders.

The Dispositions of North German Organs

1. Halberstadt Dom, completed in 1391 by Nikolaus Faber. A detailed description of this organ is given by Michael Praetorius in his Organographia (page 98 f.). The organ had four keyboards (three manuals and pedal). The Praestants, or principal pipes in façade, could be played in the bass by the lowest manual, and in the treble by the second manual. The full plenum, consisting of the Praestants and the Hintersatz (a Block chorus of many ranks), was playable in the bass by the pedals and in the trebles by the topmost manual. The compass of both of the treble keyboards was two octaves:

H c $c^{\#}$ d $d^{\#}$ e f $f^{\#}$ g $g^{\#}$ a b h $c' - g'$ a'

The compass of both bass keyboards was one octave:

H c $c^{\#}$ d $d^{\#}$ e f $f^{\#}$ g $g^{\#}$ a h

Manual keys were approximately the same size as the pedal keys and were played with the fists. This is still the case with the carillon today. The largest bass pipe of the Praestants was thirty-one feet long. The Hintersatz had as many as twenty-four pipes per key in the bass and fifty-six per key in the treble. For example, the composition of the Hintersatz in the treble on tone c was:

2	pipes	at	8'
4	"	"	4'
5	"	"	$2\frac{2}{3}$'
6	"	"	2'
7	"	"	$1\frac{1}{3}$'
8	"	"	1'
10	"	"	1/2'

2. Rysum bei Emden, Ostfriesland, built in 1457 by a master from Groningen. This organ no longer contains its original windchests. When it was built only two tonal possibilities existed, as in Halberstadt. One could either play on the principals in the façade alone (the iron lever for turning the façade pipes on and off is still

there) or one could play with the entire plenum or Hintersatz. The compass in Rysum was somewhat larger than that in Halberstadt, extending from F - a without half-tones in the lowest octave:

F G A ^{B} H c $c^{\#}$ d $d^{\#}$ e f $f^{\#}$ g $g^{\#}$ a ^{b} h c' - g" a"

The pitch of low F corresponded approximately to today's 8' C. Such tuning a fourth lower (or a fifth higher) was customary in most gothic organs. The practice was carried over into the 16th century ~~century~~, so that many organs built in that period were pitched to play a fifth away from present standards. This arrangement was very popular in England. Furthermore, it was employed extensively in English and Dutch harpsichords of the period, including the instruments of Ruckers which were often built with a second transposing keyboard for accomodating the new pitch (which has since become today's standard). The size of the keys in the second half of the 15th century was only slightly larger than those which followed in the 16th century, during which period the key dimensions familiar today became customary. It was not necessary to play an organ such as Rysum with the fists. The instrument is the oldest organ in Germany which is tonally intact.

3. Oosthuizen, Holland, built by an unknown master in 1521, incorporating some already existing parts. Since the time of its construction this organ has hardly been altered at all. Its key compass F G A - g" a" is described above in reference to the organ at Rysum. The individual stops could be drawn separately.

Principal	8'	
Bourdon	8'	(today 16')
Octave	4'	
Quinte	2⅔'	
Waldflöte	2'	(wide-scaled Octave 2')
Sesquialtera	II	(treble only from c')
Mixtur	II-III	

This disposition shows, in other words, a complete chorus of principals according

to the overtone series, including of course the Sesquialtera with its major third sounding rank. To this only the Bourdon was added for strengthening the unison line.

4. Krewerd, Provinz Groningen, built in 1531 by an anonymous master, using some older pipes, especially in the Octave 4'. The disposition of this organ was probably identical to the one at Oosthuizen. Today only the Principal 8', Holpijp 8' (Gedackt), Octave 4', Quinte 2⅔', and Octave 2' remain of the original stops. Originally the organ had a compass from F - a" ~~with the so-called "short octave".~~ At some later time, possibly in the 1600's, the compass was extended down in the form of the so-called "short octave:"

C F ^{D} G ^{E} A ^{B} H c $c^{\sharp}$ d $d^{\sharp}$ etc.

This arrangement of the bass was customary until Schnitger's time. Since the half-tones in the bass — $C^{\sharp}$, $D^{\sharp}$, $F^{\sharp}$, and $G^{\sharp}$ were large and expensive pipes which took up much space in the organ and were not used in the music of that day, they were therefore quite sensibly omited from the designs. Moreover, this enabled the player to reach extremely wide intervals when playing chords in the bass.

5. Ratzeburg Dom, contracted in 1551 with Jacob Scherer, founder of the Scherer organ-building family. Jacob Scherer ranked among the most important organ-builders of Europe. His most beautiful case, which survived until the Second World War, was that of the Totentanz organ at the St. Marien Kirche in Lübeck. The disposition of the Ratzeburg organ is representative of Scherer's construction. Along with the complete principal chorus of the manuals there was a differentiated flute chorus. Reed voices were to be found in the Pedal and in the Brustpositiv (Regalwerk). ~~The compass of the organ was:~~ C D E F G A H c' a"

Manual C D E F G A - g" a"		Pedal C D E F G A - c'	
Principal	8'	Principal	16' (playable also from
Gedackt	8'	Trompete	8' the manual)
Octave	4'		
Rauschpfeife	2⅔' and 2'	Brustpositiv	
Scharfe Mixtur			
Zimbel	(with third)	Gross Regal	8'
Holflöte	(open, wide-scaled)		
Spillpfeife			
Gemshorn			

6. Lüneburg, St. Johannis Kirche, built between 1551 and 1553 by Hendrik Niehoff and Jasper Johannsen. Following the construction of the Hamburg St. Petri Kirche organ in 1548, which brought to Niehoff great fame, he was given the contract for building the large new organ at the St. Johannis Kirche in Lüneburg. The case and some pipes of this organ remain today, but the pipework has been altered considerably. Praetorius gives the complete disposition with several mistakes in his Organographia.

