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Harp, §V: Europe and the Americas

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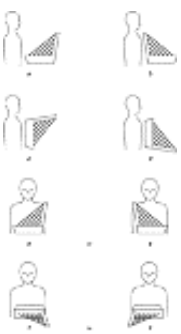
V. Europe and the Americas

1. The Middle Ages and the early Renaissance.

The distinguishing characteristic of the medieval harp is its resonator carved out of a single piece of wood. Harps made in this way were played in Europe from the 8th to the 18th centuries. Some resonators may have been carved from the front and covered with leather, tightly stitched up behind, so that the skin served as the soundboard. Strings were probably made from materials close to hand, including those derived from animals (gut, sinew, leather, horsehair), metal (brass, bronze), precious metal (electrum, silver) and exotic materials (silk). Medieval harps generally had a range no wider, and often much narrower, than the human voice.

Though the oldest extant European harps date from the 14th century CE, the earliest European depictions of harps are those on Greek and Italo-Greek vases of the 5th and 4th centuries BCE. These, however, show Asiatic-type harps, mostly derived from Mesopotamian and Persian harps of the previous millennium (see §II above). At present, no iconographical evidence is known that suggests the existence of harps in western Europe in the millennium between the Italo-Greek depictions and those of the 8th century CE. The origins and early development of European harps remain a matter for speculation and debate. Terminology provides little assistance. The Anglo-Saxon *hearpe*, from which the word harp is derived, originally denoted a Teutonic lyre. In some early Western depictions, harps are labelled ‘cithara’, ‘lyra’ or even ‘barbitos’: Greek terms for various kinds of lyre.

The primary source of information about medieval European harps is in Christian iconography. Open harps continued to be depicted occasionally up to the 12th century; after that time, frame harps are virtually the only kind shown. Most appear in illustrations of the psalms, in the hands of David himself or one of his attendants.



Worldwide distribution of performing positions on harps, regardless of historical…

The Dagulf Psalter, a product of the Court School of Aachen, was presented to Pope Hadrian I by Charlemagne some time before 795. Its carved ivory cover carries two David scenes, one with harp. In the lower scene, soldiers look on as an enthroned David plays the harp accompanied by two musicians: one with clapper cymbals, the other with a plucked three-string lute. This harp is reminiscent of a Greek type, but it has only a vestigial resonator and is held in medieval and not west Asiatic position (see fig.1, positions C and D respectively). There is no trace of such a harp in European use, but similar depictions continue to occur later; for example, in a Greek psalter written and illustrated by Theodorus of Caesarea in 1066. As many as 12 frame harps are found on Picto-Scottish cross slabs and free-standing crosses, dating from the 8th to the 10th centuries, all shown within the context of David iconography. If the dating of the stone at Nigg (Scottish Highlands) to the second half of the 8th century is accurate, its depiction of a triangular frame harp would be the earliest known

(post-Classical) appearance of the instrument in northern Europe, although it soon spread south to the Continent and west to Ireland. Pictish stones from Lethendy, near Perth, and Ardchattan, near Oban, both 10th century, present harp players alongside other instrumentalists, including triple-pipers and a horn player, evoking Davidic choirs, such as that seen in the Dagulf Psalter.

Harps in the Byzantine-influenced Utrecht Psalter (816–35) continue to have straight necks as found on all angular harps, with five to eight strings and forepillars either imperfectly delineated or absent. In some cases there is a suggestion of a trefoil or clawed foot at the base of the resonator. Harps are more clearly drawn in the 11th-century Harley Psalter and the Canterbury Psalter (before 1170), both of which derive from the Utrecht Psalter. These harps demonstrate features common to most European harps for several following centuries: the neck is slightly curved inwards towards a trapezoidal box resonator; the neck is joined to the narrower end of the resonator by a narrow shank; and the forepillar is curved outwards, away from the longest string.


Schematic profiles of European harps from the 11th century to...

Variations on this basic shape (fig.7*a*), perhaps regional, can be seen. The harp played by the seated figure on the 11th-century Irish Shrine of St Mogue (in the National Museum of Ireland, Dublin) already has the characteristic Irish T-formation strengthening the forepillar (see §V, 2 below). The late 12th-century Hunterian and Westminster Psalters depict harps with about 13 strings, zoomorphic, slightly overhanging neck finials, carved or turned forepillars, and resonators whose quatrefoil and oblong markings are probably nonperspective representations of soundholes.

In psalm illuminations dating from the 12th to the 14th centuries, David is often tuning his harp, symbolically imposing order on the world. In the Hunterian initial, David is plucking a 5th with his right hand (assuming the forefinger and not the middle finger is used and the harp is tuned diatonically) while turning the peg of the upper string with a tuning key in his left. This hand position is also often shown in depictions where he is not tuning; it appears to be a thumb and two-finger technique that continued to be the primary playing method used in Spain until the mid-18th century.

Another small harp-type instrument was quadrangular. Its string holder was at the top and it had a slim forepillar. Such an instrument is depicted on the cover of a book probably made between 1131 and 1144 for Melissenda, Countess of Anjou, played by one of David's musicians, while another plays a small triangular harp (*see* [not available online], fig.). Other examples are in a Greek psalter and canticles of Eusebius Pamphili, 11th-century Bishop of Caesarea, and on the North and South Crosses at Castledermot in Ireland, probably from the same century.

In the 12th century harps were often shown in the hands of some of the 24 Elders. Large examples with zoomorphic finial and plain forepillar are found on the Pórtico de la Gloria of the cathedral in Santiago de Compostela and the Portail Royal of Chartres Cathedral. A book of Old Testament illustrations of about 1250, with text in an Italian hand and pictures probably by various French artists, shows small, highly decorated 12- or 13-string harps of this type with trefoil foot. Plainer forms were still depicted in the 14th century; one example of 1376 (the Irish Shrine of St Patrick's Tooth, National Museum of Ireland, Dublin) has 22 strings, and was made after French models for Thomas de Bramighem, Baron of Athenry. Another with 22 strings, played by one of six attendant angels, was portrayed by the Catalan painter Pere Serra (1375–1404) in his *Virgen de Tortosa* (Museu Nacional d'Art de Catalunya, Barcelona).


Schematic profiles of European harps from the 11th century to...

A significant change can be seen in some instruments depicted in the 13th century. While the gentle curve of the neck is retained, the neck extends upwards somewhat at the front, thus giving slightly more length to the lowest strings, and the forepillar is now only gently curved (fig.7*b*). The stained glass in Chartres Cathedral contains a figure of David with this kind of harp, as does the Beatus initial in the English Peterborough Psalter (*c*1300).


Schematic profiles of European harps from the 11th century to...

By the 14th century, another harp form had developed: its forepillar was still strongly curved, but its neck swept up at the front into a pointed finial balanced by another pointed finial at the neck-to-shank joining point (fig.7*c*). A harp of this type, with nine strings, is depicted being tuned by David in the Tree of Jesse on an orphrey of *opus anglicanum* made between 1310 and 1340. Stringing can be deduced from the remains of a

late 14th- or early 15th-century ivory harp (now in the Louvre); it has 24 original pegholes and one which seems to be a later addition, bringing the total to the number given by Machaut in his poem *Dit de la harpe* (*Oeuvres de Guillaume de Machaut*, ed. Hoepffner, 1908–21). If modally tuned throughout, it would have a range of a little more than three octaves. With a more probable partly chromatic tuning in at least one octave, it would have slightly less than three octaves overall. The forepillar is 47 cm high on the external curve and is mortised into the neck. Presumably this was the kind of harp used in French 14th-century polyphonic music. The performing instructions of Jacob de Senleches's *La harpe de melodie* (a copy in ***US-CHAhs*** 54.1 is uniquely notated in the shape of a harp) indicate that its somewhat slow-moving tenor was to be played on the harp and the injunction 'harpe toudis sans espasse blechier' seems to imply that its long notes should be sustained by reiteration.

While most medieval and Renaissance harps were probably gut-strung, it is likely that a proportion were metal-strung. Irish harps, in which many medieval features were retained, had brass strings which were alternately plucked with long fingernails and damped or stopped with the fingerpads. The fingernail technique is mentioned in the 13th-century *Geste of Kyng Horn*, where the direction 'Teche him to harpe with nayles scharpe' occurs. Extant tuning-pegs from the 12th, 14th and 15th centuries are either perforated or slotted; most are made of bone, which has a higher chance of survival than wood or metal, though the latter materials were also used.

During the early 15th century considerable experimentation in harp design took place, resulting in several forms, with some common and some individual features. These changes were contemporary with the downwards extension of bass registers in general and with the development of keyboard instruments. In the late 14th and 15th centuries the harp and organ were frequently depicted with clerics (as well as in the earlier context with angels), and both instruments must have fulfilled functions which were parallel in some ways.

Schematic profiles of European harps from the 11th century to…

The methods of achieving a downwards extension of harp compass involved changes in the angles between the rigid parts of the instrument. In one type of harp the neck and curved forepillar were swept upwards to form a high point (i.e. 'high-headed'), accommodating bass strings considerably longer than was possible on earlier harps (**fig.7*d***). The other type showed more fundamental changes. Longer string length was achieved by lowering the bass end of the resonator in relation to the neck. The angle of the forepillar-to-resonator joint thus became more acute at the lower end, while that of the neck-to-resonator joint became wider. The forepillar, at first gently curved, was later straight or nearly so, and of T-formation in section. The neck was no longer set directly into the treble end of the resonator but was set on a slim shank. To some extent this improved the line-up of the shortest strings, which had been somewhat splayed and out of plane on earlier harps. Points or scrolls decorated the forepillar finial and the neck-to-shank point (**fig.7*e***).

There was little change in the size of the resonator in either type of harp. It remained slim and fairly shallow, though there was some variation in shape, later examples being generally oval or hexagonal in section and made from two hollowed-out parts put together length-ways. There was one completely new feature common to both types. Each string was fixed into the resonator with a right-angled wooden pin, which later became known as a bray (Fr. *harpion*; Ger. *Schnarrhaken*; It. *arpione*; Welsh *gwrach*). When a string was plucked, it vibrated against the bray, producing an aesthetically desired buzzing quality. This was comparable with the sound obtainable on other contemporary instruments, such as the krummhorn and the hurdy-gurdy; an annotation in a copy of Mersenne's *Harmonie universelle* (1636–7) likened the effect to 'le doux tremblement d'une orgue'. There are a few instances of brays on much later types of harp, including two-rank chromatic harp s (see §V, 5 and fig.25 below) and high-headed single-strung harps with ribbed-back resonators (see §V, 3 below). The new Renaissance harps were gut-strung; some continued to be played with the older nail technique in the stopped style and others may have been played with the fingertips. This Renaissance harp must have been well suited to the music of the time as it remained in use, across the British Isles and into central Europe, until well after the next significant redesigning of harps at the end of the 16th century.


(a) Renaissance harp with brays, and lute: engraving by Israhel…

Besides a great number of depictions of Renaissance harps, several instruments have survived. The earliest, now in Eisenach, was made in the Tyrol, possibly in the 15th century. It has 26 strings, stands 104 cm high and has delicate inlaid geometrical decoration of a kind found on other 15th-century instruments. Two undecorated 16th-century examples, now in the collections of Leipzig University and the Germanisches Nationalmuseum, Nuremberg (fig.8*b*), are 92 cm and 102 cm high, with 25 and 26 strings respectively.

A method of sharpening individual notes by stopping or pinching the string near the neck or close to the soundboard was used to some extent, but sustained change of mode required retuning of some strings. Simple tunings of a kind already in use were given in several 16th-century printed treatises: Martin Agricola (*Musica instrumentalis deudsch*, 1529) mentioned a harp with one row of 26 strings (*F* to *c‴*) in which the B strings could be tuned either flat or natural; Venegas de Henestrosa (*Libro de cifra nueva*, 1557) indicated that the fourth string (B) and the seventh (E) could be tuned either natural or flat. Mersenne also illustrated the simple single-strung harp with brays (which had been superseded in France by his time), giving the range of the 24-string harp as *G* to *g″* with natural B in the lowest octave and both flat and natural Bs in the other two. He said the performers of his day tuned by 'putting flats in all sorts of keys', though the tuning of certain strings (known as *modales*) was constant. These tuning methods continued to be used on later single-rank harps.

In Wales the classic Renaissance harp had brays, horsehair strings, bone tuning pins and mare's skin stretched over the soundbox. Descriptions of such instruments appear in many Welsh poems of the 15th and 16th centuries, soliciting the gift of a harp. A small silver model of a Renaissance harp, made by a Chester silversmith, was one of the awards at the Eisteddfod at Caerwys in Flintshire in 1567. Renaissance harps were still used in Wales long after they had been abandoned elsewhere. James Talbot, Regius Professor of Hebrew at Cambridge (1689–1704), made extensive notes on many instruments in use towards the end of the 17th century (Talbot MS; *GB-Och* Music 1187). 'The proper Welch harp' and 'Welch or Bray Harp' referred to by some of his informants were in fact large Renaissance harps, with either 31 (*A′* to *c‴*) or 34 (*G′* to *e‴*) strings. Welsh harp players employed five standard and guaranteed tunings, as enumerated in 16th-century treatises and repertory lists: *is gywair*, *cras gywair*, *lleddf gywair y gwyddil*, *go gywair* and *bragod gywair*; *tro tant* was not a standard tuning, but was commonly used. Such tunings are required by the music of the ROBERT AP HUW manuscript (*GB-Lbl* Add.14905). This manuscript, written in a unique tablature, contains examples of harp music composed by 14th- and 15th-century bardic harpers in Wales and gives precise playing instructions, indicating specific fingerings for both striking and stopping the strings.

Joan Rimmer/Robert Evans, William Taylor

2. Ireland and Scotland: diatonic harps from the 14th century to the 18th.

The Irish and Gaelic name for the harp, CLÁIRSEACH (Scottish: CLÀRSACH), is documented from the 15th century onwards; the terms 'ceirnin' and 'cruit' are also found. Harps depicted in medieval shrines (see §5(i) above) show structural features of the type of instrument used in Ireland until the late 18th century (*see* IRISH HARP (I)).


Oldest extant Irish harp, known as the 'Brian Boru' harp,…

The oldest extant Irish harp, now at Trinity College, Dublin, had legendary associations with Brian Boroimhe (or Boru, 926–1014), but dates in fact from no earlier than the 14th century (fig.9). This harp is low-headed: the upper end of its forepillar meets the neck at a point only slightly higher than the joint between the treble end of the neck and the resonator. Two other harps, known as the Queen Mary and Lamont harps (now in the Royal Museum of Scotland, Edinburgh), are also of this type and have been dated to the 15th century. Later, perhaps by the beginning of the 16th century, a larger but still low-headed form emerged.

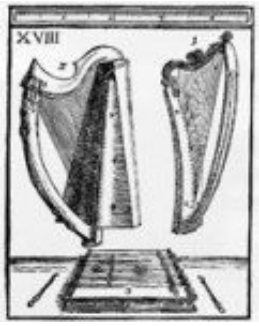
These three instruments share features which characterize the Irish harp as it was used in Ireland, Scotland and Europe until its disappearance: brass wire as stringing material; large, flat soundboxes hewn from a single piece of wood with metal 'shoes' to protect the string-holes and a thin panel rebated into the back; strong, deeply curved necks further reinforced by metal cheek-bands which sandwich the timber and are pierced by bronze or brass tuning pins of large diameter; and curved pillars with T-formation. The neck, pillar and resonator are held together by the tension of the strings alone, without glued joints.

