[ARROWS]
BackArrow=BKARROW.BMP
ForwardArrow=FDARROW.BMP
DBArrow=DBKARROW.BMP
DFArrow=DFDARROW.BMP

[VideoButton]
VIDICONUP = video0.bmp
VIDICONDOWN = video1.bmp

[DetailButton]
DTICONUP = detail1.bmp
DTICONDOWN = over1.bmp

[1010]
BMPFile=1010.bmp
Neutral=N1010.bmp
Down=D1010.bmp
Active=A1010.bmp
EndPage=11
More=-1
TextData=\ql\ri3225 Keyboards are probably the most popular musical instruments in the world. Their \par\ql\ri3615 \
f002 distinct arrangement of black and white keys has become a universally recognized symbol of music and music-
making. One of the primary \par\ql\ri4140 \f002 reasons for this popularity is that with a keyboard instrument, you \par\
ql\ri690 \f002 can begin making music almost immediately. When you press a key, a pleasant musical sound is produced.
This is quite different from many other instruments, where you might spend weeks just learning how to produce sounds
that won't make people run from the room or make dogs \par\ql\ri1050 \f002 howl in pain!
AVIFile=01_01.avi

[1011]
BMPFile=1010.bmp
EndPage=11
More=-1
TextData=\ql\ri3225 With keyboards, the tones produced are highly dependent upon the construction of \par\ql\ri3615 \
f002 the instrument. For instance, a pipe organ sounds noticeably different than a piano. Millions of keyboards are in
existence today. Some are centuries \par\ql\ri3870 \f002 old and were carefully devised and hand-crafted. Modern
keyboards are \par\ql\ri690 \f002 made of different materials, are manufactured differently and produce sounds in
different ways than their predecessors. We'll begin with an overview of some of the most important types of keyboard
instruments over the centuries.

[1110]
BMPFile=1110.bmp
Neutral=N1110.bmp
Down=D1110.bmp
Active=A1110.bmp
EndPage=12
More=-1
TextData=\ql\ri780 This beautiful spinet was made in Italy in 1550. Its ornate case was decorated with paintings and
ivory carvings. Its "white" keys had a cherrywood stain; its "black" keys were ebony and carved ivory.Highly \par\ql\
ri4785 \ql\ri4515 \f002 decorated keyboards like this became known as art case instruments. Making art case instruments
is still fashionable today, but very expensive, since the ornate \par\ql\ri4860 \f002 work must be performed by hand by
skilled craftsmen. A spinet is very similar to a harpsichord. However, this spinet did not have legs, so it had to be placed
on a table to be played.

[1111]
BMPFile=1110.bmp
EndPage=12
More=-1

TextData=\ql\ri780 In a spinet, sounds were created by a small lever attached to the key inside the instrument. Protruding from this lever (also called a jack) was a small object called a plectrum. Usually this was a hard piece of \par\ql\ri4785 \ql\ri4515 \f002 leather, although sometimes the hard quill of a bird's feather was cut into a fingernail-like shape. When a key was pressed, the lever with the plectrum would \par\ql\ri4860 \f002 pluck the strings. That's what gives these instruments their plucked sounds.

[1112]
BMPFile=1110.bmp
EndPage=12
More=-1
TextData=\ql\ri780 Spinets were not very loud instruments. Generally, they were used to play solos or accompany singers or instrumentalists. The spinet had a range of just over 4 octaves, 49 notes to be exact. This was a common \par\ql\ri4785 \ql\ri4515 \f002 range for keyboard instruments of that time. By comparison, the modern piano has 88 notes.

[1210]
BMPFile=1210.bmp
Neutral=N1210.bmp
Down=D1210.bmp
Active=A1210.bmp
EndPage=12
More=-1
TextData=\qr\li165 No one is sure where the name virginal originated, but it was widely used throughout England and Northern Europe to refer to instruments that were similar to spinets. In literature, the earliest known references to virginals date \par\qr\li4785 \f002 back to around 1460. As in the spinet, sound is produced by a plectrum attached to a lever which plucks the string when a \par\qr\li5655 \f002 key is pressed. This virginal has a very limited range, just over 3½ octaves.

[1211]
BMPFile=1210.bmp
EndPage=12
More=-1
TextData=\qr\li165 It was light and small enough to be moved from place to place. Its outer case was designed for durability, not decoration, although a beautiful landscape scene decorated the inside lid. From its small size, short range, and the fact \par\qr\li4785 \f002 that its exterior was painted a drab, solid color, one can surmise that this virginal was designed for traveling. \par\qr\li5655 \f002 The sound of this instrument was probably fairly soft and could be used to play solos or accompany singers and musicians.