The design was typically Dutch. The pipes for the Hauptwerk and Oberwerk, as well as the pedal were placed in one main case; the Rückpositiv had its own small case, which was almost identical to the Rückpositiv case at Brauershaven. The pedal stops stood at the outsides of the main case behind the eight façade pipes of the 16' Principal. The Blockwerk was located in the lower center of the main case. Above the Blockwerk chest and behind the façade about half-way up, the Oberwerk was placed with the flute and reed stops on a spring-chest which allowed for changes in registration. The layout of the Rückpositiv was similar to that of the main organ with its Blockwerk principal chorus below and a spring-chest with flutes and reeds above. For the Hauptwerk there was an additional short octave for the Principal 16' so that this stop could be played in the manual as well as in the pedal. The manual compass was C D E F G A - g' a" that of the pedal was more than likely C D E F G A - c'.

Principal	8'	"volle Orgel"
Octave	4'	
Mixtur		
Scharf		

Pedal C D E F G A - c' (probably)

Principal	16'
Trompete	8'
Nachthorn	2'

Oberwerk

Principal	8'
Holpijp	8'
Flöte	4'
Gemshorn	2'
Nasat	1⅓'
Zimbel	III
Trompete	8'
Zink	8'

Rückpositiv

Principal	8'	"das scharfe volle Positiv"
Octave	4'	
Mixtur		
Scharf		

Quintadena	8'	on the upper chest
Holpipe	4'	
Sifflöte	1'	
Barpfeife	8'	
Krummhorn	8'	
Regal	8'	
Schalmei	4'	

7. Steinkirchen bei Hamburg, contracted in 1581 with Dirck Hoyer, son-in law of Jacob Scherer. Hoyer worked primarily in Hamburg and the surrounding territory. In 1576-77 he added a Rückpositiv to the organ in the St. Jakobi Kirche in Hamburg along the lines of the Rückpositiv built by Niehoff for the St. Petri Kirche in Hamburg some twenty-eight years before. Hoyer rebuilt the old Gothic organ in Steinkirchen and added a Brustwerk and pedal to it. The instrument stood on the north side of the church with its pedal tower turned toward the congregation. Most of the registers built by Hoyer are still to be found in the Steinkirchen organ, for Schnitger used them in his new organ built for the church in 1685-87.

Werk

Principal	8'	drawn together with one stop-knob
Quintadena	8'	
Octave	4'	
Mixtur		

Brustpositiv

Regal	8'
Holflöte	4'

Spitzquinte	2⅔'	(treble only)
Sifflöte	2'	(or 1')
Klingende Zimbel		

Pedal	
Untersatz	16'
Trompete	8'
Bauernflöte	2'

8. Lüdingworth an der Unterelbe (near Cuxhaven), contracted in 1598 with Antonius Wilde, pupil of Hans Scherer the Elder. Wilde's work as an organ-builder can be dated from 1587 to 1612. He lived in Otterndorf an der Unterelbe and worked in the surrounding area. In many points the Lüdingworth disposition is typical of North German organ-building of that time: a complete chorus of flutes was placed in the Hauptwerk next to the principal chorus, and there were moreover, a Trumpet and a Zink. That is to say, the registers which were divided between the Blockwerk and Oberwerk on Niehoff's organs, were here put together on one chest. The pedal, disposed chiefly with stops of solo character, was placed in one pedal tower turned toward the congregation. The organ stood on the north side of the church, as was the general custom in North Germany during the 16th century. Many registers from this organ are to be found in the present organ, built by Schnitger in 1682-83.

(At the same time a pedal tower was built in neighboring Altenbruch with almost exactly the same disposition.)

Manual		
Principal	8'	
Holflöte	8'	(Rohrflöte)
Querpfeife	8'	(treble only)
Octave	4'	
Holflöte	4'	
Nasat	2⅔'	
Superoctave	2'	
Mixtur	V	in the bass
	VI	in the tenor
	VII	in the alto
	VIII	in the treble
Klingende Zimbel	III	
Trompete	8'	

Compass: D E F G A - g" a"

Because the C was omited the keyboard has the appearance of beginning on F

Brustpositiv
Krummhorn 8'
Spitzquinte $2\frac{2}{3}$' (treble only)

Pedal
Untersatz 16'
Rauschpfeife III
Trompete 8'
Cornet 2'

Compass: D E F G A - c'

9. Bremen, St. Martini Kirche, built in 1616-19 by Christian Bockelmann. The Bockelmann family which came from Hamburg stood in close connection to the Scherers. (Hans Bockelmann was perhaps the son-in-law of Jacob Scherer.) The beautiful case of the St. Martini organ fortunately survived the destruction of the Second World War. There is however, nothing left of the original instrument except the case. A new organ built by the firm of Ahrend and Brunzema now stands behind the old façade. Bockelmann's disposition shows a well balanced relationship between principals, flutes, and reeds.

Werk (Hauptwerk)
Principal 8' etc.

Compass: etc.

10. Lubeck, St. Agidien Kirche, contract of 1623 with Hans Scherer the Younger. This builder was active for two decades between 1610 and 1631. He created the classical type of North German organ with orderly planning of the divisions in the form of Hauptwerk (Oberwerk), Rückpositiv, and Pedal in towers. The disposition of the organ at the St. Agidien Kirche is practically identical to the disposition of the organ built ten years prior for the St. Martini Kirche (Freiheiter Kirche) in Kassel.