By the 18th century, however, the typical instrument, as played by itinerant Irish harpers, was much larger. Whereas the panels which closed the backs of the medieval instruments had no holes, causing stringing to be done through open sound-holes in the bellies of the harps, from the 17th century onwards most instruments had sound-holes filled with tracery, so stringing was done through large holes in the back panel. Unlike previous harps with solid backs, these had a drier, simpler tone. The big, one-piece resonator was retained but the forepillar, now only slightly curved, was very tall (the low-headed Lamont harp has a forepillar height of 59·7 cm; that of the high-headed, 18th century Sirr harp – in the National Museum of Ireland, Dublin – measures 111·8 cm) and the neck swept upwards to meet it. The bass strings were therefore much longer in relation to the treble strings than on a low-headed harp. Irish harps were strung to the left side of the neck, but tuning was done from the right; the left hand played the treble, the right hand the bass. Irish harpers struck the brass strings of their harps with specially trimmed long fingernails. It seems unlikely that this technique was used by gentleman amateurs in England who took up the Irish harp in the later 17th century.

The sonority of the individual notes varies greatly, depending on whether the wires are struck by the fleshy fingertips or the fingernails; the use of the latter implies a quite different playing technique and type of attack. It also means that the melodic ornamentation typical of Irish performance on an Irish harp properly 'strung with brass strings and beaten with crooked nails' cannot be reproduced by a player using the fingertips. Even in Ireland the old technique gradually died out in the 17th and 18th centuries, and of the ten harpers present at the famous harpers meeting in Belfast in 1792 only one, Denis Hempson, then 97 years old, used the traditional fingernail technique. It was very soon to die out altogether – during a period, ironically, of revived interest in Irish music and the Irish harp (see §10(i), below).

Joan Rimmer/Robert Evans, William Taylor

3. Other single-rank harps.



Woodcut from Praetorius's 'Syntagma musicum' (2/1619): (1) common harp; (2)…

Diatonically or partly chromatically tuned harps with one rank of strings continued in use long after the invention of double- and triple-strung fully chromatic harps (see §V, 4–5 below) and, later, of pedal harps. In most cases, they were adaptations of earlier types, often structurally influenced in some respects by newer forms. Two chief kinds are traceable. One seems to derive from that regarded by Praetorius in Germany as the 'ordinary' ('gemeine einfache') harp (fig.10). The resonator was generally fairly shallow, four-sided and rectangular in section, though some instruments had a convexly curved soundboard; strings were pegged into a string holder, a wooden strip that ran lengthwise down the middle of the soundboard. Soundholes were sometimes circular, more often clusters of small perforations. Some instruments were plainly made; others had very elaborately carved necks with anthropomorphic or zoomorphic finials (heads of David, Cupids, warriors, lion heads etc). Forepillars were slightly curved in earlier harps, later generally straight. Though low-headed harps of this kind were made even in the 18th century, high-headed forms had already appeared in the 17th century and these were still played by some professional virtuosos at the end of the 18th century. Presumably their repertory (like that in some regions of Latin America) was not more chromatic than could be accommodated by the old system of partly chromatic tuning or different tuning in different octaves. In hooked form, some harps of this type lasted even longer in certain regions (see §V, 8, below).

The other main type had a resonator with a ribbed back, a flat soundboard, and a straight forepillar in either low- or high-headed form. Most of the later single-strung Welsh harps are of this type. Although a low-headed form became the predominant type in Latin America (see §V, 6, below) few European examples have been preserved and its early history is difficult to ascertain. It seems to have been derived from Mediterranean (not northern) sources and may have been a byproduct of early triple harps.

A very small harp (forepillar height of 84 cm), bearing the mark 'Stradivarius, Cremona 1681' (in the Naples Conservatory), has a flat pine soundboard (now slightly lifted with string tension) with violin-like double purfling, set on a resonator shaped as if in five ribs, though it is actually made in one piece. The 27 strings are pegged directly into the soundboard, except for the lowest three, which are toggled through large holes; there are four tiny heart-shaped soundholes. In another small Italian instrument (owned by one family since 1860 but possibly of earlier manufacture), the resonator is five-ribbed, 31 strings are pegged into a central strip on the soundboard and there are four soundhole clusters.

A small harp now in the Royal College of Music, London, must have been made for a Welsh player, who traditionally balanced the harp on his left shoulder, since it is strung to the (player's) right of the neck. Its resonator is five-ribbed; the strings are pegged into the soundboard and above each string-hole is the metal strip found on most 18th-century triple harps. The Richard Hayward harp (so-called after its last private owner, who gave it to the National Museum of Ireland, Dublin, in 1947) is similarly strung. It is 150 cm high, with a nine-ribbed resonator 109 cm long and 31 strings. Except that it is single-strung, it is structurally like 18th-century Welsh-made triple harps. The inscription in Irish ('May you never want a string while there are guts in an Englishman') and the unlikely date 1657, which are incised on the forepillar, must have been added during its use in Ireland where it is said to have been played in the streets and parks of Belfast about 1780 by the itinerant harper Paddy Murphy.

Joan Rimmer

4. Spain, mid-16th century to the early 18th.

Various techniques used to obtain chromatic notes on diatonic (single-rank) harps are described or depicted in Spanish sources, mainly of the mid-16th century to the early 18th. Alonso Mudarra (*Tres libros de musica en cifras para vihuela*, 1546), Juan Bermudo (*Declaración de instrumentos musicales*, 1555; describing the technique of the harpist Ludovico) and Diego Fernández de Huete (*Compendio numeroso de zifras … para arpa de una orden y arpa de dos órdenes, y de*

órgano, 1702–4) all described sharpening the required string by stopping it close to the neck of the instrument with the thumb, and Mudarra and Huete also described re-tuning certain strings to obtain the required accidentals. Although it is never mentioned in the writings, another technique which may have been used was that of stopping the string with the tuning key, held in the fourth and fifth fingers of the right hand – which are not used for plucking the strings – in a manner similar to the current practice in some Latin American regions. This technique is depicted in a painting from the second half of the 17th century (*Herod's Banquet and Salome's Dance* by Domingo Nieto, S Juan Bautista de Taragabuena, Toro, Zamora), the only known reference in Spain to this practice.

In his *Declaración*, Bermudo described diatonically tuned, single-rank harps (of 24 to 27 strings), but he considered them imperfect compared with the fully chromatic keyboard instruments; he stated that the harp was little played on account of its difficulty and suggested adding eight or ten coloured strings to make it possible to play cadences correctly, or even five coloured strings to each octave for a complete chromatic range. A manuscript note added to the copy of Bermudo's book in the Library of Congress, Washington, DC, indicates that at the time when Bermudo was writing his treatise, Francisco Martínez, harpist to the infantas, used harps with chromatic strings added and had written tablature for harp (Stevenson, 1960). Martínez had commissioned harps for the royal household from the luthier Juan de Carrión (*d c*1606), who was probably one of those who developed the harp with two ranks of strings; it is possible that this book of tablature (now lost) was written for a chromatic harp. All this indicates that the chromatic harp, probably with crossed strings, was in use in Spain by the middle of the 16th century. The florid and fairly chromatic pieces in Hernando de Cabezón's *Obras de música para tecla, arpa y vihuela* (1578) could have been played only on a harp with considerable chromatic possibilities.

Ever since it first appeared in musical sources in the middle of the 16th century, the harp has been linked with keyboard instruments in terms of musical function and repertory, and in the chromaticism required of these instruments. The first known piece of music specifically written for harp is *Tiento IX, Cifras para harpa y órgano* by Alonso Mudarra (in *Tres libros de música en cifras*, 1546), written in tablature (Sp. *cifra*) for a diatonic harp of 28 or 29 strings. Mudarra stated that this was an example from an entire book of tablature for harp and organ which he had written but not published. Mudarra's Fantasía no.10 (for vihuela) was written in imitation of the playing of Ludovico, who contrived chromatic notes with good effect on a single-rank harp – perhaps by means of string stopping but more probably by pre-tuning selected strings. Another tablature, invented for harp, vihuela and keyboard by Venegas de Henestrosa (1557), was used by several composers from the late 16th to the early 18th centuries, including Antonio de Cabezón (1578), Ruiz de Ribayaz (1677) and Diego Fernández de Huete (1702) (*see also* **Tablature, §2(iv), fig.3**). In this tablature the letters *y*, *l* and *p* are used for the fingers – index (*índice*), middle (*largo*) and thumb (*pulgar*), respectively – and *q*, *o*, and *s* for the left-hand chords (*quinta*, *octava*, *sexta*). Some harp music has survived in normal notation.

In Spain, single- and double-rank harps coexisted from the mid-16th century (slightly later elsewhere) until the 18th. In 1702–4 Huete still devoted part of his treatise to the single-rank harp, although he pointed out that double-rank ones were more commonly used. Iconographic sources, texts, and the only surviving example of a single-rank harp (made *c*1700 by Joseph Fernández de Valladolid, and now in the Museo de la Encarnación, Ávila, this harp has the resonator of a diatonic harp but a neck of a chromatic harp), all indicate that, except for in the number of strings, diatonic and chromatic harps were similar in their morphology, proportions and style of construction. One early 16th-century painting (Juan Correa de Vivar, *King David*, *c*1535) shows a single-rank harp that displays all the main characteristics of the Renaissance and Baroque Spanish harp: several ribs in the soundbox, the head slightly raised, the forepillar narrow though still lightly curved, two soundholes with parchment, and 20 strings (though only 14 pegs).

Spanish documentation from the 17th century to the early 18th indicates that diatonic and chromatic harps were all built according to the same set pattern, differing only in the number of strings. This pattern was possibly already established in the second half of the 16th century. The guild of luthiers, regulated since the second half of the 15th century in the Kingdom of Aragon and since the beginning of the 16th century in Castilla, was ruled by a strict set of guidelines. In Madrid there are ordinances going back to at least 1578 (which indicates a pre-exisiting tradition) requiring the use of specific woods and patterns in the construction of string instruments, among them the harp. This explains the continuity of a particular harp-making style over more than a

century.

In the 1680s, there were at least six players of a Spanish kind of harp in London. The low-headed, 33-string instrument measured and described in the James Talbot Manuscript (*c*1690–1700, ***GB-Och*** MS 1187) was was a little over 147 cm tall, with a seven-ribbed resonator 137 cm long, widening from 12·7 cm at the top to 45·8 cm at the bottom. Like several of the cross-strung Spanish chromatic harps that have survived, its soundboard was of pine and the rest of the instrument of walnut. (Talbot mentioned the existence of a double-strung Spanish harp with five chromatic strings per octave, but he gave no measurements and appears not to have encountered one personally.)

Single- and double-strung Spanish harps from the late 17th century and early 18th, though approximately as tall as that described by Talbot, had much larger resonators, closer to those prescribed by Nassarre in 1724 (for double-strung harps). In Latin America, very large resonators are found on some instruments which are otherwise still of 17th- or early 18th-century type (see §5, 1(iv), below).

Nine complete two-rank harps and one fragment survive, all from the late 17th and early 18th centuries; several of them are signed by luthiers of the royal household. In all of them the diatonic and chromatic ranks cross approximately one third of the way up the length of the strings (i.e. they are ‘cross-strung’), and in four instances numbers representing the notes as they were given in tablature are written on the neck or on the soundboard. In each example, the soundbox is made up of seven ribs, usually of walnut; the head is slightly raised and the forepillar is narrow and straight, and carved with decorative rings. The base of the forepillar is usually open, with two strips of wood crossed over it that serve as feet. There are seven polygonal soundholes in the soundboard; in two examples, both from 1704, they are rhomboidal. Inside the box there is very little reinforcement; there are wooden bars only under the soundboard; the ribs are joined together by glued strips of cloth. Two of these harps have 27 diatonic and 15 chromatic strings, and the rest have 29 diatonic and 18 chromatic. Their characteristics approximate those stated by theorists, especially Nassarre.

Cristina Bordas

5. Multi-rank harps in Europe outside Spain.

(i) The instruments.

Several types of harps were developed with more than one rank of strings to make chromatic notes available as they are on the keyboard. One type, used in Spain and Portugal, had two ranks crossing approximately one third of the way up the length of the strings, yielding the term ‘cross-strung’ (see §V, 4, above). In other parts of Europe, harps with two or three parallel ranks in various configurations were used, known in general by the term *arpa doppia* (‘double harp’: in this sense the term refers to a harp with ‘additional strings’, not specifically in two ranks, nor does ‘double’ that the instrument is ‘doubled’ in size – as in ‘double bass’ – as some scholars have speculated).

Iconographical evidence shows that experiments with more than one rank of strings began at least as early as the 14th century. A triptych of 1390 (Real Academia de la Historia, Madrid) from the monastery at Piedra shows a small medieval harp with two parallel ranks.

Literary references to harps with more than one rank of strings date from the early 16th century. In his *Tetrachordum musices* (Nuremberg, 1511) Johannes Cochlaeus reported that the English play a harp with three ranks. A second annotation scribbled in the Library of Congress's copy of Bermudo's *Declaración* (see §V, 4, above) complains that Bermudo was unaware ‘que en flandres abia harpas de tres ordenes’ (‘that in Flanders there are harps with three ranks of strings’; see Stevenson, 1960).

The term *arpa doppia* has caused confusion since the 17th century. In *Harmonie universelle* (Paris, 1635–6), Mersenne used the term *double Harpe* when referring to a large harp with three

ranks of strings, comparing it to the smaller *Harpe ordinaire à trois rangs*. In the 1770s Charles Burney referred to a three-rank harp as 'our double Welsh harp' (*Burney GN*). On another occasion, when viewing the painting *Allegory of Music* (*c*1625–34; now in the Palazzo Barberini, Rome) by Giovanni Lanfranco, which features a large three-rank harp, Burney noted that 'St Cecilia is playing a large double harp' (*BurneyFI*). A similar harp appears in the painting of King David by Domenico Zampieri ('Domenichino', 1581–1641), an artist of the school of Bologna. Domenichino portrayed triple harps in several other paintings (*Martyrdom of St Agnes*, *c*1619–22, Pinacoteca Nazionale, Bologna; *Virgin and Child with SS John the Evangelist and Petronius*, *c*1626–9, Pinacoteca di Brera, Milan; *Dance of David*, Silvestro al Quirinale, Rome). A large *arpa doppia* (it is not quite clear if it has two or three ranks) is included in the *Portrait of the Artist's Family* (*c*1646; Pinacoteca di Brera, Milan) by Carlo Francesco Nuvolone.

Three treatises survive that contain detailed information on the structure and tuning of harps with more than one rank of strings: *Dialogo della musica antica e della moderna* (Florence, 1581) by Vincenzo Galilei, Mersenne's *Harmonie universelle*, and the *Tratado de la música* (Ms, 1634, ***E-Mn*** 8931) by Bartolomé Jovernardi (Bartolomeo Giovenardi, a Roman harpist working at the Spanish court). Galilei's is the only known detailed description of a harp with two parallel ranks. His schematic diagram shows 58 strings comprising a compass of four octaves and one tone (*C–d‴*). The two ranks were divided around *c′* into an upper half used by the right hand, where the second or chromatic rank lay to the (player's) left of the main diatonic rank, and a lower half, used by the left hand, where the chromatic rank lay to the right of the main rank; i.e. the chromatic rank changed sides half way up so that with each hand the player had to reach through the outer diatonic rank to pluck the chromatic strings. The problem with this type of stringing was outlined both by Galilei and Jovernardi: when playing with the right hand below the cross-over point (*c′*) or with the left hand above, in each case the fingers must reach through the chromatic rank to play the diatonic notes, unless strings on the chromatic rank could be tuned in unison with the diatonic rank. This complication is eliminated on three-rank (triple) harps with two parallel outer ranks tuned in unison and the inner rank of chromatic notes set between them.