[1212]
BMPFile=1212.bmp
EndPage=12
More=-1
TextData=\qr\li4140 This virginal was made in England in 1641 and is still in excellent condition. The outstanding craftsmanship and \par\qr\li4980 \f002 artistry in this instrument is immediately apparent. Look closely at the fine inlay work which borders the entire case, inside and out. The painted landscape on the underside of the lid was far different \par\qr\li2685 \f002 than the Italian and Flemish instruments. This virginal had a range of 4½ octaves and is larger than the other virginal and spinet we have seen.

[1310]
BMPFile=1310.bmp
Neutral=N1310.bmp
Down=D1310.bmp
Active=A1310.bmp
EndPage=14
More=-1
TextData=\ql\ri3360 This detailed drawing shows the plans for building a harpsichord. It dates back to the 1460s and comes from France. This proposed instrument was to have a range of 3 octaves. These plans also illustrated four possible systems for the plucking action which produced the sound. Harpsichords were mentioned in European literature in the mid-1400s, around the same time as virginals.

[1311]
BMPFile=1311.bmp
EndPage=14
More=-1
TextData=\qr\li2400 A manual is a keyboard for the hands. Made in Italy in 1619, this very ornate instrument is a single \
par\qr\li2790 \qr\li3435 \f002 manual harpsichord. Most later \par\qr\li2490 \f002 harpsichords had two manuals
(keyboards) so \par\qr\li3690 \f002 the player could get different sounds at the same time. During this era, it was very
common to decorate nearly every inch of the instrument case and, as you see, on this harpsichord, very little was missed.
There are little, angelic cherubs on the case and lid, and the legs are ornately carved. \par\qr\li0 \f002 \par \par

[1312]
BMPFile=1311.bmp
EndPage=14
More=-1
TextData=\qr\li1935 In this harpsichord, sound was produced in the same way as in a spinet or virginal. However,
because this \par\qr\li3255 \f002 instrument was larger than the virginal or \par\qr\li3480 \f002 spinet, and because the
strings were \par\qr\li3420 \f002 thicker, this harpsichord was considerably louder than those instruments. It also had a
much fuller sound. This instrument had a 4½ octave range, which was common for the time. The keyboard had ebonized
black keys and cherrywood white keys. \par\qr\li0 \qr\li3510 \f002 \par \par

[1313]
BMPFile=1312.bmp
EndPage=14
More=-1
TextData=\ql\ri3225 Dating from 1736, this exquisite example of a two manual harpsichord from the French Baroque era
has eight legs to support its \par\ql\ri3630 \ql\ri3465 \f002 weight and keep its wooden frame from warping. Note the
extraordinary \par\ql\ri3750 \f002 craftsmanship in the detail of the case and the carving of the gold legs. Notice that the
colors of the keys are \par\ql\ri7200 \ql\ri4005 \f002 inverted. The "white" keys are ebonized while the "black" keys have
slabs of ivory affixed to them. This was common on many keyboard instruments, including pipe organs, during this era.\
par \par \par

[1314]
BMPFile=1312.bmp
EndPage=14
More=-1
TextData=\ql\ri3225 Because of the complexity involved in constructing an instrument with two keyboards and many sets
of strings \par\ql\ri3465 \f002 stretched over a wooden frame, this harpsichord was considerably larger and \par\ql\
ri3630 \f002 heavier than others we've seen before. This harpsichord had a range of 5½ octaves, 64 notes, which also
added \par\ql\ri3750 \f002 to its overall size. Its tone was fairly bright and had a nice ring.\par\ql\ri4005 \f002 \par\ql\
ri7200 \f002 \par

[1410]
BMPFile=1410.bmp
Neutral=N1410.bmp
Down=D1410.bmp
Active=A1410.bmp
EndPage=11
More=-1
TextData=\qr\li4190 Early clavichords were the immediate predecessor of our modern piano and a model for the newly-
emerging fortepiano. \par\qr\li2685 \qr\li4980 \f002 Notice that the clavichord had the same arrangement of white and
black keys as is used today. Built in 1744, this German clavichord's white keys were covered in real ivory. On the
outside, the clavichord resembled the virginal \par\qr\li0 \qr\li0 \f002 and spinet, but inside it was significantly different.
In virginals, spinets and harpsichords, sound was produced by plucking.