Hauptwerk "zur vollen Orgel"

etc.

Brustwerk built as an Oberwerk behind the Hauptwerk.

etc.

11. Wremen bei Bremerhaven, contract dated 1624 with Antonius Moitzen and his son Henricus. Antonius Moitzen apprenticed with the important master-builder Matthias Mahn, who lived in the middle of the 16th century in Buxtehude near Hamburg. The

disposition of the organ in Wremen shows that shortly after 1600 important organs were being built even in out of the way villages in North Germany. In the latter part of the 17th century there came to be many three manual organs in rural churches.

Werk

.....

Regal 8' (probably placed as a Brustwerk)

Pedal (in towers on either side of the main case)

etc.

12. Hillerød, Frederiksborg Castle, built in 1612 by Esaias Compenius, the most famous member of the Compenius organ-building family. He was a friend of Michael Praetorius and contributed important information to the publication of the Organographia. The solitary complete Compenius organ existing today is the "hölzern Orgelwerk" (wooden organ) at Frederiksborg Castle. In this instrument the new "lieblich" style of organ-building of 1600 with its totally instrumental approach is well represented. The stops are made entirely of wood in this chamber instrument, which today is still unchanged since the time of its construction.

Upper Manual... Lower Manual...

Pedal... Klein Zimbel I (with breaks)

13. Dresden, Schlosskirche, built in 1614 by Gottfried Fritzsche. (Biographical details on Fritzsche have been mentioned previously.) This organ, built where Heinrich Schutz was active, represented the "baroque organ" which was modern for that day. It was very useful in performances of the then popular polychoral Italian music. The entire construction with its façade stops placed one behind the other gave a highly experimental appearance. The keyboards were also of a complicated construction. To make possible the playing of music written with more

than three accidentals, there had to be separate keys for $d^{\sharp}$ and $e^{\flat}$ and for $g^{\sharp}$ and $a^{\flat}$. In the tuning of that day with its pure thirds, the keys between d and e, and g and a were agreed upon as being $d\sharp$ and $g\sharp$. That was especially the case in the so-called mean-tone tuning which was founded on the absolute purity of its major thirds. This tuning came into Germany shortly after 1600 with the introduction of the new Italian figured bass style. The half-tones in this tuning could not be read either as sharps or flats, as was possible in tuning systems of the 16th century (for example, that of Schlick) or later the 17th century temperament of Werckmeister, or as is customary today in our purely logical equal temperament. In other words, in mean-tone tuning if there were to be both $g\sharp$ and $a^{\flat}$, then there would have to be two keys. The Dresden keyboard appeared thus:

c $c\sharp$ d $\overset{eb}{d\sharp}$ e f $f\sharp$ g $\overset{a^{\flat}}{g\sharp}$ a b h c', etc.

The compass of the manuals in Dresden began at C with a short octave and went to d"', the pedal from C (short octave) to d'. There were however at that time already organs which had compasses almost equal to those which are presently in use. For example, the large organ in Bückeburg, built by Compenius in 1615 had a manual compass of C - f"' without bottom $C^{\sharp}$; ~~and~~ there were in the higher octaves ~~with~~ doubled upper keys for $d^{\sharp}/e^{\flat}$ and $g^{\sharp}/a^{\flat}$. The pedal compass was C - e' without bottom $C^{\sharp}$ and $D^{\sharp}$ and in the higher octaves with doubled keys as in the manuals. Unfortunately, nothing remains of either the organ in Dresden or the one in Bückeburg. The interior parts of the Bückeburg organ were removed in 1920, and the case burned only fifteen years ago. The disposition of the Fritzsche organ in the Schlosskirche in Dresden was:

Oberwerk (Hauptwerk)
completely gilded Trompete 8'
Octave of Tin 4'

Principal of Tin	8'	these three stops comprise the façade
Quintadena	16'	
....		
Rückpositiv on both sides		
completely gilded Krummhorn	8'	these three stops comprise the façade
Superoctave of Tin	2'	
Principal of Tin	4'	
Liebliche Flöte	8'	
Querflöte of Wood	4'	
Zimbel	II	
Brustpositiv		
Regal completely gilded	8'	these three stops comprise the façade
Schwiegelpfeife of Tin	1'	
Quintadena of Tin	2'	
Pedal		
Offener Holz-Subbass	16'	
....		

(Several of the pedal registers were arranged as transmissions.)

14. Halle, St. Moritz Kirche, built 1624-25 by Johann Heinrich Compenius for Samuel Scheidt, one of the most important organ composers of that ~~time~~ day. This instrument belonged less to the North German than to the Central German tradition. The pedal was not found in large pedal towers to the left and right of the manual divisions, but rather was spread throughout the entire organ. An interesting comparison can be made between the disposition of this organ and that of the organ in the St. Agidien Kirche in Lubeck, constructed at the same time.

Hauptwerk	Pedal	
....	Subbass	16' (behind the organ)
	Quintadena	16' (transmitted from the Hauptwerk)
Rückpositiv	Zimbelbass	
.....	Flötenbass	1'
	Posaune	16' (on the Hauptwerk chest)
	Trompete	8'
	Dulcian	8' (on the Brustwerk chest)
	Cornet	2'

15. Hamburg, St. Jakobi Kirche, rebuilt in 1635-36 by Gottfried Fritzsche. In this rebuild the organ obtained a fourth manual, making it ~~Here was~~ the first example of a complete four manual organ built in North Germany. Each manual in the organ had a ~~complete~~ full

Each division was built as a "Werk" in its own right, a small but complete organ within the main organ. The pedal division was so well designed that the use of a coupler to the manuals was not ~~necessary~~ required, since all the necessary tonal possibilities were available in the pedal stops themselves. The disposition is intriguing, for here Fritzsche was forced to fit his "lieblich" style of organ-building, with its instrumental orientation, to the traditional North German style of the older instrument.