Jovernardi and Mersenne gave detailed descriptions of three-rank harps. In 1634, while in residence at the court in Madrid, Jovernardi observed that Spanish harps did not have three ranks of strings as did the harps in Italy. Features found on extant instruments corroborate the details Mersenne gave concerning the structure of the three-rank harp. Strings were secured to the soundboard using pegs or pins, a system that persisted in Welsh triple harps well into the 19th century. The back of the resonator was ribbed (rather like that of the lute), rather than being a three-sided box or carved out of one piece of wood. The metal tuning-pins were squared at one end to accommodate the tuning key, and pierced with a hole at the other for strings to be threaded through. Brass wires were attached to the soundboard above each peg to stop the wood, with the grain running vertically, from splitting. Mersenne said that harps could be made to whatever size one wished, but he suggested a height of 4 or 5 feet (1·2–1·5 metres). Large Italian triple harps were over 6 feet (1·8 metres) tall.

Some basic characteristics of two- and three-rank harps of the late 16th and early 17th centuries emerge from these sources. Compasses varied from over three octaves to four octaves and a 5th. The latter (*G′–d‴*) is the largest range required in works where *arpa doppia* is specified, including the *Toccata* by Trabaci and the solo in Monteverdi's *L'Orfeo* (see §V, 5(ii), below). Two- and three-rank harps could be tuned with either B♮ or B♭ in the diatonic ranks. The chromatic ranks contained all the accidentals needed corresponding to the diatonic ranks and could include D♮ and A♮, in unison with the diatonic ranks, or D♯ and A♭. Mersenne said that the exact size of the semitones on the harp was not easily determined, but that they could be variable, and tuned equal or unequal. No particular temperament was specified. Two- and three-rank harps were usually strung with gut. Jovernardi referred to 'reinforced strings', but what these were made of has not been determined (possibilities include gut strings with a higher twist or some kind of overwinding with metal). Silk or metal strings may also have been used. These harps were played resting on the right shoulder, and strings were plucked with the pads of the fingers, sometimes close to the nails. Damping the strings was sometimes necessary to avoid dissonances created when notes rang over. Great dynamic range was possible with the proper touch.

The lavishly decorated harp known as the 'L'arpa de Laura' is the most beautiful surviving example of a two-rank harp (Galleria Estense, Modena). It was ordered for the singer and harpist

Laura Peverara (*c*1550–1601) by the Duke of Ferrara, Alfonso II d'Este, and built in Rome in 1581. Two 17th-century two-rank harps are in the Musée des Instruments de Musique, Brussels. The first, which displays some structural similarities to the harps depicted by Domenichino and Nuvolone, is called the 'Kaiser' harp due to a possibly anachronistic label reading 'Martinus Kaiser 1675'. This harp has a five-staved, cypress resonator, a walnut neck and forepillar, four soundholes in the soundboard, and metal staples to prevent the strings from ripping the soundboard. The two parallel ranks have extremely narrow spacing and the strings are fastened to the soundboard with bray pins. The second of the Brussels harps – of German origin – is an elegant instrument, its forepillar terminating in an anthropomorphic finial. It has 33 strings in the left rank and 26 in the right; the five lowest and four highest have no chromatic strings beside them. This harp is also equipped with bray pins. Another important two-rank harp (late 16th century) is in the Museo Civico, Bologna. This harp has a carved resonator, eight soundhole rosettes in the soundboard, brass staples and three ranks of strings: a continuous middle rank from treble to bass and two incomplete chromatic ranks on either side.

The very large, highly decorated, three-rank 'Barberini harp' (*c*1625) formerly in the Palazzo Barberini and now in the Museo degli strumenti musicale, Rome is almost certainly the harp in the painting by Lanfranco mentioned above. This harp has an extravagantly carved forepillar, a resonator made of nine staves, and a long-grain softwood soundboard with four soundholes. The number of tuning pins in the neck does not correspond with the number of pins in the soundboard, so the original configuration of this harp cannot be precisely determined. A large, three-rank harp in the Museo Civico, Bologna is probably composed from two instruments. The nine-staved, maple resonator (? early 17th century) with its two-piece, long-grain spruce soundboard with four soundholes and brass staples has a light construction. The neck and forepillar are carved and heavy, and probably come from a later, larger harp.

Pierre Trichet, in his manuscript *Traité des instruments de musique* written in Bordeaux between about 1630 and 1640, observed that while single-, double- and triple-rank harps were being used at this time, the single-rank harp was by far the most common. By the beginning of the 18th century there are no records left of players of multi-rank harps working in Naples or Rome. Filippo Bonanni (*Gabinetto Armonico*, Rome, 1722), however, indicated that the three-rank harp, though scarcely found in Italy, was being used in Germany. J.P. Eisel (*Musicus autodidactus*, Leipzig 1738) gave a diagram of a two-rank harp (which he called a 'Davids-Harfe') and described how it was played, with the left hand from *G'* to *c'* and the right hand form *c'* upwards. This diagram is similar to the two-rank harps made by the German builder Johann Volckmann Rabe of Nordhausen. One of 1740, preserved in the Musikhistorisk Museum, Copenhagen, is fully chromatic, with 52 strings in two parallel rows fastened to the soundboard with bray pins. Three other harps by Rabe are in collections in Los Angeles, Nuremberg and Brussels.

(ii) Harpists and repertory.

Beginning in Naples in the 16th century, and later in Rome, Italy was home to the most important centres for builders and players of the *arpa doppia*. Galilei stated that the double harp was introduced into Italy sometime prior to 1580. The Neapolitan harp tradition was centred around Gian Leonardo Mollico (*c*1530–1602), known as Giovanni Leonardo dell'Arpa, and his students, including Flaminio Caracciola (*fl* 1579–90), Scipione Bolino (*fl* 1600) and Francesco de Auxiliis (*c*1630). By 1552, Dell'Arpa was recognized as the leading harp virtuoso in Naples and one poetic reference even claims that he invented the *arpa doppia*. Nearly fifty years later, Scipione Cerreto (*Della prattica musica vocale et strumentale*, Naples, 1601) identified Dall'Arpa, Ascanio Mayone (*c*1565–1627) and Domenico Gallo (*fl* 1600) as excellent players of the 'arpa a due ordini'. Mayone's son Giulio dell'Arpa was also an active and well known harpist.

Two publications printed in Naples include pieces designated for the harp. Ascanio Mayone included a *Recercare sopra il canto fermo di Constantio Festa per sonare all'arpa* (based on the *La Spagna* melody) in his *Secondo libro di diversi capricci* (1609). Giovanni Maria Trabaci's *Il secondo libro de ricercare* (1615) contains his *Toccata seconda, & ligature per l'arpa*, four *Partite artificiose sopra il tenor di Zefiro* and *Ancidetemi pur, per l'arpa*. Trabaci, Mayone and Luigi Rossi (?1597/8–1653; also a composer-harpist) were associated with Giovanni de Macque (*c*1548–1614), *maestro* of the Chapel of the Spanish Viceroy in Naples from 1599.

Rossi, in a manuscript collection (*GB-Lbl* Add.30491), preserved the majority of Macque's solo

instrumental works along with other contemporary pieces including the four *Partite sopra Zefiro* by one Rinaldo. These are remarkably similar, in places virtually identical, to the Trabaci's *partite* on the *Zefiro* tenor. Although the precise identification of Rinaldo is somewhat uncertain, the most likely candidate is Rinaldo Trematerra [Rinaldo dall'Arpa] (*d* 1603), a singer and harpist who was based in Naples who visited the court of Ferrara, home to Laura Peverara, during the 1590s in the retinue of Carlo Gesualdo.

By the beginning of the 17th century the harp was also flourishing in Rome. Jovernardi claimed that the perfect triple harp (*arpa perfecta a tre ordini*), was invented in Rome in 1612. Vincenzo Giustiniani, however, wrote in his *Discorso sopra la musica* (1628) that the *arpa doppia* was invented around 1600 in Naples by Sire Luc Anthoine Eustache and then introduced to Rome by Giovanni Battista Jacomelli (del Violino) (*c*1550–1608). One of the most lauded of the Roman harpists was Orazio Michi (*b* 1594/5; *d* 1641), whose talent was praised by many Italian and French writers (including Mersenne and André Maugars), as well as by other harpists such as Caterina Baroni (daughter of the singer and harpist Adriana Basile Barone) and Costanza de Ponte, who married Luigi Rossi in 1627. Costanza's brother Paolo de Ponte was also a professional harpist active in Vienna. Rossi's younger brother Giovan Carlo (*c*1617–1692) was a noted player of the *arpa a tre registri* based in Rome, whose career also included a period in France. While there Rossi performed in the first performance of Cavalli's opera *Ercole Amante* in Paris (1662). Two other harpists held in high esteem in Rome were Marco Marazzoli (*b c*1602–5; *d* Rome, 26 Jan 1662) and Lucrezia Urbani (*fl* 1609), who was a member of an ensemble that included Girolamo Frescobaldi and the lutenist Alessandro Piccinini.

One of the most famous solos for harp in opera literature is the Ritornello for *arpa doppia* in *L'Orfeo* (1607) by Claudio Monteverdi. The *arpa doppia* was also used as a continuo instrument in operas by Marco and Domenicho Marazzoli and Stefano Landi and in other works by Sigismondo d'India, Girolamo Montesardo, Francesco Lambardi, Filippo Albini and Lelio Colista. Agostino Agazzari (*Del sonare sopra 'l basso con tutti li stromenti*, Sienna, 1607) classified the harp for use in continuo realization as an instrument both of foundation and of ornamentation.

The harp began to decline in southern Italy during the second half of the 17th century. Gregorio Strozzi included two solo pieces, a *Sonata di basso solo per cimbalo et arpa, o leuto* and two variations for harp in his *Romanesca con partite*, in his Neapolitan publications of 1683 and 1687.

(iii) Wales and England.

The triple harp appeared in the British Isles early in the 17th century. On 11 October 1629, the French harpist Jean le Flelle [Flesle] took the oath at the court of Charles I as 'musician for the harp', having arrived in London in 1625 in the retinue of Charles's bride, Henrietta Maria. Le Flelle, whose playing was praised by Mersenne, played the Italian triple harp with gut strings. William Lawes composed the 11 'harpe consorts' for bass viol, violin, harp and theorbo, probably for Le Flelle's own consort.

It was the triple harp, however, that seems to have been so quickly adopted by the Welsh harpers living in London during the 17th century – so much so, that by the beginning of the 18th century the triple harp was already generally known as the Welsh harp. The first known Welsh triple harpist is Charles Evans who was appointed harper to the court in 1660, and was later referred to as 'His Majesty's harper for the Italian harp'. Two outstanding Welsh makers were David Evans, who in 1736 made the splendid triple harp now in the Victoria and Albert Museum, and his pupil John Richards of Llanrwst, who worked mostly in Wales at the estate of Sackville Gwynne at Glanbrân.


Welsh triple harp by Bassett Jones, c1850, played by Nansi…

The typical Welsh triple harp is very high-headed with a steep harmonic curve. The range is generally about five octaves containing an average of 95 strings. The strings are held in place in the soundboard by round-headed wooden pegs and pass through slotted tuning-pins arranged in three stepped rows on the right side of the neck. The neck is not jointed directly to the resonator, but is set on a flat-topped shank which forms the upper part of a fluted block fixed in the upper end of the resonator. Often the neck is reinforced with an iron insert. The joint between the neck and the long, slim forepillar is held together by the tension of the strings. The

resonator is coopered and strengthened on the inside with a number of wooden braces. Some Welsh triple harps have soundholes in the soundboard, others simply have an open resonator bottom. Welsh triples are designed to be played on the left shoulder, the left hand playing the treble register, the right hand the bass register and both hands accessing the inner row (**fig.11**). Welsh triple harps built in the 18th century were very lightly constructed, having thin, long-grained soundboards bent to form a convex belly. During the 19th century makers began to imitate pedal harp construction, using cross-grained soundboards. Late in the century Bassett Jones of Cardiff, chief harp maker to Queen Victoria and the most famous of the 19th-century makers, introduced a brass bar, or gallery, along the neck, improving the distribution of tension and justifying the plane of the strings. Compared to that of Italian triple harps, the tone is less defined but richer in the bass, and sweeter and less bright in the treble, both characteristics well suited to the 18th- and 19th-century repertory, particularly that of Welsh airs.

A good description of the Welsh triple harp is given by the harpist and composer **JOHN PARRY (II)** (1776–1851) in the preface to the second volume of his collection of Welsh airs, *The Welsh Harper* (London 1839):

> "The compass of the Triple Harp, in general, is about five octaves, or thirty-seven strings in the principal row, which is on the side played by the right hand, called the bass row. The middle row, which produces the flats and sharps, consists of thirty-four strings; and the treble, or left hand row, numbers twenty-seven strings. The outside rows are tuned in unison, and always in the diatonic scale, that is, in the regular and natural scale of tones and semitones, as a peal of eight bells is tuned. When it is necessary to change the key, for instance, from C to G, all the Fs in the outside rows are made sharp by raising them half a tone. Again, to change from C to F, every B in the outside rows is made flat, by lowering it a semitone. When an accidental sharp or flat is required, the performer inserts a finger between two of the outer strings, and finds it in the middle row. Many experiments have been made, with a view of obviating the necessity of tuning the instrument every time a change in the key occurred. Brass rings were fixed near the comb, but those rattled and jarred; in short, every attempt failed until the invention of the Pedals. … Yet my old country Triple Harp, though it has its imperfections, possesses one advantage, and that is the unisons. Who has ever heard some of the old Welsh airs with variations, and not been quite delighted with the effect of the unisons?"

The effect of 'unisons' mentioned in the last two sentences refers to a characteristic effect of Welsh technique, obtained by playing a pair of unison strings on both the outside rows using the right and left hands in rapid succession. Examples of this technique can be found in many of the publications of Welsh airs. One of the most famous of the 18th-century Welsh triple harp players was **JOHN PARRY (I)** ('of Rhuabon'; *c*1710–82). From 1734 until his death he was harper to the family of Sir Watkin Williams Wynns of Wynnstay, Ruabon. Parry and his amenuensis Evan Williams (Parry being blind from birth) published the first collection of Welsh melodies for the triple harp, *Antient British Music* (London, 1742). His 1761 *Collection of Welsh, English & Scotch Airs with New Variations* also contained four 'New Lessons' of his own composition. Parry's playing was much admired by Handel, and gave three performances of Handel's Harp Concerto in B (published as op.4 no.6, 1738) in 1741–2. According to Sir John Hawkins, however, Handel had composed this work (which had originally been intended for the first performance of *Alexander's Feast*, 1736) for another Welsh harp virtuoso, William Powell (*d* 1750). Powell was almost certainly the harpist for Handel's first composition with an obbligato harp part, the air 'Praise the Lord with Cheerful Noise' in *Esther*, composed about 1718 when both Handel and Powell were in the employ of the Duke of Chandos. Handel also included harp parts in *Giulio Cesare* (1724), *Saul* (1739; including a solo 'symphony') and *Alexander Balus* (1748). **EDWARD JONES**, *Bardd y Brenin* ('the King's Bard'), was appointed harper to the Prince of Wales in 1788. He published *Musical and Poetical Relicks of the Welsh Bards* (1784; enlarged editions in 1794 and 1808), *The Bardic Museum* (1802) and *Hên Ganiadau Cymru* (1820), each consisting of Welsh airs. These constitute the largest source of Welsh airs, and some of the plates were reprinted in the publications of John Parry (ii). Jones also published many of his own sonatas,

marches and dances for solo harp or keyboard, written in the idiom of the day.

During the 19th century Augusta Hall (Lady Llanover) (1802–96) invited harpists and harp makers to live on her estate in Llanover, Gwent, and many fine triple harps were built there during her lifetime. Many Welsh triple harps from the 18th and 19th centuries remain in public and private ownership throughout Europe and in the USA although few are still playable. Several important examples are in the collection at the Victoria and Albert Museum, London, and the largest collection is housed in the Welsh Folk Museum in Cardiff.