[1411]
BMPFile=1410.bmp
EndPage=11

More=-1
TextData=\qr\li4140 It didn't matter whether you pressed the keys forcefully or lightly, the level of loudness always remained the same.In \par\qr\li4980 \f002 the clavichord, sound was produced by a tangent striking the strings when a key was pressed. Now the player could change the level of loudness or softness by adjusting how hard the keys were depressed, getting a wide variety \par\qr\li2685 \f002 of levels. The clavichord's keyboard had a range of 5 octaves, 60 notes.

[1510]
BMPFile=1510.bmp
Neutral=N1510.bmp
Down=D1510.bmp
Active=A1510.bmp
EndPage=13
More=-1
TextData=\qr\li180 Wolfgang Amadeus Mozart was one of the first composers to write a considerable amount of important music specifically for the newly developing pianos. During the 1750s, these early pianos were called fortepianos, a term \par\qr\li3015 \f002 which meant loud-soft in Italian and pointed up the difference between them and the harpsichords and spinets of the day. This first engraving depicts the young Mozart seated at a harpsichord. His sister stands beside him, singing, while their father accompanies them on the violin. The second engraving depicts \par\qr\li4920 \f002 the same family grouping several years later gathered around a fortepiano. By the time Mozart was in his 20s, the fortepiano had overtaken the harpsichord in popularity.

[1511]
BMPFile=1511.bmp
EndPage=13
More=-1
TextData=\ql\ri480 Looking closely, you will notice knee levers beneath the keyboard. These function similarly to foot pedals on later pianos. The right lever sustains, permitting the strings to continue sounding after they are struck by the little hammers attached to the keys. The left lever shifts the keyboard slightly to the right, making the overall sound softer.The major advantage of fortepianos and early pianos over their predecessors was that the pianist \par\ql\ri7200 \ql\ri4455 \f002 could now play many different levels of intensity, from extreme softs to booming louds. This was impossible on keyboard instruments where sound was produced by a plectrum plucking the strings.

[1512]
BMPFile=1512.bmp
EndPage=13
More=-1
TextData=\ql\ri3000 Keyboard instruments where sounds were produced by plucking belonged to the string family. However, the sounds in fortepianos \par\ql\ri3300 \f002 and pianos was produced by one object \par\ql\ri3735 \f002 striking another. This necessitated changing the classification for these new instruments from string to \par\ql\ri4590 \f002 percussion. This fortepiano has a range of five octaves. Six legs support it and the entire frame is made of \par\ql\ri3930 \ql\ri4260 \f002 wood.

[1513]
BMPFile=1513.bmp
EndPage=13
More=-1
TextData=\ql\ri3135 Built in London, England, in 1802, this fortepiano is an important instrument in the \par\ql\ri3405 \f002 transition from early keyboards to the modern piano. As you can see, it has \par\ql\ri3855 \f002 two foot pedals which replaced the knee levers of the earlier fortepianos. In later instruments, \par\ql\ri3870 \ql\ri4440 \f002 these pedals were moved to the center, allowing the pianist to sit with his/her legs together instead of spread \par\ql\ri3570 \f002 apart. This instrument has a mahogany case and trestle legs to help support its considerable weight. The frame and body are constructed entirely of wood \ql\ri3770 \f002 and the white keys are covered in ivory. The instrument has a 5½ octave range.

[2010]
BMPFile=2010.bmp
Neutral=N2010.bmp

Down=D2010.bmp
Active=A2010.bmp
EndPage=11
More=-1
TextData=\qr\li2400 The pipe organ evolved over many centuries. In the 1600s, it became known as the "King of Instruments" because it had developed into a \par\qr\li3345 \f002 powerful performance instrument which \par\qr\li3945 \f002 put a multitude of different sounds, and combinations of sounds, in the hands of a single player.The \par\qr\li4035 \f002 modern pipe organ is a fairly complicated device consisting of many different sizes and shapes \par\qr\li3870 \f002 of pipes, a wind supply to the pipes, several keyboards for the hands, one keyboard for the feet, and complex couplers connecting everything together. Many of the beautiful organ cases conceal the complex inner workings that make this instrument so special.
AVIFile=01_19.avi

[2011]
BMPFile=2010.bmp
EndPage=11
More=-1
TextData=\qr\li2400 Because an organist must play with both hands and both feet, playing the organ requires considerable training and coordination, as well as musicianship. \par\qr\li3345 \f002 One of the greatest organists of all time \par\qr\li3945 \f002 was Johann Sebastian Bach (1685-1750). He composed over 200 pieces for this instrument; \par\qr\li4035 \f002 these are still performed and studied today. The pipe organ's development through the \par\qr\li3870 \f002 centuries is an interesting phenomenon to study, especially as it relates to uses in religious worship. Let's take a look at some of the important innovations as we examine different organs.