Hauptwerk
....

Oberwerk
...

Brustpositiv (new fourth manual)
Principal 8' (wood)
...

Ruckpositiv
...
Sesquialtera
(this marks the first appearance of the Sesquialtera in North Germany)
...

Pedal (in side towers)
...

Compass of the manuals: ...
Compass of the pedals:...

16. Westerhusen, Ostfriesland, built in 1642 by Jost Sieburg, a builder who worked primarily in Bremen and Ostfriesland. The organ in Westerhusen is almost completely intact. Tonally it is one of the most beautiful organs in North Germany. It is tuned in mean-tone. The disposition of this organ is typical of a small village church organ of the 17th century. The choice of stops was limited to the most important ones (the Gedackt and Quintadena drawn together make a fine substitute for a Principal 8'). The original compass was C D E F G A - c'''.

Principal 8'
...

17. Langwarden an der Unterweser, built in 1651 by Harmen Kroger, in whose shop Berendt Hus, teacher of Arp Schnitger, was trained. The disposition of the Hauptwerk possesses many similarities to Westerhusen — here only a Quinte 2⅔' and the

"liebliche" Spitzflöte have been added. The Brustpositiv is based tonally on the two wooden stops at 8' and 4' along with the very narrow scaled Schweitzerpfeife. The placement of two wooden stops in the Brustpositiv later became a characteristic of most of Schnitger's work.

Hauptwerk	Brustpositiv	Pedal
...	....	...

Manual Compass: ...
Pedal Compass: ...

18. Stralsund, St. Marien Kirche, built in 1653-59 by Friedrich Stellwagen, son-in-law of Gottfried Fritzsche. This was the largest organ to be built in North Germany during the middle of the 17th century. The Thirty Years War, which ravaged much of North Germany between 1618 and 1648, had precluded the building of especially large organs, except in the coastal regions (in towns such as Oldenburg, Langwarden, Hamburg, and Stralsund) where organ-building had been able to continue apace. By the end of the 17th century, as the country recovered from the destruction of the war, organ-building was able to begin once more in earnest. This situation made possible Schnitger's wide field of activity. The art of construction of the Stellwagen organ in Stralsund appears to have had a great influence on Schnitger. He took note of its disposition in his own hand when he visited Stralsund at the inception of his career. In order not to encroach too much on the limited space available, I have chosen here to omit the disposition of the organ in Stralsund and in its place to include the to date unpublished dispositon of the first large organ which Arp Schnitger built to completion, that of the St. Wilhadi organ in Stade, no longer in existence.

19. Stade, St. Wilhadi Kirche, construction begun in 1673. When his master Berendt Hus died in 1676, Schnitger took charge of the work, and finished the organ in 1678.

classical Werk construction) was expertly combined with innovations of the Fritzsche school, shows the point of departure for Schnitger's own manner of construction. Because the St. Wilhadi stoplist represents the manner of construction of Berendt Hus and Arp Schnitger in his early period, the disposition of the organ in Stade at the St. Cosmae Kirche will be omitted. The organ at St. Cosmae was built before the St. Wilhadi organ (1668-73) and is largely preserved today. Most important, the beautifully crafted spring-chest of the Hauptwerk is still in the St. Cosmae organ. This manner of construction (with the "double" spring-chest) was not adopted by Schnitger for his own work, for he built only slider chests. This type of spring-chest was built with removable register pallets in order to effect repairs. Such construction was highly sophisticated and seldom seen.

Hauptwerk	Ruckpositiv
...	...
Brustpositiv	Pedal
....	...

20. Buttforde, Ostfriesland, built by Joachim Richborn from Hamburg (1681-82). Richborn was related to the Fritzsche family and was active in Hamburg a generation before Schnitger. His organ in Buttforde is almost completely intact. Its disposition and arrangement of principals and flutes is characteristic of work of that time. Schnitger appears to have adopted some details of Richborn's work. For example, the scaling of the façade principal pipes in Buttforde and in Steinkirchen (built four years later by Schnitger) are practically identical. The organ in Buttforde has only one division with the following disposition:

Principal	8'	Manual Compass: ...
....		
Sesquialtera	II	(intended as a plenum stop, as was most often the case in
....		Schnitger's organs as well)

Following are some typical dispositions of Schnitger, arranged in chronological order

As has already been mentioned, here the various historical trends in North German organ-building are brought together harmoniously with unexcelled economy.

21. Steinkirchen bei Hamburg, built by Arp Schnitger (1685-87) using parts from the old organ of Dirck Hoyer (No. 7). Schnitger built his organ in a new balcony in the west end of the church very high and just under the ceiling — an acoustically fortunate location.

Hauptwerk		Brustpositiv	
...		...	
		Quinte	$2\frac{2}{3}$' (added later)
Pedal		Manual Compass: ...	
...			
Gedackt	8' (today changed to an Octave 8')		

22. Hamburg, St. Jakobi Kirche, built in 1689-93 by Schnitger, using the old organ. In this organ, in which Schnitger used a large number of the old pipes, there is a perfect synthesis of two-hundred years of North German organ-building styles. The tonal result must have been overpowering when it was completed. Unfortunately, the sound of this organ has been altered (primarily through the great damage of the Second World War.) The original disposition follows. Stops built by Schnitger are noted with an X.

Hauptwerk		Oberwerk		Ruckpositiv	
...		...		...	
Gedackt im Kammerton					
Brustpositiv		Pedal			
Principal (wood)	8'	Principal	32' (beginning with F in façade)		
....		....			