A line of Welsh harp tradition can be traced back to Robert Parry of Llanllyfni, a relative and teacher of John Parry of Rhuabon (whether the line goes back as far as Charles Evans has not been confirmed). Robert Parry supposedly had a link with the ancient traditions of Welsh harp playing. John Parry of Rhuabon taught William Williams (Wil Penmorfa) (1759–1828), who taught Richard Roberts of Caernarfon (1769–1855), who in turn was the teacher of John Wood Jones (*d* 1844). Wood Jones was a great grandson of Abram Wood (*d* 1799), a Romany gypsy who came to Wales in about 1750. Many more of Abram Wood's direct descendents were famous harpists, including Jeremiah Wood (*c*1778–1867), Edward Wood (1838–1902), and John Roberts (1816–94) who was himself the father of a family of harpists. The continued practice of the Welsh triple harp throughout the 19th century is largely thanks to the members of the Wood and Roberts gypsy families.


Welsh triple harp by Bassett Jones, c1850, played by Nansi…
Cheryl Ann Fulton

After the early 20th century triple harps were almost completely abandoned in Wales in favour of the pedal harp. Were it not for one player, Nansi Richards-Jones (1888–1979), who learnt to play from itinerant harpists in the Bala area at the turn of the century and who played both triple and pedal harp on the left shoulder (fig.11), the traditional techniques would have been lost completely. Current performers of the Welsh triple harp include Eleanor Bennett, Robin Huw Bowen, Cheryl Ann Fulton, Ann Griffiths and Llio Rhydderch.

6. Latin America.

(i) History and distribution.

The *arpa* (harp), single-strung, diatonic and without pedals, was brought to the New World from Spain with the first conquistadors, and later with lay colonists and various missionary orders. With the *vihuela*, it is said to have prospered more than any other European instrument in New Spain. Just as early 16th-century luthiers of Seville were required by ordinance to be able to make harps, so were instrument makers of Mexico City by an ordinance of 1568. A link remains between 20th century Latin American diatonic harp traditions – for example those of Paraguay and the Colombian–Venezuelan plains – and Jesuit settlements of the 17th and 18th centuries. The harp and violin played significant roles in Jesuit evangelistic activities in Paraguay and in the Peruvian–Ecuadorian Oriente; in the mid-18th-century, the harp is said to have been the most common instrument among Indians in the Quito area of Ecuador.

In the early colonial period, the harp was also used in cathedrals, for example in the orchestra of that of Mexico City in the late 16th century and throughout the 17th. It was the required instrument for the accompaniment of religious music in 18th-century Montevideo, Uruguay; and the cathedral of Concepción, Chile, boasted an organ and an ensemble of clavichord, two violins, drum, fife and harp in the 18th century. Around 1630 in the Lima Cathedral *capilla de música*, the harp assumed the bass role of the sackbut and continued until 1832 when the position of harpist was abolished.

There is evidence of such a bass role in numerous Mexican and South American archives, which allude to the harp's use as a continuo instrument up to the end of the 18th century. Stevenson's aggregation of colonial manuscripts from different archival sourcesgives an idea of the

instrument's use as a continuo instrument in Hispanic-American Baroque music (as in Iberian music; *StevensonRB*).

In the 19th century, following the 1767 expulsion of the Jesuits and the widespread replacement of the harp by the organ as a church continuo instrument, descriptions of the harp focus more on folk and salon usage. In the Mexican *son jarocho*, a musical–choreographic genre now centred in the southern coastal plain of Veracruz, the use of the harp dates back at least to 1803. Female harp virtuosos are described in various accounts of 16th-century Spain, and in Chile the tradition of women harpists is documented back to the 18th century; they also performed in 19th-century salons and in outdoor booths set up in towns. The tradition of harp playing in 17th- and 18th-century Córdoba, Argentina, continued in northern Argentina in the following century; in Santiago del Estero, dances at country posts included performances by blind harpists. There are numerous historical references to blind harpists, and still today this occupation is often selected by blind men of rural Latin America who are unable to earn a living by working the fields.

There is iconographical evidence for the use of harps outside the church in 19th-century Peru; Pancho Fierro (1803–79), the watercolourist, portrayed musicians carrying the instrument on their shoulders, often in procession, as they still do. It should be noted that the harp was used in processions for Corpus Christi in the 17th and 18th centuries in the Spanish Marañón (as they may have been in 16th-century Spain under Charles V). Illustrations of Peruvian harp usage, including holding the instrument on the shoulder, appear on 19th-century vessel fragments; one portrays the Ayacucho region scissors dance, which is still performed.

The harp was used in 19th-century Venezuela in salons and in shops. By the end of the century it was found throughout the Venezuelan plains, played by men; in Caracas, women performed on European made harps. Along the Atlantic coast, in Cartagena, Colombia, the harp was a favourite instrument in the early 19th century, played by either sex. In Bogotá, in the 1820s, it was used in the home and in the theatre. In Guayaquil, Ecuador, in the early 19th century, the harp, guitar or violin was often used to accompany dance.

An important early description of Quechua harp playing in highland Ecuador (by F. Hassaurek for San Juan festivities in 1863) details how the harp was carried in a procession of dancers, the instrument being played as it rested on a boy's back, while a second musician beat it rhythmically. Late 19th-century Ecuadorian Indians also used the harp in a radically different context: for a child's wake. In the style of the late 19th-century Quito School, Joaquín Pinto's painting *Velorio de indios* depicts a highland Ecuadorian Indian home, where a harpist plays as one couple dances in the patio and the corpse of a winged figure – probably a child – is visible on a platform within. In the 1980s and 90s Quechua communities outside Cotacachi (near Otavalo) still employed a harpist-cum-beater (*golpeador*) for the ritual celebration of a child's wake (a *golpeador* is shown beating the harp in fig.30*b* below).

In the 20th century, according to the Paraguayan harpist Alfredo Rolando Ortíz, the harp is particularly used in six countries: Argentina, Chile, Mexico, Paraguay, Peru, and Venezuela. Although its importance in these cultures is beyond dispute, it should be emphasized that the instruments show unique physical features and possess distinct musical repertories, often representing different cultures, in each country.


Single-rank harp with ribbed resonator, guitar and violin, Zinacantán, Chiapas,…

Yaqui Indians of Sonora, Mexico, and Arizona, USA, perform the Pascola dance around Holy Week to the music of a harp and a violin (*see* [not available online], fig.); this combination is also used by the Mayo of Sonora for their Pascola dances. In Chiapas, southern Mexico, a favoured trio combination among Tzotzil, Chamula and Tzeltal musicians is harp–violin–guitar (**fig.12**); it has been suggested that the nature of these instruments, their performing techniques and the structure of their music derive from 16th- and 17th-century Spanish sources. The Veracruz *jarocha* harp shows four principal melodic tendencies: homophonic, with slow rhythmic movement; tremolo arpeggios; arpeggios with 'melodic intent'; and undulating conjunct motion. In Jalisco, some *mariachi* groups include harp, several violins and *jarana*, possibly with *vihuela*, *guitarrón*, other guitars and several trumpets, though the harp is now rare in this context. The harp tradition in Apatzingán, Michoacán, is sufficiently strong to support an annual contest; in that region, rhythmic *sones* and lyric-declamatory *b alonas* are sung to harp and vihuela accompaniment.

Paraguay now has one of the most influential harp traditions in Latin America. The harp is the country's official national instrument and is featured in hundreds of *conjuntos* (*see* [not available online], fig.). Paraguayan folk groups exist in most South American countries and the Paraguayan-style harp (see V, 6(ii), below) is also used in Chile, Ecuador and Venezuela. The Paraguayan harp repertory includes the *galopa* and *guarania*, both in sesquialtera rhythm, the latter having frequent arpeggios and great melodic freedom.

According to Isabel Aretz, the harp in Tucumán, northern Argentina, has a tradition that lasted 350 years; it was widely used solo or in dance *conjuntos* both in the countryside and in the city until just after 1900, when the tradition weakened.

In Chile (as in Michoacán-Guerrero, Mexico, Argentina, Peru and highland Ecuador) the practice of *cajoneo* (rhythmic beating of the resonator) is common. The national dance is the *cueca*, in which the harp accompaniment, when present, is played by women; *tonadas* and *romances* may also be accompanied by the harp.

Throughout Venezuela the harp is closely tied to the performance of the rhythmically complex national dance, *joropo*, but there are two distinct traditions: in the Plains (extending into eastern Colombia) the 'llanera' tradition has a fixed playing style and compositional form, while the 'aragüeña' tradition of Aragua-Miranda has melodic, rhythmic and textual variants. The Aragua harp normally performs with maracas accompaniment (*see* [not available online], fig.), the Plains harp with that of maracas and four-string *cuatro*.

Peruvian harps may be divided into two types: a longer instrument, generally found in 20 of the 23 states (covering much of the central and southern coast and the central and southern Sierra), and the *domingacha*, a small harp found principally in the state of Cuzco. Gourd harps, a type observed in 19th century Colombia (there are examples in the Pedro Traversari Collection of Musical Instruments, Quito, Ecuador), are still played in Piura, north-west Peru. Peruvian harpists perform *waynos* (HUAYNO), song-dances in rhythmic duple metre, often with the violin and sometimes other instruments, and lyrical, elegiac *yaravís*, which are frequently performed solo. Each region of Peru may be identified by particular left-hand, or bass patterns, notably for the *wayno*. The Peruvian performance practice of carrying and playing the harp upside down in a sling resting on the harpists shoulder while in procession, is traditional and distinctive for Latin America (*see* [not available online], fig.). In Quechua-speaking areas of Bolivia, harpists attend *farras* (or *fiestas*), where they perform *cuecas*, *bailecitos* and *kaluyos* with the *kena* (flute) and occasionally other instruments.

In the Ecuadorian highlands the two major harp traditions are that of primarily mestizo culture, in Tungurahua province, and that of Quechua culture, in Imbabura province. In central highland Tungurahua, harpists of average ability perform national folk musical genres such as *pasillo* and *albazo*, but there are also players with a broader, sometimes international repertory. Distinctive in the repertory of northern highland Imbabura Quechua harpists, is the *vacación*, a cyclical, ametrical non-dance music closely allied to ceremonies for a child's wake. The dance music of the same child's wake ritual comprises the *sanjuán*, a vigorous music with isorhythmic phrase structure, and the slightly faster *pareja*, a music associated with newly-weds, dancing and the dawn. (For further discussion *see* ECUADOR, ESP. §II, 1(II) and [not available online])

(ii) Structure and performance.


Single-rank harp with ribbed resonator, guitar and violin, Zinacantán, Chiapas,…

A variety of sources, both written and iconographical, give details of 16th- and 17th-century Spanish harps. Some characteristics are: varnishing; bone or brass pegs; relief work; single-rank (diatonic) or double-rank (chromatic); three parallel sets of soundholes on the soundboard, astride the forepillar, or violin-type f-holes; resonator with seven ribs; a compass of at least two octaves, and up to 46 strings; a C-shape (inverted arch) neck; a long, thin and straight forepillar, turned; a roundish soundboard, large in proportion to the low, slender superstructure of forepillar and neck; a low, walnut head; and gut strings. Many Latin American harps exhibit these features, notably the turned forepillar, inverted arched neck and gut strings. The most important features of Mexican harps are: their straight and turned forepillars; the shape of soundholes in Sonora and Chiapas Indian

harps; the neck relief-carving of Chiapas harps (see fig.12); and the gut strings on some Guadalajara harps.

20th-century Paraguayan harps are long and slender (with a resonator of 140 x 40 cm at its widest point). The sound escapes through a large round hole on one side of the resonator (there are no holes in the soundboard). The resonator is traditionally of cedar, surfaced in pine. The strings are secured to the soundboard by a thin external belt of wood (cedar) down its middle, into which bone incrustations are fitted. The tuning-pegs are traditionally of wood, though now aluminium is also used, as are guitar-type, mechanical tuning-pegs. Rural Paraguay harps of about 1940 had a curved neck with a circular finial on top of the forepillar, a feature retained in most recent harps though in an exaggerated form, in effect consisting of two curved segments connected at nearly a right angle. The neck, sometimes painted with an abstract design, consists of two facing halves of laminated cedar, the strings emerge from holes in the bottom. The result of this design, apparently peculiar to Latin America, is a truly vertical harp with centralized pressures permitting a very light construction not achieved on other harps. The straight, round forepillar has little or no turning. Up to the mid-20th century the instrument had 32 strings; later examples have 36 or even 40 nylon strings, some of them coloured (e.g. red to mark octaves), with a range of five octaves, often tuned in G. It is played seated for solo music and standing in ensembles.

The mestizos people of Tucumán, Argentina, use harps with extensively turned forepillars whose finial is often a small ball or other turned extension; there are seldom holes in the soundboard (when present there is only one or a parallel pair). Other structural features include short, flat-planed legs; a narrow but deep ribbed resonator; and a neck that is uncarved but occasionally painted. The instrument is played seated.

The neck of 20th-century northern highland Ecuadorian harps is uncarved and lightly curved. The forepillar is straight, with rounded edges; it is turned with two concentric incisions, commonly in three places; and occasionally has black painted rings at either end of each incision group. The forepillar is short, creating a low head, and there is usually no forepillar finial. The resonator is slightly arched, wide and deep. Harps in the northern highland Imbabura province have 17 to 27 strings, yielding a range of three octaves and a 5th or four octaves. The general pattern is hexatonic tuning in the treble, which has steel strings over a range of about a 12th, diatonic but lacking the minor supertonic. Harpists can thus play all pentatonic pieces (the bulk of the repertory) as well as the few, but widely played, hexatonic pieces.

The harp in the central highland Tungurahua province is made of a combination of several types of wood, usually cedar, walnut and cinnamon. Played seated or standing, it has three soundholes, which are circular or oblong, sometimes flanged and occasionally wood-inlaid; these are present on all Ecuadorian and Venezuelan harps. The neck is elaborately carved, often in a floral pattern; its curvature is substantial, resulting in a near-S shape (similar to the neck of the NADERMAN single-action harp of 1780). The forepillar is tall, straight, squared and unturned, with a carved finial, often in the form of a human or animal head. Master harpists tune the large 34-string harp, with four octaves and a 6th, to play *sanjuanito*, in the 'natural' minor and its relative major; the range in C♯ minor/E major would be G♯′–e‴. For the slow, expressive *yaraví*, in C minor/E♭ major, the following variant tuning is used: the lowest octave, natural minor; the second, harmonic minor; the third, natural minor; the fourth, Dorian. For the *pasillo*, the alterations from the strict natural minor are, in the second and third octaves, that the subtonic is raised to the leading-note and the submediant is raised a semitone, and in the fourth the subdominant is also raised a semitone (these alterations accommodate frequent recourse to the dominant).

Many central Ecuadorian highland harpists are coming to prefer Paraguayan harps, with their distinctive sharply angled, uncarved necks and their absence of circular soundholes. Some such harps have 'figure S' soundhole patterns on either side of the forepillar, closely resembling those painted by Francisco de Zurbarán for the 17th-century Spanish harp. The tradition of harp-playing remains vital in Latin America. The *IV Encuentro Latinoamericano de Arpa* (The 4th Latin American Harp Meeting) held in Mexico City in May 2000, continued the study of the diffusion and development of pedal and non-pedal harps in Latin American music of all types and styles.

John M. Schechter

7. Mechanized harps and later ‘harpes chromatiques’.

(i) Hook harps and single-action pedal harps.