[2110]
BMPFile=2110.bmp
Neutral=N2110.bmp
Down=D2110.bmp
Active=A2110.bmp
EndPage=16
More=-1
TextData=\qr\li840 The origins of the modern pipe organ can be traced to one of the oldest instruments in the world the pan pipes. Pan pipes are hollowed out reeds of different lengths, into which the player blows air to produce \par\qr\li975 \f002 sounds. The \f002 two examples shown here represent different pitch \par\qr\li1095 \f002 ranges. The principle is fairly simple: the shorter and thinner the pipe, the higher the pitch; the longer and thicker the pipe, the lower the pitch. The pipes shown in these photographs are arranged from \par\qr\li3660 \f002 shortest to longest,or highest to lowest tones. If you compare these pictures with the photos of the modern instrument, you will notice that the pipes in the pipe organ are arranged similarly to the pan pipes. However, the pipes in the pipe organ are inverted. This is because the air is blown into them from the bottom, not the top.

[2111]
BMPFile=2111.bmp
EndPage=16
More=-1
TextData=\qr\li2430 The modern pipe organ can be traced back to the hydraulis, or water organ, which was used as early \par\qr\li2565 \f002 as 200 BC. Some historians claim that Alexander \par\qr\li3750 \f002 the Great used a form of this instrument in his Indian campaign of 317 BC. The air pressure that provided the power for the pipes of \par\qr\li2805 \f002 the hydraulis came from water being pumped from one cylinder into another. This water made such an impressive sound, one early writer called it "the resounding instrument that could be heard for sixty miles."

[2112]
BMPFile=2112.bmp
EndPage=16
More=-1
TextData=\qr\li2595 The hydraulis was used in military rituals and to accompany the slaughter of early Christians in the arenas of Europe. It is a strange irony that the organ which descended from this early instrument eventually became the most powerful musical instrument in Christian worship in the West. However, it was not until well into the Renaissance era that instruments, in general, were permitted in Christian worship services. This most likely was because of the

negative associations with these early instruments. The basic principles of design and construction for later organs were established in these early instruments. The closest \par\qr\li2760 \f002 modern-day descendant of the hydraulis is the calliope, which was powered by pressurized steam. During the 1800s-1920s, many traveling circuses throughout America and Europe used calliopes to announce their arrival.

[2113]
BMPFile=2113.bmp
EndPage=16
More=-1
TextData=\ql\ri2010 This is a picture of the remains of a clay pipe organ found in the ruins of the lost city of Pompeii, Italy. The city of Pompeii was destroyed in a sudden eruption of Mount \par\ql\ri2580 \f002 Vesuvius in 79 AD. The city was lost and forgotten for many centuries, until it was rediscovered in \par\ql\ri3075 \f002 1748. This clay organ is one of the artifacts recovered from the excavations of Pompeii. These excavations are still on-going today. \par\ql\ri5010 \f002 Even though much of the instrument was damaged, the familiar arrangement of the pipes is clearly evident and very closely \par\ql\ri4845 \f002 resembles the arrangement on a modern pipe organ.

[2114]
BMPFile=2114.bmp
EndPage=16
More=-1
TextData=\qr\li4545 This depiction of a pipe organ from the Utrecht Psalter dates from the year 850 AD in Belgium.The drawing, although crude by today's standards, clearly shows someone sitting at an instrument resembling a pipe organ.This organ appears to have been powered by water pressure, like the earlier hydraulis. Notice the big canisters underneath the instrument. The water in them was used to produce air pressure which was transferred from the canister to the pipes.

[2115]
BMPFile=2115.bmp
EndPage=16
More=-1
TextData=\ql\ri4080 This diagram illustrates how complex a pipe organ from the 1600s had become when compared to earlier instruments. Here, the player is seated in front of three keyboards for the hands and a pedalboard (keyboard) for the feet. The main case is \par\ql\ri3870 \f002 cutaway so you can view the linkages from the keyboard to the valves on the pipes. These opened to let air into the pipes when a key was pressed.

[2116]
BMPFile=2116.bmp
EndPage=16
More=-1
TextData=\qr\li2445 Because the player needed both hands and feet to play the instrument, another person, or several people, often helped pump the bellows which provided the wind power for the instrument. In modern instruments, an extra person to pump the \par\qr\li2775 \f002 bellows is no longer required. An electric motor \par\qr\li3585 \f002 now pumps the air.