23. Groningen, der Aa Kerk, built by Schnitger 1694-97. This instrument was one of the most valuable of Schnitger's works. In his memoirs Schnitger said of it, "Ich habe nicht daran gesparrt und alles herrlich gemacht." (I did not stint on this organ and made everything excellent.) The disposition behind the grandiose

Schnitger organ in the church was not installed there until 1815. The disposition of the original organ read as follows:

Hauptwerk		Ruckpositiv
Principal	16' (of tin, beginning at F in façade)	...
.....		
Oberwerk		Pedal
....		...

Manual Compass: ... (with complete bottom octave)

24. Dedesdorf an der Unterweser, built by Schnitger (1697-98). The plan of this instrument consisted of a completed Werk in one case. The windchest was so constructed that it contained pallets at the front and back. The tone-channels were separated in the middle. In that manner, with the pipes for one manual placed behind the other, there were almost as many registration possibilities as if there had been a genuine two manual organ with two divisions and case locations. Here is found also a Sesquialtera (with breaks, as was almost always the custom in North German building) intended for use in the plenum. In this connection mention should be made that Schnitger ordinarily had the habit of completing the plenum of a division with a third-sounding register. Even in those stoplists where only "Mixtures" were found, there was often a third included. Unfortunately, with the later introduction of equal temperament tuning the third-sounding ranks were removed. In the contract for construction of the large organ in the St. Johannis Kirche in Magdeburg, Schnitger wrote a note about the Hauptwerk Mixtur in his own hand: "It will be built as two registers, in such a form that the one produces a Sesquialtera, and when both are drawn together, there will be a complete mixture of six to eight ranks." The organ in Dedesdorf belongs to the very few Schnitger organs in Germany which have not suffered fundamental tonal alterations. Originally it contained no independent pedal,

case was added in 1745 by Eilert Kohler.

Vorderwerk		Hinterwerk	
Principal	4' (of tin)	...	
...		Mixtur (with divided slider)	IV
Compass of the Manuals: ...		Trompete (with divided slider)	8'

25. Uithuizen, Provinz Groningen, built 1700-01 by Schnitger. The instrument is an example of a large new organ in which Schnitger used no old pipework. Fortunately, the organ is tonally in good condition for the most part, especially the reeds. The construction is so arranged that the pedal is not placed in pedal towers (there was not sufficient space for that) , but rather stands on the floor behind the Hauptwerk.

Hauptwerk	Rückpositiv	Pedal
...	...	...

26. Godlinze, Provinz Groningen, built by Schnitger in 1704. The arrangement of this organ was also exceptional for Schnitger, again showing how variable his designs could be. The façade is placed directly in the balcony rail. Below the façade pipes of the Hauptwerk are the flat pipe fields of the Unterwerk or Brustwerk. The keyboards are built into the back side of the organ, and the pedal which has no stops of its own couples into the manual. The original disposition of the Godlinze organ, which is in good condition, was found only recently by the Groningen organ ~~expert~~ authority C. H. Edskes, who is probably the most knowledgeable person in the history of the Dutch and North German organ art.

Hauptwerk	
Principal	8' (from F in façade)
....	
Brustwerk	
Principal	4' (from F in façade)
....	

Following are two dispositions from the North German Schnitger school. Of the numerous pupils of Schnitger, at least fifty of whom have been documented, those who

tradition. In this regard the rebuilding of the old Niehoff organ in Lüneburg at the St. Johannis Kirche is most intriguing. The work was carried out between 1712 and 1714 by Matthias Dropa, working together with Georg Böhm, the important composer and organist of the church. Dropa added to the case the two large pedal towers and gave the completed organ the following disposition. Böhm demanded of Dropa that he be certain to retain "the bright and sharp tone in the old as well as the new voices."

Hauptwerk	Oberwerk	Rückpositiv
...	.....	...
Pedal	Manual Compass: ... (with all half-tones in the bottom octave except Cs)	
....		

28. Scharmbeck bei Bremen, built 1731-34 and again in 1745 by Erasmus Bielfeldt. This organ-builder came from Stade and spent his apprenticeship in the Lüneburg shop of Dropa. He opened his own business in 1719, the year of Schnitger's death and worked primarily between the Elbe and Weser rivers. The organ in Scharmbeck was built with two manuals, a Hauptwerk and Brustpositiv, and an independent pedal placed behind the main case, following the Schnitger example at Uithuizen. In 1744 a new church was built in Scharmbeck. Bielfeldt moved the organ into the new building. Because there was more space than in the old location, Bielfeldt placed the pedal division in two new towers on either side of the case. The disposition is interesting inasmuch as there is a Hauptwerk mixture with a third-sounding rank, having the double function of sesquialtera and mixture (as for example in the St. Johannis Kirche at Magdeburg and in many more organs of the time.) Through the old pure-third tuning, which has recently been re-introduced to the organ (Werckmeister III), this function can now be realized. The restoration of the Scharmbeck organ is especially important, for it is the first restoration in North Germany to be carried out according to the modern, yet thoroughly historical point of view toward the preservation of old instru-

ments. The original disposition of 1745 is as follows:

Hauptwerk
.....
Mixtur III-IV (with third)

Brustpositiv
....
Scharf III (composition: C 1/2', ⅓', 1/4'
... octave break on every c)

Pedal
...

Manual Compass: ...

The keyboards are still original. The organ is even now tuned in the high Chorton, a little more than a half-tone above normal. Such a pitch was common in North Germany after the end of the 16th century.