Chromatically strung two- and three-rank harps were complicated to make and cumbersome to play if more than a small number of chromatic notes were needed. Sometime during the late 17th century or early 18th a method of obtaining some chromatic notes on a diatonically tuned single-rank harp was developed. Strong metal J-shaped hooks were inserted in the neck below the tuning-pins to provide the pitch changes required in the musical styles of the time. At first these were the first, second, fourth and fifth degrees of the scale in which the instrument was tuned. When a hook was turned by the left hand to stop the adjacent string the pitch of that string was raised by a semitone. The hook method of chromaticization was applied to instruments considerably varied in structure, ranging from early 17th-century types to imitations of pedal harps. Some had rectangular resonators, some ribbed, some curved. Some had necks and forepillars of austere simplicity, while others were elaborately decorated, occasionally with zoomorphic or anthropomorphic designs such as a lion’s head or a representation of David or a satirical regional figure.

Only one string could be sharpened at a time, and the process of turning a hook temporarily prevented the left hand from playing. It was in order to remedy the inconveniences of manually operated hooks that a pedal-operated mechanism for sharpening the strings was developed. Although eventually the harp was provided with seven pedals, one for each note of the scale, initially it had five (C, D, F, G and A). These pedals, in the bottom of the resonator, were connected to wire rods that passed up through the resonator to connect with a link mechanism in a hollowed-out recess along the length of the right-hand side of the neck. The link mechanism was connected to the hooks on the outside left of the neck, and when a pedal was depressed the hooks turned and sharpened every string of the same note name in all its octaves. Single-action pedal harps are still a popular folk music instrument in the Austrian Tyrol and in Bavaria.

Jakob Hochbrucker of Donauwörth, Bavaria, is often credited with the invention of the single-action pedal harp, though it is sometimes attributed to other makers, such as J.P. Vetter of Nuremberg and Johann Hausen of Weimar. 1720 is usually given as the approximate date of the invention, but Hochbrucker’s son Simon (*b* 1699), in his introduction to an undated collection of *Ariettes*, stated that the pedal harp had been invented by his father in 1697. It is not known who had the idea of enlarging the pillar and hollowing it out so that the pedal rods could be accommodated inside (rather than in the resonator), but by the time the single-action harp came to be played regularly in French aristocratic circles this placement of the pedal rods was standard.

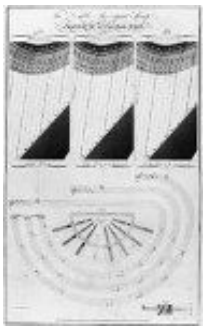
Simon Hochbrucker introduced his father’s harp to Vienna in 1729 and to Brussels ten years later. It was not until 1749 that a similar harp was played in Paris by the German harpist Goepfert (Gaiffre), who claimed to have invented it. Paris soon took a leading role, however, and with the arrival in 1770 of France’s new dauphine, Marie-Antoinette – herself a harpist – Paris became pre-eminent in the harp industry. Harpists and harpist-composers converged there, and it is reported that in 1784 there were 58 harp teachers in the city. Harp makers too were numerous, and it was in Parisian workshops that all the important developments in harp construction in the second half of the 18th century took place.

Single-action pedal harp with structural and mechanical details: engraving by…

Diderot and D’Alembert’s *Encyclopédie* shows a typical harp of the period (fig.13). The resonator was composed of a ribbed back, lidded by a thin flexible soundboard of lateral grain. The curve of the neck varied slightly according to the number (generally 36 to 43) and pitch of the strings. A box to house the seven pedals was added at the base of the harp, and the pedal rods connected to the linkage ran up through the hollow forepillar, now of necessity absolutely straight. In response perhaps to the taste of aristocratic patrons, the simply carved forepillars were made highly ornate, sculptured and gilded. Soundboards were painted in the Vernis Martin style, and the harp itself became an important decorative element, indeed a requisite of the most elegant Parisian salons.

Improvements were made in its mechanism. The *crochets* – a French version of the hook mechanism – were right-angled rather than U-shaped. When the pedal was depressed the *crochet* moved horizontally inwards towards the neck where it squeezed the string against a fixed nut, thus shortening it by approximately an 18th of its length. The disadvantage of this system – used by all the leading harp makers including Louvet, Salomon, Holtzmann, Renault and Chatelain, Naderman, and the Cousineau family – was that strings so sharpened were pushed out of vertical alignment. Their sonority was then rather dull in comparison with the open strings, and they also tended to buzz against the neck of the harp. To remedy these failings Georges Cousineau and his son Jacques-Georges contrived an improved system (*à béquilles*), in which each string is provided with two small crutch-ended levers placed to either side of it, one above the other. The downwards movement of the pedal causes one lever to turn clockwise and the other anticlockwise, tightening the string in a firmer, more controlled manner than the *crochets* (for illustration *see* COUSINEAU).

The pedals for D, C and B strings were normally placed to the left of the resonator, and those for E, F, G and A to its right. The harp was lightly strung with gut strings except for the bottom six, which were wire-covered, and C and F strings were coloured respectively red and blue, for ease of identification. The open strings were tuned in E♭ to give the widest scope for modulation, eight major and five minor keys being obtainable by different pedal combinations. For example, in E♭ all the pedals were in their open position, but in C, the B, E and A pedals were depressed and fixed into the lower notch so that B♭ became B♮, E♭ became E♮, and A♭ became A♮.



Positions of forks and pedals, and corresponding keys obtainable on…

In 1794 Sébastien Erard, who by this time had established his firm in London, took out the first British patent ever granted for a harp. This instrument, the fruit of much experiment, represented a radical change in the construction of the single-action harp. The ribbed resonator was abandoned in favour of a body made in two separate parts: a soundboard of Swiss pine and a rounded back reinforced by internal ribs. For strength and stability, the neck was of laminated construction. The mechanism, mounted on two brass plates, was fixed to the neck instead of being housed inside it, and was therefore independent of the frame. Erard also made mechanical improvements to the pedals, but the really revolutionary feature of his harp was its brilliantly simple 'fork' system, which replaced the unsatisfactory *crochets* and *béquilles*. The 'fork' consists of two brass prongs mounted on a small round brass disc. The disc is screwed centrally on to an axis which passes through the brass plates. The string, resting against a bridge-pin which aligns it with the centre of the disc at a distance of approximately 5 mm, passes between the forks. When the pedal is depressed, the axis turns to bring the prongs into firm contact with the string, thus sharpening it by a semitone (**figs.14** and 34 below). The string is held firmly in position by the fork, so that the problem of jarring strings, common to the *crochets* and *béquilles* systems, is eliminated. The movement of the fork also keeps the affected string perfectly parallel with the others.

Sue Carole DeVale, Nancy Thym-Hochrein

(ii) The Pleyel harp and other later experimental harps.

The increasing use of chromatic harmony by composers such as Wagner, Fauré and Richard Strauss at the end of the 19th century posed problems in executing harp parts on the pedal harp. There were also structural imperfections in the pedal harp such as its dependence on an often imprecise mechanism in order to obtain the semitones. In August 1894, two famous French harpists, Alphonse Hasselmans and Félix Godefroid, presented the problem to Gustave Lyon, director of the firm of Pleyel, Wolff et Cie. Lyon immediately began building an 'harpe chromatique sans pédales' based on a patent of 1845 by J.H. Pape, who had essentially 're-invented' the two-rank, cross-strung harp so popular in Spain during the Renaissance. Retaining the single neck and forepillar of other harps, the neck carrying the tuning pegs was made of aluminium instead of wood and an aluminium plate was fixed below the sounding board. The forepillar was also made of steel or aluminium so that the whole formed a non-deformable metal triangle. As a result, the

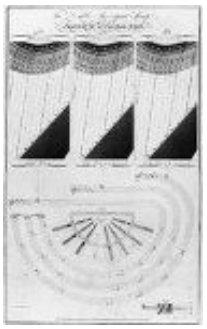
harp could be tuned with great precision, it retained its tuning very well, and far fewer strings were broken. The tuning pegs were replaced by the 'cheville Albert', a micrometric screw. One rank of 46 or 48 white strings contained all the diatonic notes, with C coloured red and F blue. Each diatonic string was attached to a *cheville Albert* on the right side of the neck and threaded though an eyelet in the left side of the soundboard, below which it was knotted. The second rank consisted of black strings divided into twos (C♯ and D♯) and threes (F♯, G♯ and B♭) like the black notes on the piano. This rank ran from the left side of the neck to the right side of the soundboard. The harpist played at the point where the strings cross.

The Pleyel harp became particularly successful in France and Belgium and was taught at the Paris and Brussels Conservatoires for many years. There is still a class in 'harpe chromatique' at the Brussels Conservatory, although the heyday of the instrument was in the first half of the 20th century. Lyon wrote a method in 1898, followed among others by Johannes Snoer (Leipzig, 1908) and Jean Risler (Paris, 1908), a teacher in Brussels. In 1985 a didactic work for the instrument was written by Odile Tackoen. 930 instruments were built over a period of about 30 years (up to 1930). Most of the harps have been lost, but a number of the remaining instruments can be seen in museums (in Brussels, Paris, London and elsewhere) and some are still played by a small circle of harpists. The Pleyel harp is experiencing a period of renewed interest as a result of its use in jazz, and attempts are being made at present to make new designs of the instrument, particularly in Wales, Canada and the USA. A limited number of compositions have been written for the Pleyel harp, the best known of which is Debussy's *Danse sacrée et danse profane* (1904). This harp, with its many chromatic possibilities, is also outstandingly well suited to the whole piano repertory.

A number of other chromatic instruments were invented during the 19th century. The *harpe-luth* was a smaller derivative of the Pleyel harp but had only metal strings. The intention was to play harpsichord music on it. It was used as the instrument to accompany Beckmesser's serenades in Wagner's *Die Meistersinger*. To achieve the required 'cracked lute' effect, the opera orchestra harpists threaded cloth or paper strips through the strings. Another European cross-strung harp, in a private collection, has a thick neck and a unique 'inverted Y shaped' forepillar arrangement: a short distance from the head it divides into two delicate 'branches' which are attached far apart to the base of the harp (see Rensch, D(vi)1989, fig.92). H. Greenway from New York built a chromatic harp (now in the Metropolitan Museum of Art, New York) at the end of the 19th century with two necks and two complete forepillars which cross each other slightly below their midpoints. There is a similar harp, probably from about 1800, in London (Victoria and Albert Museum), which is a totally unplayable instrument, and was assembled by crossing two harps over each other.

Hannelore Devaere

(iii) The double-action pedal harp.

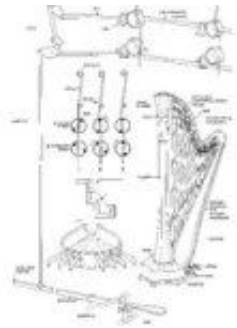


Positions of forks and pedals, and corresponding keys obtainable on…

In spite of mechanical and constructional improvements, musicians and harp makers alike were dissatisfied with the tonal and modulatory limitations implicit in the fact that the single-action harp could play in only eight major and five minor keys and that accidentals were extremely limited. In 1782 the Cousineau family built a harp which could play in all keys by means of a complicated apparatus with two sets of pedals placed one above the other, making 14 pedals in all. (The open strings were tuned in C .) Around the turn of the century Erard set out to produce a better solution, and, after continuous experiment, in 1810 he patented his double-action harp. Operating on the same fork principle as his earlier single-action harp, Erard's double-action instrument uses C as its open key and has 43 strings (*E*′ to *e*‴′) and seven pedals, each of which can be depressed twice, housed in a box at the base of the harp. Each string passes between two fork-bearing discs, placed one above the other. When the pedal is depressed into its first notch, the upper disc turns so that the forks grip the string and sharpen it by a semitone, while the lower disc turns

about 45° but does not touch the string. When the pedal is depressed a second time, and fixed into the bottom notch, the lower fork turns a further 35°, gripping the string and shortening it by another semitone (see fig.14). Each string, except the highest and the lowest one or two which have no forked discs, can therefore be sharpened two semitones, from flat to natural to sharp, and the harp can be played in any key by the simple expedient of fixing the pedals in the requisite notches. Moreover, on double-action harps, accidentals are only limited by the fact that when a pedal is activated, all strings of the same name change together. Thus, for example, one cannot play C♯ and C♮ at the same time in different octaves unless enharmonics can be used for one or both of the two Cs, i.e. B♯ for the C or D♭ for the C♯. This ingenious mechanism has been used, with very few modifications, by most harp makers up to the present day. Between 1811 and 1835 Erard made about 4000 double-action harps, decorated in a 'Grecian' style, and many of them are still in use. They are strung with gut from *e‴′* (known on the harp as 'First Octave E') to *F* (known as 'Fifth Octave F'), and from *E* to *E′* with wire-covered silk (now often replaced in restrung Erards with wire-covered nylon).

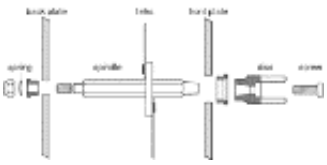
In 1835 Erard's nephew Pierre, building on the same principles, brought out a larger model (with 'Gothic' decoration) of 46 strings (*C′* to *f‴′*), the wire-covered bass strings (*C′* to *F*) having steel cores. Such harps were familiar in most British and French orchestras until the early 1960s, when the age of their mechanism made most of them too unreliable for regular orchestral use and harpists began to import new instruments from Germany, Italy and the USA.



Modern double-action harp, showing pedal-rod/tuning disc mechanism, pedal box, and…

When European harps were first imported into the USA in large numbers in the second half of the 19th century, it became obvious that a more robustly constructed instrument was needed to withstand the rigours of the varying climatic conditions. Two rival Chicago-based firms – LYON & HEALY, who made their first harps in 1889, and the Rudolph Wurlitzer company (*see* WURLITZER, §2), who made harps from 1909 to 1936 – worked to this end. Mechanical precision was improved and the mechanism was entirely enclosed between the brass plates of the neck. The pedal rods within the forepillar were enclosed in individual brass tubes, which made their movement easier and less noisy. While all of the non-mechanical structural parts of the harp were still made entirely of wood, soundboards were strengthened by covering the usual single cross grain with a veneer of vertical grain. On bigger harps the soundboard was extended to exceed the width of the body of the instrument at its lower, bass end, where the heavier strings needed greater amplification. The largest modern concert pedal harps have 46 or 47 strings (*D′* or *C″* to *f‴′* or *g‴′*), are about 183 cm tall and weigh about 35 kg (fig.15). The stringing is usually the same as that set by Erard, i.e. gut with wire-wound strings in the bass. Some harps are strung with nylon rather than gut, while many harpists who generally prefer gut use nylon for the highest one to two and a half octaves because they are less susceptible to the temperature and humidity changes that cause frequent breakage of the strings. The total applied string tension exceeds 730 kg. There are now many makers of this type of pedal harp around the world.

No further major innovations in the pedal harp were made for 90 years, until the French firm Camac Production, owned by Joël and Gérard Garnier and based at Mouzeil, near Nantes, introduced their 'New Generation' harps in 1996. Seven major changes – ergonomic, mechanical, acoustical and structural – were made to their harps: (a) they reduced the weight of the harp by using an anodized aluminium alloy instead of the traditional brass for the plates along the neck, and by replacing the heavy wood of the forepillar with a hollow carbon-fibre/epoxy tube covered by a wood veneer. (b) While retaining the traditional string lengths of the harp and its overall height at the column end, they lowered the height of the harp at the rounded end of the neck near the highest strings. In so doing, Camac returned to the standard used by Erard, which enables the arms and hands to be held in a more comfortable lower position when playing the uppermost strings. (c) While the strings of most harps are essentially parallel to each other across their entire range, Camac returned to a Baroque concept of a progressive radiation for the angle of the strings to one another, most evident in the highest strings, so that the angle between the harpist's fingers and the strings stays the same from the middle to the highest range of the harp.