[2210]
BMPFile=2210.bmp
Neutral=N2210.bmp
Down=D2210.bmp
Active=A2210.bmp
EndPage=10
More=0
TextData=\qr\li1725 Most of the larger organs were permanent fixtures in the churches which housed them. However, there were times \par\qr\li2340 \f002 when organs needed to be portable, or at least \par\qr\li3180 \f002 moveable. The portative organ, a small version of the instrument, was developed for \par\qr\li3915 \f002 such instances. Here we see an \par\qr\li3585 \f002 example of a fine instrument made in France in the 1600s. This instrument was played by one hand while the other hand pumped the bellows to supply the wind power needed to produce sound.

[2310]

BMPFile=2310.bmp
Neutral=N2310.bmp
Down=D2310.bmp
Active=A2310.bmp
EndPage=16
More=-1
TextData=\ql\ri2175 By the 1600s, early organs had evolved into the impressive instruments which most of us envision when we think of pipe organs today. This particular \par\ql\ri2700 \f002 instrument is from Germany and was designed and built by several generations of craftsmen. The style of the case is decidedly Baroque, highly \par\ql\ri3030 \f002 orate and decorated. It was completed in the early 1700s.

[2311]
BMPFile=2311.bmp
EndPage=16
More=-1
TextData=\ql\ri2130 There are well over 2,000 pipes of all sizes, materials, and tone color in this instrument. The player sits behind \par\ql\ri2985 \f002 the first small chamber of pipes; these conceal the keyboards from view.

[2312]
BMPFile=2312.bmp
EndPage=16
More=-1
TextData=\qr\li3765 This magnificent instrument in St. \par\qr\li4365 \f002 Florian Market Church in Vienna, Austria, was played by the Austrian composer \par\qr\li4245 \f002 Anton Bruckner (1824-1896). It is now named after him, although it was built long before his lifetime. The design of the case is noticeably Baroque, \par\qr\li4335 \f002 with its considerable decoration and numerous statues. There are over 2,700 assorted pipes in this \par\qr\li4140 \f002 instrument, giving it a commanding sound.

[2313]
BMPFile=2313.bmp
EndPage=16
More=-1
TextData=\ql\ri1170 This instrument, an example of contemporary craftsmanship, was built by the Peragallo family of New Jersey. Unlike Baroque \par\ql\ri3570 \f002 instruments, which only permitted viewing of the facade pipes in the case, this modern design displays more of the actual pipe-work. This provides an \par\ql\ri3990 \f002 indication of how many pipes are contained in one instrument.

[2314]
BMPFile=2314.bmp
EndPage=16
More=-1
TextData=\par\par\par\par\par\ql\ri3990 \f002 The organ console (keyboards) for this instrument is placed at a distance from the pipes and is connected by electronic cables. \par\ql\ri4230 \f002 The sound is still created by wind being blown through the pipes when a key is pressed.

[2315]
BMPFile=2315.bmp
EndPage=16
More=-1
TextData=\ql\ri5205 The next two pictures illustrate what is required to \par\ql\ri4365 \f002 play a pipe organ.The first shows a player sitting at \par\ql\ri4860 \f002 a console in front of the manuals, the keyboards played by the hands. This organ has three \par\ql\ri5010 \f002 manuals, with many tabs and buttons around the keys. With these the player can \par\ql\ri4485 \f002 select which pipes and combinations of pipes will sound when the keys are \par\ql\ri570 \f002 played.\par

[2316]
BMPFile=2316.bmp
EndPage=16
More=-1

TextData=\qr\li3060 This illustration shows the pedalboard, the keyboard for the feet. Both feet are used to \par\qr\li3945 \f002 play the low bass notes; the sound \par\qr\li4455 \f002 for these notes is produced by the longest, widest pipes. There is also a foot pedal for increasing the loudness in one set of pipes. These pipes are enclosed in a box \par\qr\li4575 \f002 called the swell chamber.

[2410]
BMPFile=2410.bmp
Neutral=N2410.bmp
Down=D2410.bmp
Active=A2410.bmp
EndPage=11
More=-1
TextData=\qr\li3915 The Hammond organ is the instrument that set the standard for electric organs. Invented by Laurens Hammond in 1934, the electric organ immediately became a success. This instrument is a veritable workhorse, and most of the original instruments are still being used today. They can be \par\qr\li4275 \f002 found in professional recording studios and are especially popular in rhythm and blues, gospel, and rock music.This diagram illustrates how the \par\qr\li4785 \f002 Hammond organ is structured.

[2411]
BMPFile=2411.bmp
EndPage=11
More=-1
TextData=\ql\ri5460 One of the features that \par\ql\ri3750 \f002 makes the Hammond organ unique is the inclusion of drawbar controllers. \par\ql\ri3450 \f002 With these controllers, the player can create hundreds of different sound combinations. There are 18 preset sound \par\ql\ri4620 \f002 combinations built into the instrument. These range from very soft to very full combinations. The Hammond organ has two manuals (keyboards) for the hands. A full pedalboard is used by the feet to play bass notes. There is also a crescendo pedal which controls the volume.

