Among the most intriguing and revealing artifacts are the instruments of that most venerable art, music. They serve the ear as well as the eye, they are contrivances for producing sound and at the same time articles of furniture, thus reflecting throughout history the changes in musical as well as visual taste. They follow rules varying in strictness and persistence: stern, immutable ones, such as the laws of nature, and volatile, changeable ones, such as the fancies of fashion, and in between the semimalleable ones of the great conservative forces of civilization, habit and tradition. Thus every builder of musical instruments combines different roles: he observes, as an acoustical engineer, the invariant properties of vibrating matter, whether revealed by his own research or handed down by the tradition of his craft; he follows, wittingly or not, the vogue of his day; and, finally, he obeys his own personal taste, musical and decorative.

But these are not the only factors that determine the production of musical instruments. There are, also, different social levels: we see the instruments gaining and losing caste, passing from street singer or shepherd to courtier and perhaps back again. There is, moreover, the unequal pulsation of inventive life in the different dwelling places of men: centers of creative energy, courts and cities fermenting with competition and consequently with novelties, and quiet, remote mountain valleys where a hundred years are like a single day. There are, finally, the cultural migrations such as the infiltration of oriental civilization into Europe through its main gates, the Balkans, southern Italy, and Spain.

But above all, one is struck by the enormous influence that the beaten path of custom has. If the other factors form the fleeting and shifting surface pattern, the curls of foam, tradition is the regular beat of the heavy waves. Structural devices, playing techniques, even small decorative patterns such as the shape of sound holes are retained for centuries. Having seen a flute in an ancient Egyptian tomb, we recognize the same instrument in the hand of a fellah; just as we recognize in Torre Annunziata the very same wall scrawls, kitchen utensils, and children’s toys that we had noticed half an hour before in Pompeii, four feet, or rather two thousand years, lower in the ground.

Among the most versatile instruments—at the same time stable and protean—are the bagpipe and hurdy-gurdy. Both are of remarkable age. Though at first glance they are as different as possible, after an adventurous history their fates intertwined and they became so assimilated that they could replace each other in the same score. But before taking up their evolution, let us examine their structure.

In its simplest form the bagpipe consists of (a) a bag, (b) a short blowpipe through which the player inflates the bag with air, and (c) one or more reed pipes through which the air leaves the bag, thus producing sound. The bag, which serves as a flexible wind reservoir, is made of the skin or bladder of an animal, usually a goat or a sheep; the pipes are inserted into the natural holes of the skin, where the animal’s neck or feet were, by means of cylinders of wood (the so-called stocks) round which the skin is tightly fastened with a cord. The blowpipe, where it enters the bag, is fitted with a leather flap valve that prevents the air from passing back. The sounding pipes—primitive oboes or clarinetts—differ in structure and function. One, called the chanter, is fitted with finger holes that shorten the vibrating air column within the pipe and thus permit the playing of a melody. The other, which is usually larger, has no finger holes and is therefore ca-
pable of only one tone—the continuous and invariable bass called the drone (a name also given to this pipe). The playing position of the bagpipe is well known: the player holds the blowpipe in his mouth, fingers the chanter in front of him like an oboe or clarinet, and squeezes the bag under one of his arms, thus regulating the air pressure (fig. 1).

The elements just described are only the minimum components of the typical bagpipe. Throughout its history the instrument has been subjected to various modifications, improvements, and complications: more drones have been added (producing the octave and the fifth of the first drone); the chanter has been doubled; the blowpipe, so hard on the lungs, has been replaced by the more comfortable bellows. In the British Isles even greater intricacies have been invented, one of the most complex instruments being the Uilleann pipe, also called the Irish organ.

As the bagpipe is an eccentric member of the wood-wind family, so the hurdy-gurdy, being a sort of mechanized fiddle, is a capricious member of the great family of stringed instruments. The sound box may be that of a lute, guitar, or fiddle (figs. 3 and 4), but the strings stretched along it are neither plucked nor bowed, being set into vibration by a wooden wheel revolving in the middle of the sound box and turned by a crank at its tail end. The smooth edge of the wheel, which is coated with resin, serves as an endless bow. Like the pipes of the typical bagpipe, the strings differ in kind and function: there are stopped ones (the melody strings, or chanterelles) running along
Fig. 3. Hurdy-gurdy in lute shape. France, XVIII century

Fig. 4. Hurdy-gurdy in guitar shape. France, XVIII century

Nos. 1059 and 2817 in the Crosby Brown Collection
Fig. 5. Wheel and stopping mechanism of the hurdy-gurdy shown in figure 4. Thirteen black naturals, ten white sharps. The third sharp and the seventh natural, counting from the wheel, are pushed in.
the middle of the sound box and open ones (the drones, or bourdons) running on either side. The melody strings are stopped by a primitive key mechanism, a set of stopping rods—naturals and sharps—equipped with little projections that press inward against the strings when the rods are pushed in (figs. 5 and 6). Thus a full scale can be produced. When released, the rod falls back of its own weight. Consequently, as figure 2 shows, the hurdy-gurdy is played with the keyboard down. As the two melody strings are tuned in unison, each rod has two projections simultaneously stopping both strings. When there are two drones, they are tuned in octaves; when there are more, the octave is strengthened by an added fifth.