Section through the neck of a Camac 'New Generation' harp…

(d) The rods that connect the pedals to the mechanism in the neck of the harp have been replaced with more durable stainless steel flexible cables similar to aircraft control cables. A separate testing device with an electronic sensor – nicknamed 'le dohickey' – has also been designed which allows facile regulation of the length of the cables to help keep the harp equal-tempered. The device is inserted into the harp and if the cables are out of adjustment it begins beeping and does not stop until the cable is correctly adjusted by turning the cable adjustment screw. Such regulation can take less than ten minutes, and can be carried out by the harpist rather than needing the services of a technician. (e) While maintaining the basic Erard concept of double action, the mechanism inside the neck of the harp has been completely redesigned. While a forked disc on most pedal harps is a stand-alone disc screwed on the outside of the harp to an axle which turns inside a hole between the two plates on the neck, the Camac disc has been modified to have an extended base with a conical bore, thus making the disc an intrinsic part of the spindle system which turns inside the harp (fig.16). Thus, while the forked discs on a standard pedal harp can become easily de-regulated by the screws which hold them in place becoming loosened by the tension of the strings, the Camac conical disc-spindle system functions as a stable inert unit which resists de-regulation. In addition, the Camac natural and sharp discs rotate in opposite directions – the natural disks anticlockwise like most pedal harps, and the sharp disks clockwise – resulting in even contact pressure from both disk pins and less string deflection when engaging the sharps, which minimizes buzzing and helps maintain the tuning of the strings.

(f) Unlike the straight, tapered soundboards on most pedal harps, the Camac soundboard is stiff in the centre, where the stress from the strings is concentrated, and much lighter and more flexible along the outside edges. While still remaining pliant and extremely responsive, their soundboards result in instruments that quickly assume the full sound of 'maturity' without going through the 'green harp' phase that others require. (g) While the box-frame at the bottom of the harp that houses the pedals and connects the resonator to the column has been traditionally constructed solely of wood, Camac has added an internal assembly of aluminium alloy components, again borrowing the technology from critical aircraft structures. As a result of all the changes made to them, Camac harps have a very accurate action, stable tuning, are very light and strong, and are ergonomically much improved.

Sue Carole DeVale

(iv) Technique and repertory.

(a) 1750–1820.

The late 18th-century development and establishment of the single-action pedal harp was paralleled by developments in playing technique and repertory. Stéphanie-Félicité, Countess of Genlis (1746–1830), had been given harpsichord pieces to play on the harp when she had her first lessons at the age of 13 from Georges-Adam Goepfert. It appears to have been her own idea later to adapt keyboard technique to the harp, and to play it using all five fingers of both hands. Her reasons for doing so are admirably expounded in her *Nouvelle méthode pour harpe* (1802), but the only players to adopt her method were her own pupils. The normal method then, as now, was to play with the first four fingers of both hands, the little finger never being used at all on account of its lack of strength and also its shortness.

The three-movement solo for harp in G written by C.P.E. Bach in Berlin in 1762 makes no concessions to either the limitations of the harp of his day or those of the harpist; neither does Mozart's Flute and Harp Concerto (K299/297*c*) of 1778. The Mozart concerto, however, is distinctly easier to play on the lightly-strung harps of the 18th century for which it was intended than on the larger, heavier-strung double-action pedal harps now in general use.

Harp writing of the period was normally confined to scale passages, arpeggio figurations and spread chords, embellished by occasional trills and turns. The only special effects of timbre in common use were single harmonics and *sons étouffés* (damped notes), both executed only by

the left hand. Modulation was unadventurous and an enormous number of sonatas, airs with variations and so on were written in E♭, the open tuning (i.e. with all pedals in the natural position) of the single-action harp. Whether such fashionable harpist-composers as Louis Cardon, Simon Hochbrucker, P.-J. Meyer and P.J. Hinner mistrusted the uncertain mechanical functioning of their harps or whether they were merely content musically to rely on the available conventional effects is not certain. However, those unafraid of experiment, particularly with the use of the enharmonic 'synonyms' made available by the pedals and by an approximation of equal temperament, were able to compose short passages of a fairly chromatic nature that were well within the harmonic limitations of the instrument. The lovely Adagio opening of Krumpholtz's Sonata no.5 ('dans le style pathétique') is a case in point: the 11 bars of Largo introduction are in E♭ minor, with written G♭ played by its enharmonic equivalent F♯, C♭ by B♮, F♭ by E♮, and D♭ by C♯.

The three composers who made the greatest contribution to the literature of the single-action harp – J.-B. Krumpholtz, J.L. Dussek and Louis Spohr – were all married to professional harpists. Krumpholtz, himself a talented harpist, engaged Erard's interest in the technical problems of the instrument, and also made improvements of his own: a short-lived damping mechanism for the bottom strings, and a more successful 'harpe à renforcements' in which the central back panel of the ribbed body of the harp was replaced by shutters which, when opened by the operation of an eighth pedal (placed centrally between those operated by the left foot and those operated by the right), prolonged and enlarged the sound of the instrument. Krumpholtz wrote several concertos, some sonatas for flute or violin and harp, duos for two harps and many solos and studies.

Dussek wrote his op.2 harp sonatas (including the well-known one in C minor) in Paris between 1786 and 1789; the op.11 duo for harp and piano, which he dedicated to Mme Krumpholtz, was probably composed after he went to London in 1789, as was the E♭ concerto (op.15). Between 1792 (when he married the harpist and singer Sophia Corri) and his departure for Hamburg in 1799, he wrote more duos, solo sonatas and three concertos. The first of these concertos, the two-movement op.30 in C, demands firm, incisive playing and impeccable articulation of the fingers. Without doubt, Dussek's best works for the harp are his late *Trois duos concertants* for harp and piano (op.69 nos.1–3), written for performance by himself and F.J. Naderman in Paris in 1810. The problem presented by the inability of the single-action harp to modulate into the remote keys favoured by Dussek is here solved by combining the two instruments in such a way that the remoter modulations are accomplished in the piano's solo passages. Although the harp parts are technically extremely demanding, Dussek did not demand of the instrument itself excessive chromaticism or key changes beyond its capabilities.

Spohr's output contains several pieces for solo harp that do not tax to any great extent the modulatory possibilities of the instrument. In the duo sonatas for violin and harp, however, like Krumpholtz he made much use of harmonies rendered possible on the harp by the use of enharmonic equivalents. Dorette Spohr's instrument was a single-action harp made by the elder Naderman, and the unsatisfactory *béquilles* system of these harps (see §V, 7(i) above) caused the sharpened strings to be dull in sound, to be pulled out of alignment, and, most annoying to the harpist, to jar. However, when the harp's pedals were in their open position, none of these problems occurred. It was normal practice when playing in A♭ to tune all the D strings down to D♭. Spohr conceived the idea of tuning all the strings a semitone flat so that pieces in D or G might be played with the pedals in their open position. The manuscript copy of his Concertante for violin, harp and orchestra (***GB-Lcm***) is provided with two harp parts, one in A♭ and one in G. Dorette Spohr eventually gave up the harp around 1820 when, though dissatisfied by the limitations of her own instrument, she found she could not adapt herself to playing one of Erard's splendid new double-action harps tuned, in the open position, in C .

Some other works for the single-action harp deserve mention: in Germany the concertos of Eichner (1769) and Albrechtsberger (1773); in France the four concertos and various sonatas, variations and duos of Petrini (1744–1819); and the harp and fortepiano duos of Boieldieu as well as his elegant Concerto in C of 1801. All these works are technically demanding but use only the conventional stock-in-trade of harp writing – trills, arpeggio figuration and scale passages – without any search for musical profundity or attempts to overcome the harmonic limitations of the single-action instrument.

The harp entered the modern orchestra by way of the opera house, where it was at first little used

except as an instrument evocative of mythology and romantic legend. Early uses in 18th-century opera include Gluck's *Orfeo ed Euridice* (1762). Haydn used it in his *L'anima del filosofo* (1791), and in 1804 Le Sueur called for 12 harps (six to each of two parts) in his *Ossian ou Les bardes*.

(b) Modern technique and repertory.

Elias Parish Alvars (1808–49), a fine composer and outstanding harp virtuoso, was the first to recognize the numerous effects and harmonic possibilities made available by the double-action harp and had an immeasurable influence on later harp writing. One of his teachers was Théodore Labarre, whose excellent *Méthode complète* (1844) indicates the techniques expected of good performers on the double-action harp. Apart from the usual scales, arpeggios and trills, Labarre particularly stressed harmonics, glissés and the use of enharmonic 'synonyms'.

Harmonics are written with the sign '^{o}' above or below the notes, and in the left hand can be single, doubled or tripled to allow chords in harmonics. Left-hand harmonics are obtained by using the side of the palm as an artificial bridge, placing it at a point halfway down the length of the string and playing only the top half to produce a note one octave higher in pitch. In the right hand only one harmonic at a time can be obtained, as the artificial bridge is formed by the first joint of the index finger, the harmonic being obtained by playing the top half of the string with the thumb. The best range for harmonics is ***A*** to *g″*.

Another important technique is the sliding movement which Labarre called *glissé*, produced in a downward direction by sliding the thumb from one string to the next, and in an upward direction either with the second (index) finger alone, or with the second and third fingers together in parallel 3rds. Yet another important technique was that of producing enharmonic 'synonyms' – the unisons made possible by the positioning of the pedals. On the double-action harp, every note except D♮, G♮ and A♮ has its synonym, that is, a note of the same pitch obtainable on an adjacent string. For instance, D♭ has C♯ as its synonym, F has E♯, A♭ has G♯. When played at speed, the quickly reiterated notes of the same pitch thus produced give an impression of great virtuosity (*see* **BISBIGLIANDO**). It was by combining the *glissé* and 'synonym' techniques that Parish Alvars was able to produce the chordal glissando, a device that became essential for any composer writing for the harp. If, for example, the pedals are positioned so that the strings sound B♮–C♭–D♮–E♯–F♮–G♯–A♭, a diminished-7th chord is formed. Many other such combinations are of course possible, and once the pedals are fixed to produce only the notes of the chord and their synonyms, a chordal glissando (without any dissonances) can be obtained by sweeping the fingers across all the strings. Parish Alvars, the first to use this remarkable effect, called it *sdrucciolando* ('slipping'). Berlioz, who heard Parish Alvars in Dresden in 1842, and, in his treatise on orchestration (1843) described him as 'the most extraordinary player' ever heard on the harp, understood its technique though he did not use it in his own works. Parish Alvars was also the first to combine *sdrucciolandi* with harmonics. (The best-known example of their combined effect is in the cadenza of Ravel's *Introduction et allegro*.)

Much of the solo harp repertory of the 19th century, however, was scarcely more than salon music to be performed by talented amateurs. None of the later virtuosos approached Parish Alvars either as harpist or as composer, and with a few exceptions the solos and concertos they wrote for themselves, and the music they wrote for their pupils, have little intrinsic merit, relying for their effect on some of the easier techniques used by Parish Alvars.

The harp continued to be played in opera orchestras – particularly noteworthy are the harmonics in Boieldieu's *La dame blanche* (1825), the use of two harps in Meyerbeer's *Robert le diable* (1831) and the idiomatic harp solo in Donizetti's *Lucia di Lammermoor* (1835) – but it was Berlioz who pioneered its use in the symphony orchestra (*Symphonie fantastique*, 1830; *Harold en Italie*, 1834). Not until the 1840s, however, did the double-action harp become so widespread that it was available to all Western composers. Liszt's tone poems (particularly *Orpheus*) show the harp to great advantage. Both Schumann (*Drei Gesänge* for tenor and harp op.95) and Brahms (Four Songs op.17) wrote harp parts that are idiomatic and difficult, while those in Wagner's operas are extremely difficult and unidiomatic. Verdi's later ones, on the other hand, are well written and grateful to play. Bruch's *Schottische Fantasie* op.46 (1880) has an important and well-written harp part. Occasionally in 19th-century operas multiple harps are required. Wagner apparently was the first in this: *Das Rheingold* (completed 1854) has six harps on-stage and a seventh off-stage. For

the remaining three parts of the *Ring*, Wagner wrote only two harp parts but called for six harps, three on each part. Berlioz scored for six separate harp parts in *Les Troyens* (composed 1856–8).

The closing years of the century produced Richard Strauss's *Tod und Verklärung* and *Don Juan* (both 1888–9), Sibelius's *Swan of Tuonela* (1893) and Symphony no.1 in E minor (1898–9), Franck's Symphony in D minor (1886–8) and Debussy's *Prélude à l'après-midi d'un faune* (1892–4), all with parts for harp. The Debussy *Prélude* is scored for two harps, using chords, arpeggios, broken chords, glissandos and harmonics to excellent effect. Also notable are harp cadenzas by Rimsky-Korsakov (*Spanish Capriccio*, 1887) and Tchaikovsky (*Swan Lake*, 1875–6; *Sleeping Beauty*, 1888–9; and *The Nutcracker*, 1891–2).

Until the second half of the 19th century, professional harpists were usually men; women played it primarily as a 'parlour instrument' or were harp teachers. One of the first women harpists of renown was Henriette Renié (1875–1956), who was awarded the *premier prix* at the Paris Conservatoire in 1877 and later became professor of harp there.

Almost all the available harp effects of the late 19th and early 20th centuries, some of them bearing fanciful names (e.g. 'Aeolian flux' for 'glissando'), were detailed by Carlos Salzedo in his *Modern Study of the Harp* (1921). He described, for instance, a 'pedal glissando' (best used on the bass notes of the harp) that is achieved by moving the pedal to flat or sharp and back again within the duration of a note, the 'glissando' effect being produced by the sound of the movement of the fork against the still-vibrating string. The pedal glissando is used to great effect in André Caplet's *Divertissement à l'espagnole* (1924). Salzedo also mentioned the device of weaving a narrow strip of paper between the strings, an effect used by Puccini in *Turandot*. Most of the new effects introduced by Salzedo himself are of a percussive nature: 'esoteric sounds' (in which the pedals are moved without any notes being played), chordal glissandos played with the backs of the nails, plucking the strings with the nails near the soundboard and harmonics at the 12th (produced by playing the top third of the string; Salzedo wrote harmonics at the pitch at which they sound, a departure from the normal practice, both before and since, of writing them at the octave at which they are played). Many of these effects have become a common part of the harpist's technique.

Early 20th-century works featuring the harp as a solo instrument include Gabriel Pierné's *Concertstück* (1903), Debussy's *Danse sacrée et danse profane* (1904) and Ravel's *Introduction et allegro* (1905). In the opera house, the harp parts of Puccini are idiomatically written, extensive, and consistently effective. Like all harp parts by Richard Strauss, the score for his opera *Salome* (1905) is technically difficult, particularly Salome's dance with its nearly continuous chromaticism requiring rapid multiple pedal changes; it has become a required test piece for harpists auditioning for orchestra positions. In the concert orchestra, where the inclusion of two harps had become standard, Debussy and Ravel composed parts that are models of harp writing, while those by Stravinsky, though more unconventional, are nevertheless effective. The dominant school of playing was the French, a fact reflected in the repertory, which includes solo works by Fauré, Roussel and Caplet, a concerto by Saint-Saëns (*Morceau de concert* op.154, 1918) and chamber music such as Debussy's Sonata for flute, viola and harp (1915) and Caplet's *Conte fantastique* for harp and string quartet (1924). The impetus derived from such works, allied to the ever-increasing number of good harpists, led to a proliferation of chamber works including harp, particularly in France and later in Great Britain, Germany, the Netherlands, Switzerland and North America. Among those that have remained standards in the harp repertory are the compositions of Marcel Tournier (1879–1951) including *Féerie: prélude et danse* (1920) for harp and string quartet, and *Jazz-band* (1926) for solo harp, Hindemith's solo *Sonate* (1940), and Britten's *Ceremony of Carols* (1942) for chorus with solo harp accompaniment.