[2510]
BMPFile=2510.bmp
Neutral=N2510.bmp
Down=D2510.bmp
Active=A2510.bmp
EndPage=10
More=0
TextData=\qr\li690 Instead of pipes inside the instrument, this instrument has very carefully crafted pitched brass reeds. These are similar to the reeds found in harmonicas and accordions, but much thicker and larger. The wind is supplied by bellows inside the instrument which are filled with air when \par\qr\li4335 \f002 the feet alternatingly pump the two foot pedals. Knee levers control opening and closing shutters inside the instrument which either constrict the sound or let it out fully. These permit the player to get different levels of loudness or softness.

[3010]
BMPFile=3010.bmp
Neutral=N3010.bmp
Down=D3010.bmp
Active=A3010.bmp
EndPage=10
More=-1

[3110]
BMPFile=3110.bmp
Neutral=N3110.bmp
Down=D3110.bmp
Active=A3110.bmp
EndPage=13
More=-1
TextData=\ql\ri1605 The grand piano is the most recognized piano. Usually grands have three strong legs to support their massive weight. Ludwig van Beethoven's (1770-1827) last grand piano had a \par\ql\ri2295 \f002 particularly strong

sound. Built by Konrad Graf, this piano had four strings (wires) per note instead of the usual three. Many people assumed that this was \par\ql\ri2850 \f002 specially built for Beethoven because he was going deaf. However, in an effort to get a more \par\ql\ri3810 \f002 powerful sound, Graf was building many pianos this way. Beethoven wrote 32 solo sonatas and five spectacular piano concertos. These utilized the piano's full range of \par\ql\ri3270 \f002 emotional expression and made new technical demands on the players' performing skills.
Caption=Ludwig van Beethoven's grand piano

[3111]
BMPFile=3111.bmp
EndPage=13
More=-1
TextData=\qr\li3555 Length is what distinguishes a full grand piano from a "baby" grand.Generally, a piano qualifies as a \par\qr\li4065 \f002 "grand" piano if it is 6 feet or longer. Full concert grands are usually just under 9 feet long. \par\qr\li4380 \f002 Shown in this section are two Yamaha baby grands. Called \par\qr\li4185 \f002 "Disklaviers," these are "player pianos" which have a very sophisticated, well-concealed playing mechanism built in.

[3112]
BMPFile=3112.bmp
EndPage=13
More=-1
TextData=\qr\li3555 Baby grands can range from 4 to 6 feet long and are most often found in homes, studios, and lounges. \f002 Yamaha \par\qr\li4065 \f002 and other manufacturers offer baby grand pianos in polished white or ebony finishes.

[3113]
BMPFile=3113.bmp
EndPage=13
More=-1
TextData=\qr\li2400 In this overhead view of a baby grand piano you can see the difference in proportions between the full \par\qr\li2970 \f002 length concert grand shown earlier and the shorter "baby" version.The musical difference \par\qr\li3660 \f002 between the shorter baby grand and the longer concert grand is especially \par\qr\li4590 \f002 evident in the lower bass notes. The full grand's extended sounding body and longer bass strings give it a richer, louder sound than the baby grand. The baby grand, however, is actually preferable in more intimate settings and in chamber music involving several other performers along with the piano.

[3210]
BMPFile=3210.bmp
Neutral=N3210.bmp
Down=D3210.bmp
Active=A3210.bmp
EndPage=15
More=-1
TextData=\ql\ri2010 For many craftsmen, the decorative appearance of the outer case of the grand piano was as important as the mechanical components of the instrument. The outer \par\ql\ri2355 \f002 cases of these "art case grands" were meticulously designed and a wide variety of styles emerged over \par\ql\ri2865 \f002 the years. The examples shown here should dispel any notion that pianos come only in basic black. Made by a European builder in the \par\ql\ri3675 \f002 1920s, this parlor grand comes with an upholstered, matching bench. Its unique eight carved legs and exquisite \par\ql\ri4350 \f002 blondewood veneer make a lasting impression. You can sense that this instrument is an object of art-not just a mechanical device for producing music.