9. Bremen, St. Martini Kirche

Werk (Hauptwerk)		Compass: CDEFGA - g" a"
Principal	8'	
Untersatz	16'	
Holpipe	8'	
Octave	4'	
Flöte	4'	
Nasat	2⅔'	
Sifflöte		
Mixtur		
Trompete	8'	
Krummhorn	8'	
Rückpositiv		
Principal	4'	
Gedackt	8'	
Quintadena	8'	
Flöte	4'	
Octave	2'	
Waldflöte	2'	
Sedetzima	1'	
Bärpfeife	8'	
Krummhorn	8'	
Pedal		Compass: CDEFGA - c'
Principal	16'	
Gedackt	8'	
Octave	4'	
Rauschpfeife		
Posaune	16'	
Trompete	8'	
Dulcian	8'	
Cornet	2'	

10. Lübeck, St. Agidien Kirche

Hauptwerk ("zur vollen Orgel")	
Principal	16'
Quintadena	16'
Octave	8'
Gedackt	8'
Flöte	4'
Rauschpfeife	II
Mixtur	VI-VIII
Scharf	IV-VI
Ruckpositiv:	
Principal	8'
Quintadena	8'
Gedackt	8'
Octave	4'
Holflöte	4'
Sifflöte	1⅓'
Mixtur	III
Scharf	IV-VII
Regal	8'
Krummhorn	8'

Brustwerk built as an Oberwerk behind HW		
Principal	4'	
Holpipe	8'	
Nasat	2⅔'	
Waldflöte	2'	
Zimbel	III	
Trompete	8'	
Zink	8'	(treble)
Pedal		
Principal	16'	
Untersatz	16'	
Octave	8'	
Gedackt	8'	
Rauschpfeife	II	
Posaune	16'	
Trompete	8'	
Cornet	2'	

11. Wremen bei Bremerhaven

Werk		Rückpositiv	
Principal	8'	Principal	8' (treble)
Gedackt	8'	Principal	4'
Octave	4'	Quintadena	8'
Superoctave	2'	Holflöte	4'
Spilpfeife	2'	Superoctave	2'
Nasat	1⅓'	Waldflöte	2'
Gemshorn	1'	Quintflöte	1⅓'
Mixtur	IV	Sifflöte	1'
Cimbel	II	Mixtur	III-IV
Trompete	8'	Cimbel	II
Zink	8' (treble)	Krummhorn	8'
Regal	8' (probably as Brustpositiv)		

Pedal (in towers on either side)

Principal	16' (from F in façade)
Octave	8'
Bauerflote	1'
Rauschpfeife	II'
Posaune	16'
Trompete	8'
Cornet	2'

12. Hillerød, Frederiksborg Castle

Obermanual		Untermanual	
Principal	8'	Quintadena	8'
Gedacktflöte	8'	Klein Gedacktflöte	4'
Klein Principal	4'	Principal treble	4'
Gemshorn or Klein Violin	4'	Blockpfeife treble	4'
Nachthorn	4'	Super Gemshörnlein	2'
Blockflöte	4'	Nasat	1⅓'
Gedackt Quinte	2⅔'	Klein Zimbel (with breaks)	I
Super Gedackt-flötlein	2'	Krummhorn	8'
Rankett	16'	Geigend Regal	4'

Pedal

Grosser Gedacktflöten-Bass	16'
Gemshorn Bass	8'
Quintadena Bass	8'
Querflöten Bass	4'
Nachthorn Bass	2'
Bauerflöten Bass	1'
Sordunen Bass	16'
Dulcian Bass	8'
Jungfrauen Regal Bass	4'

13. Dresden, Schlosskirche

Ober-Werk (Hauptwerk)

Trompete completely gilded	8'	
Octave of Tin	4'	these three stops comprise the façade
Principal of Tin	8'	
Quintadena	16'	
Quintadena	8'	

Holzprincipal	8'
Octave	4'
Quinte	2⅔'
Nasat (gedackt)	⅔'
Gemshorn	2'
Super Quinte	⅓'
Zimbel	I
Mixtur	V

Rücknositiv on both sides

Krummhorn completely gilded	8'
Superoctave of Tin	2'
Principal of Tin	4'
Lieblich Flöte	8'
Querflöte of Wood	4'
Zimbel	II

Brustpositiv

Regal completely gilded	8'
Schwiegelpfeife of Tin	1'
Quintadena of Tin	2'
Gedacktflöte	2'
Schärf-Octave	2'

Pedal

Offener Subbass (Wood)	16'
Gedackter Subbass	16'
Quintadena	16'
Principal	8'
Spitzflöte	1'
Posaune	16'
Cornet	2'

14. Halle, St. Moritz Kirche

Hauptwerk

Principal	8'
Quintadena	16'
Grobgedackt	8'
Octave	4'
Kleingedackt	4'
Quinte	2⅔'
Octave	2'
Mixtur	
Zimbel	
Regal	8' (Brustpositiv)

Rückpositiv

Principal	4'
Grobgedackt	8'
Kleingedackt	4'
Octave	2'
Spitzflöte	2'
Quinte	1⅓'
Sifflöte	1'
Zimbel	
Dulcian	8'
Regal	8'
Singend Regal	4'

Pedal

Subbass	16' behind the organ
Quintadena	16' transmitted from the Hauptwerk
Zimbelbass	
Flötenbass	1'
Posaune	16' on the Hauptwerk chest
Trompete	8'
Dulcian	8' on the Brustwerk chest
Cornet	2'

15. Hamburg, St. Jakobi

Hauptwerk	
Principal	16'
Quintadena	16'
Oktave	8'
Gedackt	8'
Querflöte	8'
Rohrflöte	4'
Mixtur	
Scharf	
Trompete	8'