Of great importance to harp repertory from the late 19th century to the present are the compositions, transcriptions and arrangements by great harpists and teachers such as Charles Oberthür (1819–95), a German-born harpist, and the Welshman John Thomas (1826–1913), both of whom flourished during the third quarter of the 19th century in London. Others included Henriette Renié, Marcel Tournier, Ada Sassoli (1881–1946), Carlos Salzédo (1885–1961), Micheline Kahn (1890–1987), Marcel Grandjany (1891–1975), Pierre Jamet (1893–1991) and Lily Laskine (1893–1988), all students of Alphonse Hasselmans (1845–1912), professor of harp at the Paris Conservatoire from 1884 to 1912. (For further details of harpists and their compositions from the 18th century to the early 20th, see Rensch 1989).

From the late 1950s onwards composers such as Berio, Boulez, Holliger, Rands and Miroglio extended the technical vocabulary even further in their works, at the same time developing new notation and giving instructions for the performance of the required effects. New effects have included the loud 'buzzing' sound resulting from threading the lower strings with aluminium foil, an eerie whistling sound created by sliding a steel tuning fork up the whole length of several contiguous wire bass strings simultaneously, muted single-string 'glissandos' produced by plucking and re-plucking a string continuously near the soundboard with the index finger of the left hand while lightly sliding the index finger of the right hand up or down the length of the string, and a bevy of percussive sounds caused by striking groups of strings with everything from chopsticks to rubber mallets. Unfortunately, many composers have used the same effects but with different notation, much to the chagrin of harpists. In 1984, Ingelfield and Neill came to the rescue of fellow harpists with their *Writing for the Pedal Harp*, which created a standardized notation of harp effects.

Since the 1950s a considerable number of harp concertos and works for solo harp have been written, most either inspired, commissioned or composed by harp virtuosos. A call by Sue Carole DeVale for scores from composers, posted on the internet in 1995, had yielded nearly 80 such works by early 2000 by composers from around the world. Most are harp solos or small chamber works for harp with other instruments or voice, most are by women composers, and every style of composition is represented.

Since at least the mid-20th century, many pedal harpists have played diverse forms of music – classical, jazz, popular and traditional – and many compositions and arrangements reflect this fact. Composers are increasingly writing for the harp played in combination with non-Western instruments, and for combinations of Western and non-Western tunings, resulting in new explorations of tonality and sound effects for the harpist. Examples include Robert Lombardo's *Independence Day* (1983), a dance-theatre suite for Javanese GAMELAN and harp, with the latter tuned to match the gamelan's seven-note *pelog* scale; and Elaine Barkin's *Gamelange* (1993) for harp and a mixed band of selected instruments from the Javanese and the Balinese gamelan, in which harp is tuned diatonically to interplay with the three notes common to Western tuning and those of the Javanese *slendro* (five-note tuning system) and the Balinese *pelog*. The three 'common' notes are not in exact unison and thus, when played together, create audible, vibrating beats.

Sue Carole DeVale

(v) Lever harps.

In 1962, Lyon and Healy Harps in Chicago introduced their 'Troubadour harp', of 'neo-Gothic' shape, on which every string could be raised a semitone (and lowered back again) by means of a brass lever that could be flipped up with the performer's left thumb either before or (with planning) during a piece; this was the first 'lever harp'. The lever was essentially L-shaped, the longer arm being the handle, and the shorter arm having a rounded slot in its edge which would catch the string and stop it when the lever was raised. While allowing the desired sharpening effect with great ease, these original levers were unsatisfying in other respects. Firstly, the sharpness of the notch wore down the strings, causing them to break more frequently than strings without levers. Secondly, the timbre of the stopped string was deadened slightly and its volume consequently decreased. Nevertheless, the Troubadour harp was a great success because it was seen immediately as a less expensive alternative to a pedal harp for beginners.

However, it very quickly became clear that lever harps were not just for beginners, but a new form of affordable and easily transportable harp, and a genuine alternative to an expensive and heavy pedal harp. Their popularity has grown exponentially. Soon other manufacturers, both small one-man shops and larger factories, arose around the world, either devoted solely to the production of lever harps or adding lever harps to their production line. Since then, a large variety of harp styles and levers have been developed. Most are still 'neo-Gothic' or 'neo-Celtic' in shape, but now lever harps with the classic rounded column design that makes them look like miniature pedal harps are being manufactured. Newer levers have improved both the sound quality and the longevity of the strings on which they are employed. Some of these can be purchased to be used on any harp, while others remain for the exclusive use of the harp brand for which they have been invented.

Even the J-hooks have returned (see §V, 7(i), above), but with the cup of the J filled in, taking the form of sharpening 'blades'. Lever harps range in size from small lap harps with 21 strings to standing harps of 1·5 metres with 40 strings. Harps can be purchased with levers only on particular notes (usually Cs and Fs) or with a 'full set' on all the strings.

At first some of the less chromatic pieces of the classic pedal-harp repertory were adapted 'on-the-spot' for lever harp, but special lever-harp (or 'pedal-free harp') arrangements soon began to be made of traditional music of Ireland and other countries, and of pieces from the classical, popular, musical comedy and film repertories. Many new compositions have been written specifically for the lever harp. The lever harp has been used for folk, classical, jazz, popular and country music with equal success.

The major manufacturers of lever harps are Lyon & Healy, Dusty Strings and Triplett Harps (USA), Salvi (Italy), Aoyama (Japan) and Camac (France). There are now several manufacturers of excellent harp kits for assembling in the home: an even more affordable alternative to owning and playing a harp.

Sue Carole DeVale

8. Electronic harps.

As is true of all innovations in musical instruments, electric and electro-acoustic harps have been developed to respond to changing musical aesthetics and the needs of harpists. Beginning no later than the 1940s, jazz and pop music began to be explored as sources of solo repertory for the harp. One of the early pioneers was Robert Maxwell in the United States, a classically-trained graduate of the Juilliard School of Music, whose original compositions and arrangements were first published over a ten-year period beginning in about 1946. While microphones on stands connected to public address systems could be used to amplify the sound of a harp, during Maxwell's time, the only way for a harpist to produce sound effects common today, such as instant reiteration, was to re-record over one's previous recordings in a studio, an extremely difficult task. In his recordings of 'Limehouse Blues' and 'Chinatown, My Chinatown', Maxwell did exactly that, but an astonishing 15 times for each piece.

Concomitantly, the number and types of venues available to harpists to perform (such as restaurants, nightclubs and hotels) increased. It was inevitable that harpists, like other instrumentalists, would seek more sophisticated ways to amplify their instruments so they could be heard over conversation and other ambient noise, and to explore timbral variation. Whether performing classical, jazz or pop music in such venues, harpists began to use various types of contact microphones or pickups, first connecting them to public address systems or simple separate amplifiers, and later to electronic amplifiers with built-in sound modifying capabilities. The latter allowed experimental sound effects especially used for jazz and pop. Both practices are still widely in use and pickups are attached to tuning pins, bridge pins or soundboards of small diatonic harps, lever or pedal harps whether strung with gut, nylon, wire or some combination thereof.

The first electric harp – one, like an electric guitar, that could only be heard if connected to an amplification system – was produced by Salvi Harps (who no longer makes them) in the 1980s. During the same period, in response to the demands by harpists to have amplified sound equal in quality and clarity to their acoustic harps, Lyon & Healy (Chicago) began researching and developing two such harps which they call 'Electric and Electroacoustic'. Both types of harps are fitted with transducers on each of the strings that transform the acoustic sound of the string into an electrical signal. Both types use the same pedal mechanism and strings as all Lyon & Healy harps, and are made in two of the same sizes: the 'concert grand' with 47 strings and the 'semi-grand' with 46 strings. The difference between them lies in their soundboards and their uses.

The soundboard of the Electric harp, introduced in 1991 and designed to be used only as an electric instrument, is made of solid hardwood poplar which is immovable and less resonant, thereby suppressing feedback at loud volumes. Poplar is also used for its ruggedness for the gigging harpist, constantly moving the harp from venue to venue, and for its resistance to the

radical climatic changes of some performance environments. The Lyon & Healy Electroacoustic harp (1977), has the same Sitka spruce extended tapered soundboard as acoustic concert-grand pedal harps; thus it can be played as an amplified instrument or as an acoustic one with the same sound and feel as other acoustic harps. Unlike other electric harps, both of these models have high-performance 'Stereo Active' electronics that mix and preamplify the separate string signals to produce a stereo-like output. Because each string has a specific location on the stereo spectrum, 'moving stereo sound' can be produced when the harp is amplified or recorded in stereo; this also allows adjustment of the balance between the top and bottom strings when only monaural output is available. An electro-acoustic lever-harp is in development.

Camac Harps introduced its electrified harps in 1991. The line, consisting only of electro-acoustic harps, is known as the 'Blue', and all five harp styles in it, both lever and pedal harps, are lacquered in royal blue. Like Lyon & Healy electric and electro-acoustic harps, each string has its own electric transducer and the harps can be plugged into all manner of amplifiers and sound modifiers. Unlike Lyon & Healy harps, they do not have a preamplifer built in. The 'electroharps' are a pair of lever harps of neo-Celtic shape, the larger with 36 strings; the smaller with 30 strings is dubbed 'Baby Blue'. The other three are all pedal harps with the 'New Generation' double action and construction (see §V, 2(ii), above). The smallest pedal harp, with 44 strings, is called 'Little Big Blue'; the other two are both concert-grand size with 47 strings, and are differentiated by their soundboard shape, one being called 'Straight-soundboard Blue', the other, 'Extended-soundboard Blue'.

Amplification or modification of sound is not the only way harp makers use electrification. For example, Glen Hill of Mountain Glen harps has incorporated a unique laser light system into his custom-built, electro-acoustic, 34-string lever harp. Using microchips, his trigger circuitry allows a signal from piezoelectric pickups to act as a switch that activates red diode lasers, like those in laser pointers, set under faceted crystals in the pillar and the neck. Activated in real time by plucking any of nine strings (C, D or G in three successive octaves), the laser-lit crystals sparkle in response to the tones being played by the harpist with the same intensity and decay rates shared by light and sound. Mountain Glen will also custom-fit a harp with a wireless FM radio transmitter, so the harp can be amplified but with no cables to get in the performer's way, or with a pitch-to-MIDI converter so that any MIDI sound or digital signal can be controlled by one or more of the harp's strings. Using a custom computer program, any sampled visual image can also be controlled by this same circuitry. Images can be fed into a liquid crystal display projector via a computer, and then be controlled by the harpist. Because they have their own separate circuitry, both the laser-lit crystals and the MIDI system can be plugged in separately and activated whether the harp is played either as an acoustic instrument or an electric one.

Sue Carole DeVale

9. Local traditions.

Local and primarily indigenous harp traditions on the European continent began at least by the 17th century and were found performed by musicians from Norway, several countries within the Austro-Hungarian Empire, Germany and Italy. At the present time, unbroken traditions, both stemming from 18th-century itinerant Austrian harpists, are known still to flourish in the Tyrol and in Hungary.

(i) Norway.

The earliest mention of a local Norwegian harp tradition appears in 'King David's Psalter' written in 1623 by Bishop Arrebo of Trondheim in defence of his strict conduct. He lists *krogharper* along with *hackebretter* (hammered dulcimers) and *langspil* (*langeleik*, a type of dulcimer) as instruments leading to bad character among young people. Only one description of performance practice has been found. In a novel by N.R. Østgaard written in 1852, but describing events at the end of the 18th century, a woman plays *pols* and *halling* (dance tunes) as well as psalm melodies on the *krogharpe* for a wedding party. In a footnote, Østgaard explains that the *krogharpe* is similar to the common harp, has metal strings, is played with the soundbox

horizontal and sounds louder than a *langeleik*.

There are nine extant Norwegian *krogharper* ('crook harps') or *bondeharper* ('peasant harps') and one fragment, all dating from 1681 to 1776. They are located in the Norsk Folkemuseum, Oslo; the Glomdalsmuseet, Elverum; the Ringve Museum, Trondheim; the Historisk Museum, Bergen; the Musikmuseum, Stockholm; and in private collections. Two of these (in Bergen and Stockholm), presumably from the south-west coast of Norway, resemble large medieval harps. They have wooden pegs for 14 and 18 strings respectively. The resonators are carved from a solid block of wood and backed with a single wooden slab.

The other instruments are very unique in construction. They are characterized by a hollow forepillar constructed like the resonator, i.e. carved from one piece of wood and backed with slab. The soundboard is carved so that the strings rise from a peak which runs down the centre of its length. The neck is a simple yoke between the soundbox and the forepillar and is often hollow as well. The harps are decorated with wood-burnt patterns and cross-shaped soundholes. Two of them have carved zoomorphic heads at the front of the pillarbox. These harps are all from Østerdalen, the eastern-most valley of Norway.

All Norwegian harps show evidence of 12 to 20 iron or brass strings with wooden tuning blades and very wide spacing (2·5–3 cm). The name *krogharpe* is perhaps a reflection of the hook-shaped bray pins with which many of the harps are equipped. The Østerdalen harps were found at large farms and are usually decorated with the date (the earliest 1696, the latest 1776) and three initials of the owner ending in 'D' (e.g. 'M H D' for 'Maren Halvorsdatter'), which suggests that the harps were played by the women of richer farms. The *krogharpe* died out completely at the beginning of the 19th century, but in the 20th century makers in Norway and England (such as Sverre Jensen, Paul Guppy and Kjell Stokke) began building them again. Performers such as Tone Hulbaekmo, Stein Villa and Åshild Watne have used the harp for Norwegian dance tunes from the *langeleik* repertory, song accompaniment and medieval music. The harp is regularly included in the *Landskappleiken*, the Norwegian national folk music competition.

(ii) Austria, Hungary and Germany.

The 19th century witnessed a rich tradition of wandering harpers in the Austro-Hungarian empire and Germany, with the earliest reports of its existence coming from Vienna at the time of Maria Theresa (1717–80). The wandering harpers were both men and women. They went from house to house, courtyard to courtyard and performed at markets, fairs, inns and gardens. The harps were termed *Lamentiergattern* ('lamenting fences') in reference to the tragic songs sung by the harpers. They had simple four-sided resonators and a straight forepillar sometimes topped with a forward-turned scroll. There is no mention of a hook mechanism, so the harps were presumably tuned diatonically and had 25–35 strings. In many orphanages children were taught to play the harp or other instruments so that they would have a means of making a living after leaving the orphanage. In the 19th century the harpers became so prolific that the Viennese authorities issued licences and instated prohibitions in an attempt to control their numbers and the quality of their music and the content of their songs, which were often obscene. Wandering harpers also played in the theatres between acts. The last of the Viennese harpers, Gustav Bergmann (*b* 1824), Paul Oprawil and Magdalena Hagenauer (*b* 1807), had died by the early 20th century.

In the second half of the 18th century, after the demise of the mining industry in the Erzgebirge mountains of German-speaking northern Bohemia, the population turned to other means of earning a livelihood. Records as early as 1745 show that wandering harp players travelled to Karlsbad to entertain the guests there. In 1787 Mozart heard the wandering harper Josef Häussler playing variations on melodies from *Le Nozze de Figaro* in Prague at his favourite inn. Mozart reportedly composed a theme upon which Häussler played several variations, which were published by Anton Schimon in 1848. Although men did play the harp, it was most common for women, called *Harfenmädchen* (harp girls), to travel alone or in pairs with their harps upon their backs. Later entire families took to the roads as *Harfenkapellen* (harp bands) became popular. The usual constellation consisted of the father on violin, the mother on guitar and the daughters on harp. The centre of this activity became the town of Pressnitz (now Přisečnice) whose entire population seems to have been engaged in some aspect of travelling music, whether performing, teaching young musicians or caring for the children of those on the road.