[3211]
BMPFile=3211.bmp
EndPage=15
More=-1
TextData=\qr\li3705 This beautiful instrument was built by Erard, the famous piano builder from \par\qr\li5145 \f002 Paris, France, in 1855. Its design is an interesting blend of the traditional black case and some ornate brass \par\qr\li5025 \f002 ornamentation - known as ormolu - affixed to the exterior. Notice that this instrument has a square-backed \par\qr\

li3360 \f002 cabinet, different than the round-backed instruments we have seen. This particular instrument was awarded a Seal of Honor for its design and craftsmanship at the Paris Exposition of 1867.

[3212]
BMPFile=3212.bmp
EndPage=15
More=-1
TextData=\qr\li3090 This instrument was built by Ernst Kaps in Dresden, Germany, in 1877. At the turn of \par\qr\ li3660 \f002 the century, it was brought to England and completely restored. Its entire case is veneered in satinwood and \ par\qr\li3810 \f002 rosewood. The panels were painted by C. Feldwicke & Songs of Brighton, England. A decorative motif of garlands and floral swags was used throughout to enhance the pastoral theme of the paintings.This piano is still in excellent condition and is often used for soirees and intimate concerts.

[3213]
BMPFile=3213.bmp
EndPage=15
More=-1
TextData=\qr\li3315 A very impressive instrument, this Erard grand piano was built in 1905. There are \par\qr\li4620 \ f002 four different types of wood used in the case, and the deign was modeled after the "Bureau de Roi." This piano is one of the most valuable pieces of furniture ever built. It is now on view in Versailles, France.

[3214]
BMPFile=3214.bmp
EndPage=15
More=-1
TextData=\ql\ri0 The Boesendorfer company of Vienna, Austria, has been building pianos since the time of Beethoven. This "Mighty Boesendorfer" is an example of 20th century \par\ql\ri4800 \f002 design. The design of the legs and the pedals of this instrument give it an almost "high-tech" appearance.This piano's most interesting \par\ql\ri5505 \f002 innovation is the hydraulic lift which holds the \par\ql\ri5565 \f002 lid open. In conventional grands, there are usually two pegs to hold the lid up.

[3215]
BMPFile=3214.bmp
EndPage=15
More=-1
TextData=\ql\ri0 If the short peg is used, the sound of this Boesendorfer is not as full as when the long peg is used. With this hydraulic device, the lid can be opened to many \par\ql\ri4800 \f002 different levels; this expands the variety of tonal nuances possible.

[3310]
BMPFile=3310.bmp
Neutral=N3310.bmp
Down=D3310.bmp
Active=A3310.bmp
EndPage=12
More=-1
TextData=\ql\ri4155 The upright piano is also referred to by some as a "cabinet grand." This design is useful when a full sounding piano is needed in a space that cannot easily accommodate a grand \par\ql\ri4650 \f002 piano. The tone of most upright pianos is very full sounding and-in some \par\ql\ri4530 \f002 cases-even comparable to that of a grand. This is a Steinway upright piano with \par\ql\ri4335 \f002 a walnut case and matching bench.

[3311]
BMPFile=3311.bmp
EndPage=12
More=-1
TextData=\ql\ri4620 This Yamaha upright model has the Disklavier "player" unit built right into the cabinet. This piano has a rich, full tone and can be found in many homes, \par\ql\ri5055 \f002 studios, and schools. The inclusion of the

Disklavier unit makes this a very versatile \par\ql\ri4875 \f002 piano. It will play back preprogrammed performances or record anything you play into it and then play it back with uncanny accuracy - \par\ql\ri3090 \f002 including the pedals.

[3312]
BMPFile=3312.bmp
EndPage=12
More=-1
TextData=\ql\ri2325 This illustration provides a very clear picture of the size and space relationships between an upright \par\ql\ri3540 \f002 piano, a grand piano, and a full concert grand. You can see the amount of space saved by an upright as compared to a grand. A grand will take up a large portion of any room, whereas an upright can be placed against any wall.

[3410]
BMPFile=3410.bmp
Neutral=N3410.bmp
Down=D3410.bmp
Active=A3410.bmp
EndPage=12
More=-1
TextData=\qr\li4665 A spinet piano occupies almost the same amount \par\qr\li5160 \f002 of space as an upright piano. It also has several other advantages.Spinets are much less expensive than full uprights or grands. They are also easier to move than other types of pianos. There are some very good spinet pianos available. The tone produced by a spinet \par\qr\li1545 \f002 is not as full or rich as that of a full upright or grand, but it is more than adequate for small rooms or apartments.
Caption=Spinet: The Apartment Piano

[3411]
BMPFile=3411.bmp
EndPage=12
More=-1
TextData=\qr\li5070 This spinet and the one on the preceding \par\qr\li5520 \f002 page are produced by the Story & Clark Piano Company. The opening above the pedals is called the "tone escapement panel" and gives this design a fuller sound than other spinets.
Caption=Spinet: The Apartment Piano