Oberwerk	
Principal	8'
Quintadena	8'
Rohrflöte	8'
Octave	4'
Nasat	2⅔'
Gemshorn	2'
Rauschpfeife	
Scharf	
Klingende Zimbel	
Krummhorn	8'
Trompete	8'

Brustpositiv (new fourth manual)	
Principal (wood)	8'
Octave	4'
Spitzquinte	2⅔'
Scharf	
Dulcian	16'
Geigend Regal	4'

Rückpositiv	
Principal	8'
Gedackt	8'
Octave	4'
Querflöte	4'
Blockflöte	4'
Gemshorn	2'
Sifflöte	1⅓'
Mixtur	
Scharf	
Klingende Zimbel	
Sesquialtera (see text)	
Krummhorn	8'
Bärpfeife	8'
Regal	8'
Schalmei	4'

Pedal (in the side towers)	
Principal	16'
Quintadena	16'
Octave	8'
Superoctave	4'
Gemshorn	
Spitzquinte	
Kleine Mixtur	
Zimbel	
Posaune	24' (32' beginning at F)
Posaune	16'
Dulcian	16'
Krummhorn	16'
Trompete	8'
Bärpfeife	8'
Cornet	2'

Manual Compass: CDEFGA - c"'
Pedal Compass: CDEFGA - d'

16. Westerhusen, Ostfriesland

Principal	4'
Gedackt	8'
Quintadena	8'
Octave	2'
Quinte	1⅓'
Mixtur	III
Trompete	8'

17. Langwarden an der Unterweser

Hauptwerk	
Principal	4'
Gedackt	8'
Quintadena	8'
Spitzpfeife	4'
Scharf Quint	2⅔'
8 Octave	2'
Nasat Quint	1⅓'
Mixtur	V-VI
Trompete	8'

Brustpositiv		
Gedackt von Holz	8'	
Blockflöte von Holz	4'	
Schweizerpfeife	4'	(treble)
Octave	2'	
Zimbel	III	
Krummhorn	8'	

Pedal	
Untersatz	16'
Principal	8'
Octave	4'
Bauerflöte	2'
Posaune	16'
Cornet	2'

Manual Compass: CDEFGA - c"'
Pedal Compass: CDEFGA - d'

19. Stade, St. Wilhadi Kirche

Hauptwerk	
Principal of Tin	16'
Quintadena	16'
Octave	8'
Holflöte	8'
Octave	4'
Rohrflöte	4'
Nasat	2⅔'
Superoctave	2'
Rauschpfeife	II
Mixtur	VI-VIII
Trompete	8'
Zink	8'

Brustpositiv	
Gedackt of wood (sehr lieblich)	8'
Principal (treble)	8'
Principal	4'
Blockflöte, wood (lieblich)	4'
Querflöte of wood	2'
Flachflöte	2'
Sifflöte	1⅓'
Terzian	II
Scharf	III-V
Trechterregal	8'

Rückpositiv	
Principal	8'
Quintadena	8'
Gedackt	8'
Octave	4'
Spitzflöte	4'
Octave	2'
Waldflöte	2'
Scharf Quint	1⅓'
Sesquialtera	II
Scharf	V-VI
Dulcian	16'

Pedal	
Principal	16'
Subbass	16'
Octave	8'
Octave	4'
Nachthorn	2'
Grosse Rauschpfeife	II
Mixtur	VI
Posaune	16'
Dulcian	16'
Trompete	8'
Trompete	4'
Cornet	2'

20. Buttforde, Ostfriesland

Principal	8'
Gedackt	8'
Octave	4'
Gedacktflöte	4'
Nasat	2⅔'
Octave	2'
Sesquialtera	II (for the plenum)
Mixtur	V
Trompete	8'

Manual Compass: CDEFGA - c"'

21. Steinkirchen bei Hamburg

Hauptwerk	
Principal	8'
Quintadena	16'
Rohrflöte	8'
Octave	4'
Nasat	2⅔'
Octave	2'
Gemshorn	2'
Sesquialtera	II
Mixtur	IV-VI
Zimbel	III
Trompete	8'

Brustpositiv	
Gedackt	8'
Rohrflöte	4'
Quinte	2⅔'
Octave	2'
Spitzflöte	2'
Tertian	II
Scharf	III-IV
Krummhorn	8'

Pedal	
Principal	16'
Gedackt	8' (today Octave 8')
Octave	4'
Nachthorn	2'
Rauschpfeife	II

Mixtur	IV-V
Posaune	16'
Trompete	8'
Cornet	2'

Manual Compass: CDEFGA - c"'
Pedal Compass: CDE - d'

22. Hamburg, St. Jacobi Kirche

Hauptwerk	
Principal	16'*
Quintadena	16'
Octave	8'
Spitzflöte	8'*
Gedackt (Kammerton)	8'*
Octave	4'
Rohrflöte	4'
Superoctave	2'*
Flachflöte	2'*
Rauschpfeife	II
Mixtur	VI-III
Trompete	16'

Brustpositiv	
Principal (wood)	8'
Octave	4'
Holflöte	4'
Waldflöte	2'
Sesquialtera	II
Scharf	IV-VI
Dulcian	8'*
Trechterregal	8'*

* Stops made by Schnitger

Oberwerk	
Principal	8'*
Rohrflöte	8'*
Holzflöte	8'*
Octave	4'
Spitzflöte	4'*
Nasat	2⅔'*
Octave	2'
Gemshorn	2'
Scharf	VI
Zimbel	III
Trompete	8'*
Vox Humana	8'*
Trompete	4'*