Sometime before 1840 the tradition spread from the Erzgebirge to the Czech-speaking areas of north-eastern Bohemia, centring around the town of Nechanice (near Nepomuk). From here impresarios travelled with large groups of harp players often made up of young children 'bought' from their parents. Smaller family groups consisted of violin, harp and sometimes transverse flute. Bohemian musicians also carried the tradition of the *Harfenkapelle* to the German towns of Hundeshagen in the southern Harz Mountains of Thüringen (by 1788) and Salzgitter near Hanover (*c*1850). These areas of high unemployment also became centres of wandering musicians.

As with Vienna, certain larger German cities, such as Hamburg, Munich, Berlin and even Hildesheim (near Hanover), boasted their own *Harfenjulen* (wandering harp women). Most famous of these was perhaps Louise Nordmann, the last Berliner *Harfenjule*, who died in 1911.

At fairs, markets and inns, the wandering harpers from Bohemia, Hundeshagen and Salzgitter played dance melodies (Lanner and Strauss) and accompanied the popular songs of the time termed *Schlager*, *Moritaten* (similar to British broadside ballads) or *Küchenlieder* (lit. 'kitchen songs': those popular among servants). The harp played accompanying chords to the melody of the violin or played the melody in the right hand with chordal accompaniment in the left hand.

Bohemian and German musicians travelled throughout Europe and Asia, including Russia and Siberia, Scandinavia, the British Isles, northern Africa, the Near East, Manchuria and Mongolia. It was not uncommon for the musicians from Salzgitter to travel to the Americas.

The harps they played were built by carpenters in Pressnitz (which also supplied Hundeshagen), Nechanice, possibly Schönbach in Egerland, Markneukirchen in Saxony, areas near Salzgitter and certainly in other areas as well. The names of several 19th-century carpenter-harp builders have come down to us: Poppenberger, Reis und Bach in Pressnitz and František Kdoul in Nechanice. They were light (4–6 kg) and portable hook harps, 135–145 cm high with 36–39 strings, usually gut (although the harps from Nechanice had metal strings in the treble) and they were tuned diatonically, usually in B♭ or F. The resonators were four-sided and arched upwards towards the neck. The harps from Pressnitz and Salzgitter were equipped with hooks for each string, those from Nechanice usually had only one or two hooks per octave.

At the end of the 19th century, the *Harfenkapellen* became eclipsed by orchestras and brass bands from Pressnitz who toured all over the world. The tradition had died out by the beginning of World War I in most areas. In Hundeshagen, which lies just 5 kilometres to the east of the former East German border, women continued to travel and perform, sometimes stealing across to the West, until 1961 when the border became impassable.

In the Egerland, the area of north-western Bohemia closest to Bavaria, harps were included in the so-called *Dudelsackkapellen* (bagpipe bands) consisting of *Bock* (bagpipe), clarinet, short-neck fiddle, bass and harp. In these groups the harp was played exclusively by men. They played local folk music rather than popular music and often marched through the streets carrying their harps and playing at the same time. The harp was most commonly a hook harp as used by other Bohemian wandering harpers, but sometimes Tyrolean single-action pedal harps were used. The tradition continued until the end of World War II when German-speaking Bohemians were deported to Germany.

One region in which the present practice represents an unbroken but continually developing tradition is the Alpine region of Austria and Bavaria. Joseph Haydn (1731–1809), born in the village of Rohrau in lower Austria, wrote glowingly of the simple melodies his father played on the harp when Haydn was a small boy (quoted in E.F. Schmid: *Joseph Haydn*, Kassel, 1934, p.95). From the middle of the 19th century the Zillertal was the centre of harp activity. The musicians played mainly dance-music – ländler, waltzes and polkas – in groups consisting of harp, one or two violins and *Bassettl* (small double bass). Sometimes harps played with accordions or brass and wind ensembles. They also played solo and duet harp pieces, or accompanied solo instruments or song.

Records of harp builders in the Austrian Tyrol exist from the middle of the 18th century onwards. Local tradition suggests that Bohemian wandering harpers introduced the hook mechanism to the Tyrol. Most surviving non-pedal harps are simple diatonic instruments with four-sided arched resonators and straight forepillars. Very few have hooks. The first single-action pedal harp builder in Tyrol was Sepp Sappl (1862–1925). His early 32-string harps retained the four-sided arched resonators of the hook harp with the addition of three to five pedals. He used a simple hook

mechanism, the pedals attached to cables running through the resonator to the neck. Later he developed the five-sided, staved, arched back with seven pedals and 36 strings which has become the typical form of the 'Tiroler Volksharfe'. This form was perfected by Franz Bradl from Brixlegg (1882–1963). His harps were tuned in E♭ and the pedals originally arranged E B F C G D A from left to right. Later he changed to the present arrangement, identical to that of the double-action pedal harp. Bradl's harps became the model for all later Tyrolean harp builders such as Josef Sappl (1909–86), Karl (*b* 1912) and Peter (*b* 1943) Petutschnigg of Lienz, Benedikt (*b* 1928) and Peter (*b* 1958) Mürnseer of Kitzbühel, Jakob (*b* 1919) and Alexander (*b* 1964) Kröll of Kramsach, Fritz Hauser (*b* 1927) of Zell am Ziller, and Karl Fischer (*b* 1912) of Traunstein in Germany. The modern Tyrolean folk harp is still a single-action harp with the cables running through the resonator but it now uses forked mechanics like those of the double-action pedal harp. Nylon strings have replaced the original gut. Until World War II it was exclusively a man's instrument. But since then its popularity and use have spread throughout Austria and Bavaria where it is played by both men and women. It is played as a solo virtuoso instrument or in groups called 'Saitenmusi' (string music) together with *Hackbrett* (hammered dulcimer), zither, guitar and violin. Most music schools and conservatories in Austria and Bavaria offer Tyrolean harp as well as classical harp; however, without the efforts of harp players such as Berta Höller and Peter Reitmeier, who collected harp music during and after World War II, the Tyrolean folk harp and its music would not enjoy the standing it does today.

The itinerary of the 19th-century German-speaking wandering harpers also included the areas of Hungary settled by German speakers in the 18th century, particularly Transnubia. Some families of harpers and knife grinders, primarily from Austria, settled near Lake Balaton in Transnubia and continued the tradition of the wandering harper within Hungary. They played hook harps and performed waltzes and polkas as well as popular German songs, visiting mainly the German-speaking villages. Later Hungarian popular songs (gypsy songs) and folk songs were added to the repertory. In the 20th century some harpers built their own harps, adding a simple four- or five-pedal mechanism of their own construction. In the 1960s there were still 12 members of the Gertner and Horváth families carrying on the tradition of the wandering harper and some were still active in the year 2000.

(iii) Italy.

Ensemble of harp, violin, four-keyed clarinet and triangle: 'I Viggianesi',…

Two areas of Italy – Viggiano near Naples and the Abruzzi near Rome – were also known for their wandering harpers in the period from 1780 to at least 1850. Paintings and etchings from this period usually show groups of musicians with one or two harps together with a mandolin, a violin bowed in front of the chest and a triangle; sometimes bagpipe and shawm, clarinet, guitar or bass are also pictured (fig.17). These are simple diatonic harps with straight four-sided resonators and a straight forepillar, sometimes topped with a volute. There is no evidence that a hook mechanism was used. Viggiano in Calabria is perhaps the more famous of the two areas. The Museo Storico Musicale in Naples owns a harp from Viggiano with 34 strings, a straight, four-sided resonator and straight forepillar. The musicians played and sang Italian folk melodies, tunes from operas and Neapolitan songs. Although the Abruzzi are most famous for their bagpipe and shawm players, ensembles with harps called *carciofolari*, were also known. The harp players in both locations were exclusively men. They wandered throughout Europe and to the Americas. In Italy the practice of teaching children in orphanages to play the harp was also widespread in the 19th century. In 1992 there was only one elderly Viggianese harpist, a Signore Rossi, but he still knew the traditional repertory.

Nancy Thym-Hochrein

10. Revivals.

(i) The Celtic revival.

In the early 19th century attempts were made to sustain and revitalize Irish harp playing traditions and repertory. The main source of information on the traditional style of harping in Ireland is the collection of EDWARD BUNTING, originally published in three volumes as *A General Collection of Ancient Irish Music* in 1797, 1809 and 1840. A founder of the Belfast Harp Society (1808–13) and the Irish Harp Society (1819–39), Bunting acted as scribe at the meeting of harpers in Belfast in July 1792, notating the performances of DENNIS HEMPSON and nine others who remained from the class of traditional players, of whom Hempson was the only one who still used the old fingernail technique. This characteristic playing technique for the metal strung harp, using specially trimmed long fingernails, is very different to that of the gut or nylon strung harp and probably contributed to the Irish harp's almost total disappearance. Harp teachers were mostly from a classical background which implied gut-string playing technique.

The Belfast Harp Society inaugurated the teaching of a number of children by Arthur O'Neill and Bridget O'Reilly, two of the players who had taken part in the 1792 festival. Harps were provided by local makers. Having collapsed in 1813, the society was re-established with similar aims in 1819 but closed in 1839. A Dublin Harp Society, of social rather than pedagogical character, lasted from 1809 to 1812. After 1819 John Egan, and later his nephew and successor Francis Hewson, produced a new design of 'Irish Harp' for amateurs. Although superficially resembling some 18th-century harps, Egan's instruments were much more lightly constructed and were smaller, simplified versions of the pedal harps of his day, with thin soundboards and separate, rounded backs. Later, he produced his 'portable harp', the gut strings of which were fixed into the soundboard with pegs. A hand-operated blade not unlike that of the hook harp (see §V, 7(i), above) shortened individual strings by a semitone. In about 1819, Egan built a harp with seven 'ditals' placed in the forepillar, each of which when pressed down would affect a mechanism in the neck of the harp that shortened all strings of the same note name by a semitone. Like the single-action harp on which it was based, this harp was tuned in E♭; the technique of playing was also derived largely from that of the pedal-harp. Egan also made at least one double-action dital harp.

The upsurge of interest in Celtic culture at the end of the 19th century saw upper middle class scholars and academics encouraging interest in the harp by providing money for prizes at competitions (e.g. the eisteddfod in Wales and the mod in Scotland) and by commissioning instrument makers to try their hands at harp making. In the early 20th century J. & R. Glen, an Edinburgh bagpipe maker, made a few reproduction harps, and Briggs, an English violin maker based in Glasgow, made some harps which are still being played today. Small harps were also being made in Dublin by Egan, in Belfast by McFall and in London by Clive Morley. By the mid-20th century, the main makers were Walton in Belfast, Imbush in Limerick, Pat and John Quinn in the Republic of Ireland and Brown and Bruce in Edinburgh who took over the business of Sanderson and Taylor. Mary O'Hara played a Brown and Bruce harp. (For a discussion of the Welsh triple harp, whose tradition never entirely died out, see §V, 5(iii), above.)

However historically incorrect the terminology, the modern harp known as 'Irish' or 'Celtic' is small and diatonic, although most small harps have blades or levers which can raise the pitch of each string by a semitone (see §V, 7(iv), above). Generally these harps have a compass of about four octaves and an average of 30 strings. Older models, such as those by Morley or Briggs, have narrower spacing between the strings, but the ones being made today are more likely to have concert-harp spacing. Some of the modern harps (e.g. by Mark Norris and John Yule, both based in Scotland) are very tightly strung, but there is a growing trend among makers to use lighter-gauge strings. Nylon strings are very popular, especially in the USA, as they are less sensitive to extremes of temperature. They are also used by the Japanese company Ayoyama which has exported many harps to Ireland since the 1970s. Camac of France are experimenting with carbon fibre strings, but there are still some makers who prefer gut (e.g. Pilgrim Harps in England, Norris and Yule). Few metal strung harps are being made even though the tradition in Ireland before the mid-18th century certainly involved metal stringing (*see* IRISH HARP (I)).

However, some revivalist gut harpers have also experimented with the metal strung harp, either in researching the old techniques and music associated with the harp (e.g. the Americans Anne Heyman and William Taylor, and Alison Kinnaird of Scotland), or playing on it the music of today, be it traditional or newly composed (e.g. Paul Dooley in Ireland, Eileen Monger in England, Alan

Stivell and Paul and Herve Queffelant from Brittany, Rudiger Opperman from Germany, and Mary McMaster from Scotland). Many of these players are also teachers and makers. Other makers of metal strung harps include Jay Witcher and Chris Caswell (USA), Robert Evans (Wales), Jack Morgan (England) and Ardival Harps (Scotland).

In Ireland in the 1960s, the harp became increasingly used in a chordal style to accompany singing, a style of which Mary O'Hara is perhaps the most famous exponent. During the same period Seán Ó'Riada introduced the harp to Irish *céili* music in his Ceoltóirí Cualann group, thereby encouraging its use also as a melody instrument. Considering the large population of emigrant Irish in the USA, it is not surprising to find the harp also beginning to gain popularity in America at that time. A similar development has taken place in Scotland, with the harp being increasingly played not only as a solo instrument but as an integral part of groups of musicians (*see* CLÀRSACH). In the 1970s Alan Stivell of Brittany was playing the harp in a rock-based band to large crowds all over Europe and America, and he undoubtedly inspired many younger people who perhaps had never seen a harp before. Since that time there has been a huge increase in the numbers of people playing the small harp, and it now has a status equal to any of the other instruments being used in traditional music, and it is also finding its way into other genres of music. There are players composing music for the small harp in the traditional mode, in jazz style, and in other wholly original ways. It has also become possible to study the small harp on degree courses in Ireland, Scotland and Galicia (Spain). There are societies for the small harp in England, France, Germany, Northern Ireland, the Republic of Ireland, Scotland, the USA and Wales which promote concerts, fund teaching, host festivals and acquire harps to rent out to beginners. The small harp is being used in music therapy, especially in the USA and Ireland, and all over the world harpers find employment playing at weddings, formal dinners and in hotels.

Mary McMaster

(ii) Early music.

Along with the general development of interest during the 20th century in historical performing practices using period instruments or replicas, a growing number of harpists and harp makers have been researching the playing techniques, repertory and building methods of earlier periods, and recreating them in performance on harps based on historical or iconographical models, with the help of contemporary descriptions. Harps were featured in many of the pioneering EARLY MUSIC groups of the 1950s and later. A growing need to further the exchange of information among historical harp players, builders and researchers has led to the establishment of a Historical Harp Conference and Workshop held annually in the USA, the first of which was organized by Judit Kadar and Cheryl Ann Fulton in 1984. The Verein zur Förderung historischer Harfen (International Historical Harp Society) was founded in 1985, based in Europe. Its archive houses literature, facsimile prints of harp music, iconography, photos and descriptions of harps in museums and private collections as well as information on harp builders and players. The Historical Harp Society, founded in 1990 and based in North America, has initiated the 'Historical Harp Survey' to register all harps built before 1939 currently in North America. Symposia and workshops are held annually in various locations in the USA and Europe under the aegis of the two main societies, and a number of smaller organizations have arisen, such as the Asociación arpista Ludovico in Spain. The International Harp Centre in Basle and its journal *Harpa* were established in 1991.

Makers of historical harps include Yves d'Arcizas (France), Ardival Harps (Scotland), David Brown (USA), Catherine Campbell (USA), Simon Capp (England), Arsalaan Fay (USA), Winifried Goerge (Germany), Tim Hobrough (Scotland), Claus Hüttel (Germany), Eric Kleinmann (Germany), David Kortier (USA), Lynn Lewandowski (USA), Pedro Llopis Areny (Spain), Antonio de Renzis (Italy), Rainer Thurau (Germany), Jay Witcher (USA) and Beat Wolf (Switzerland).

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