[3412]
BMPFile=3412.bmp
EndPage=12
More=-1
TextData=\ql\ri5220 This picture shows the soundboard and the cast iron plate and strings of a spinet piano. It is interesting to compare this design with those of the baby grand and the concert grand. This is a very compact, functional design which gets the maximum amount of sound in a small space.
Caption=Spinet Soundboard

[3510]
BMPFile=3510.bmp
Neutral=N3510.bmp
Down=D3510.bmp
Active=A3510.bmp
EndPage=13
More=-1
TextData=\ql\ri4560 At one time - especially before the days of commercial recordings - the \par\ql\ri4905 \f002 "player" piano was a very popular instrument. With a player piano, people could have music played mechanically on a real instrument simply by pumping the piano's \par\ql\ri4785 \f002 pedals. Most player pianos were "roll players"-they played music from punched hole paper rolls.\par\ql\ri7200 \f002

[3511]
BMPFile=3511.bmp

EndPage=13
More=-1
TextData=\qr\li4770 George Gershwin was one of many famous musicians who recorded \par\qr\li5025 \f002 on these piano rolls so that people could play his performances back on their own instruments. Many of these recordings are still available and player pianos are still being made today. Shown here are a few outstanding examples by the Story & Clark Company.

[3512]
BMPFile=3512.bmp
EndPage=13
More=-1
TextData=\qr\li4770 This is a gorgeous replica of a nickelodeon. Sometimes nickelodeons \par\qr\li5025 \f002 were called "orchestrations" because they had several different mechanized instruments built into them, along with a player piano.If you look closely through the leaded glass, you may be able to see the xylophone, some drum heads and even castanets.

[3513]
BMPFile=3513.bmp
EndPage=13
More=-1
TextData=\qr\li4215 These are close-ups of some of the individual components encased in the nickelodeon we \par\qr\li3690 \f002 just viewed. Notice how there are many different instruments included with the piano. All of these instruments play from piano rolls \par\qr\li4275 \f002 which have been punch-performed. Many museums in America and Europe house spectacular examples of these mechanical \par\qr\li3720 \f002 musical wonders. endofstory

[4010]
BMPFile=4010.bmp
Neutral=N4010.bmp
Down=D4010.bmp
Active=A4010.bmp
EndPage=12
More=-1

[4011]
BMPFile=4011.bmp
EndPage=12
More=-1

[4012]
BMPFile=4012.bmp
EndPage=12
More=-1

[4110]
BMPFile=4110.bmp
Neutral=N4110.bmp
Down=D4110.bmp
Active=A4110.bmp
EndPage=19
More=-1

[4111]
BMPFile=4111.bmp
EndPage=19
More=-1

[4112]
BMPFile=4112.bmp

EndPage=19
More=-1

[4113]
BMPFile=4113.bmp
EndPage=19
More=-1

[4114]
BMPFile=4114.bmp
EndPage=19
More=-1

[4115]
BMPFile=4115.bmp
EndPage=19
More=-1

[4116]
BMPFile=4116.bmp
EndPage=19
More=-1

[4117]
BMPFile=4117.bmp
EndPage=19
More=-1

[4118]
BMPFile=4118.bmp
EndPage=19
More=-1

[4119]
BMPFile=4119.bmp
EndPage=19
More=-1

[4210]
BMPFile=4210.bmp
Neutral=N4210.bmp
Down=D4210.bmp
Active=A4210.bmp
EndPage=10
More=0

[4310]
BMPFile=4310.bmp
Neutral=N4310.bmp
Down=D4310.bmp
Active=A4310.bmp
EndPage=14
More=-1

[4311]
BMPFile=4311.bmp
EndPage=14
More=-1

[4312]
BMPFile=4312.bmp
EndPage=14
More=-1

[4313]
BMPFile=4313.bmp
EndPage=14
More=-1

[4314]
BMPFile=4314.bmp
EndPage=14
More=-1

[4410]
BMPFile=4410.bmp
Neutral=N4410.bmp
Down=D4410.bmp
Active=A4410.bmp
EndPage=11
More=-1

[4411]
BMPFile=4411.bmp
EndPage=11
More=-1

[4510]
BMPFile=4510.bmp
Neutral=N4510.bmp
Down=D4510.bmp
Active=A4510.bmp
EndPage=12
More=-1

[4511]
BMPFile=4511.bmp
EndPage=12
More=-1

[4512]
BMPFile=4512.bmp
EndPage=12
More=-1