Rückpositiv	
Principal	8'*
Gedackt	8'
Quintadena	8'
Octave	4'*
Blockflöte	4'
Querflöte	4'
Octave	2'*
Sesquialtera	II
Sifflöte	1⅓'
Scharf	VI-VIII
Dulcian	16'
Bärpfeife	8'*
Schalmei	4'*

Pedal	
Principal	32'*(beginning at F in façade)
Octave	16'*
Subbass	16'*
Octave	8'*
Octave	4'*
Nachthorn	2'*
Rauschpfeife	III *
Mixtur	VI-VIII
Posaune	32'*
Posaune	16'*
Dulcian	16'
Trompete	8'*
Trompete	4'
Cornet	2'

Compass of Hauptwerk, Oberwerk, and Brustpositiv: CDEFGA - c"'
Compass of Rückpositiv: CDE -c"'
Compass of Pedals: CDE - d'

23. Groningen, der Aa Kerk

Hauptwerk	
Principal	16' (tin, beg. F in facade)
Octave	8'
Rohrflöte	8'
Octave	4'
Holflöte	4'
Superoctave	2'
Rauschpfeife	II
Mixtur	VI-VIII

Rückpositiv	
Principal	8' (tin)
Gedackt	8'
Quintadena	8'
Octave	4'
Waldflöte	2'
Quinte	1⅓'
Sesquialtera	II
Mixtur	IV-VI
Dulcian	8'

Oberwerk	
Principal	8' (tin)
Holpijp	8'
Salicet	8'
Octave	4'
Nasat	2⅔'
Sesquialtera	II
Mixtur	IV-VI
Trompete	8'
Vox Humana	8'

Pedal	
Präestant	16' (tin)
Octave	8'
Octave	4'
Mixtur	IV-VI
Posaune	16'
Trompete	8'
Schalmei	4'
Cornet	2'

Manual Compass: C - c'"
Pedal Compass: C - d'

24. Dedesdorf an der Unterweser

Vorderwerk:	
Principal	4' (tin)
Gedackt	8'
Flöte	2'
Quinte	1⅓'

Compass: CDEFGA - c"'

Hinterwerk		
Quintadena	8'	
Gedackt	4'	
Quinte	2⅔'	
Octave	2'	
Sesquialtera	II	
Sifflöte	1⅓'	
Mixtur	IV	(bass - treble)
Trompete	8'	(bass - treble)

25. Uithuizen, Provinz Groningen,

Hauptwerk	
Principal	8'
Holpijp	8'
Octave	4'
Spitzflöte	4'
Quinte	2⅔'
Superoctave	2'
Sifflöte	1⅗'
Mixtur	IV-V
Trompete	8'
Vox Humana	8'

Rückpositiv	
Principal	4'
Gedackt	8'
Quintadena	8'
Holpijp	4'
Octave	2'
Waldflöte	2'
Quinte	1⅓'
Sesquialtera	II
Scharf	IV
Dulcian	8'

Pedal	
Bourdon	16'
Octave	8'
Octave	4'
Nachthorn	2'
Mixtur	IV
Posaune	16'
Trompete	8'
Cornet	2'

Manual Compass: CDEFGA - c"'
Pedal Compass: CDE- d'

26. Godlinze, Provinz Groningen

Hauptwerk	
Principal	8' (from F in façade)
Holpijp	8'
Octave	4'
Flöte	4'
Quinte	2⅔'
Superoctave	2'
Sesquialtera	II
Mixtur	IV-VI
Trompete	8'

Brustwerk (Unterwerk)	
Principal	4' (from E, façade)
Gedackt	8'
Octave	2'
Quinte	1⅓'
Scharf	III
Vox Humana	8'

Compass: CDEFGA - c"'

27. Lüneburg, St. Johannis Kirche

Hauptwerk	
Principal	16'
Quintadena	16'
Octave	8'
Gedackt	8'
Octave	4'
Spitzflöte	4'
Superoctave	2'
Mixtur	
Scharf	
Trompete	16'
Dulcian	8'
Schalmei	4'

Pedal	
Principal	16'
Untersatz (wood)	32'
Untersatz	16'
Octave	8'
Gedackt	8'
Octave	4'
Nachthorn	2'
Rauschpfeife	II
Mixtur	VII-VIII
Posaune	32'
Posaune	16'
Trompete	8'
Trompete	4'
Cornet	2'

Oberwerk:	
Principal	8'
Holflöte	8'
Octave	4'
Holflöte	4'
Nasat	2⅔'
Gemshorn	2'
Mixtur	V-VI
Sesquialtera	
Trompete	8'
Krummhorn	8'
Vox Humana	8'

Rückpositiv	
Principal	8'
Quintadena	8'
Octave	4'
Waldflöte	2'
Sifflöte	1'
Sesquialtera	
Scharf	
Dulcian	16'
Bärpfeife	8'
Regal	4'

Manual Compass: CD - c'''
Pedal Compass: CD - d'

28. Scharmbeck bei Bremen

Hauptwerk		
Principal	8'	
Quintadena	16'	
Gemshorn	8'	
Octave	4'	
Quinte	2⅔'	
Octave	2'	
Mixtur	III-IV	(with Terz)
Trompete	8'	

Brustpositiv		
Gedackt	8'	
Flöte (gedackt)	4'	
Quinte	2⅔'	
Waldflöte	2'	
Scharf	III	C- 1½', 1/3', 1/4', breaking each octave on c
Dulcian	8'	

Pedal	
Principal	16'
Untersatz	16'
Octave	8'
Octave	4'
Mixtur	IV
Posaune	16'
Trompete	8'
Cornet	2'

Manual Compass: CD - c'''