Thus it appears that our two instruments, so different in appearance and structure, have much in common musically. First, both are
highly mechanized. In other instruments, such as the clarinet or lute, the player's lips or finger tips are in immediate contact with the heart of the instrument, that is, the agent of vibration—the reeds on the clarinet mouthpiece or the strings of the lute. But in our instruments mechanical devices intervene, the windbag in the bagpipe, the friction wheel in the hurdy-gurdy. True, this results in obvious handicaps: no such direct control of timbre and dynamics is possible as a clarinet or a lute permits, or even the bow of a violin, so responsive to the fingers. On the other hand, bag and wheel make possible something which neither lute or violin nor any pipes (at least in the Occident) can render—a continuous sound. This is the second analogy between our instruments: the bag overcomes the pauses between breaths, the wheel the pauses between the single strokes of plucking or bowing. The third, and musically the most important, analogy between the bagpipe and the hurdy-gurdy is that both employ the drone principle—that is, the accompaniment of a melody by an invariable bass. This principle is a very ancient one in the music of western Asia, where many instruments such as fiddles and pipes are based upon it. It has also played an important role in the development of occidental polyphony. We find it in the tuning of early occidental fiddles and, to mention the most notable example, in the open strings of the lira da braccio—the graceful instrument seen in the hands of Apollo and of so many angels in the Italian quattro- and cinquecento.

We have no means of knowing the emotional responses in distant periods of music: the habits of the musical ear follow the changes in musical styles. But the archaic contrast between a lively melody and a monotonously humming bass still affects us strongly and, strangely enough, with varying emotions. Sometimes it may be felt as restful, as in nineteenth-century music when it is used to convey a pastoral atmosphere, sometimes as exciting, as in the battle tunes of the Highland pipes. In the pedal points in classical and contemporary music there seems to be a similar ambiguity of expression.

It was particularly the principle of the drone that later brought about the most intimate relations between members of such distant families, but curiously enough neither the hurdy-gurdy nor the bagpipe had drones when they first appeared in occidental history. There is no mention of drone pipes before 1300. The
hurdy-gurdy adopted drone strings even later—the precise date we do not know.

The bagpipe is much the older instrument of the two. The first traces of it go far back into remote antiquity in the Orient and in those parts of Africa which were subjected to the Persian-Arabian civilization. It seems that the idea of combining pipes with a bag must have been natural to herdsmen who had plenty of goats and little water and to whom the hide was familiar as a water bag.

Martial mentions the bagpipe, and from Suetonius we learn that Nero played the *tibia utricularis*. In the Middle Ages we find the bagpipe all over Europe, from the Mediterranean to Ireland, which indeed proudly claims to have invented the instrument independently of the Romans. Numerous manuscript illuminations bear witness to its popularity.

The hurdy-gurdy is exclusively the child of the Occident. When it first appeared in the tenth century, under the name of organistrum, it was an ungainly, two-man affair (fig. 10), not less than five feet long and usually with three melody strings. The stopping mechanism was clumsier and slower than that described above for the later hurdy-gurdy. Instead of teeth the small stopping rods had bridges which lay beneath the strings. To raise a bridge one had to take the end of a rod between his finger tips and revolve it a quarter circle. This was an awkward procedure, requiring two hands to achieve even a slight degree of speed, and thus a second player was needed to turn the crank. Moreover, with this method of stopping, the handles of the rods had to point upwards towards the player and so could not fall back of their own weight as in the later hurdy-gurdy.

It seems very likely that this stopping mechanism was an improvement on the monochord, that venerable scientific instrument of the Pythagoreans and of the learned mediaeval monks for studying on one string the mathematical ratios of the consonances. The string of the monochord was originally stopped by means of a bridge that could be shifted back and forth. As this was awkward, several bridges were sometimes used (fig. 8), and finally these were fixed in proper positions to be raised by hand when necessary. One more improvement, the addition of handles to the bridges, would give us the key mechanism of the organistrum. It is worth noting that the great scholar and friend of Descartes, Father Marin Mersenne, found the hurdy-gurdy reminiscent of the monochord, which, of course, must have been an important tool in his acoustical experiments. In his *Harmonie universelle* (1636) he says of the melody strings that “they act as an ever-ready *perpétuel* monochord, because they make all sorts of tones by means of the keys.” How the strings of the organistrum were tuned we have no detailed information; but there is reason to believe that the outer strings were tuned in octaves, the middle a fourth or fifth above the lower. This, at least, would be in line with the early forms of polyphony de-
Fig. 10. Organistrum played by two elders. From the Portico de la Gloria of the Cathedral of Santiago de Compostela. End of the XII century

Fig. 11. Detail from the Glorification of Saint Francis, a fresco in the Church of San Francesco al Prato in Pistoia. School of Giotto
developed between the ninth and the thirteenth century. The beginnings of polyphonic music must have left their mark on the instruments of the time, particularly on their tuning. Unfortunately we do not know much more of that instrumental music than we can gather from depictions of the instruments. The early writers on polyphony deal mainly with vocal music. Their problem was the tabulation of rules for accompanying the traditional melodies of Gregorian chant with a second melody. Following those rules the singer had to improvise an accompaniment called the descant. The rules changed through history, but, very roughly, two main methods can be distinguished.

One was the “organum” found in the writings
of the Flemish monk Hucbald (840–930); it prescribed an accompaniment in fourths and fifths—sometimes with the octave also added. The other, as found in Scotus Erigena (ninth century) and again later in Guido d'Arezzo (about 1020), directed that the chant be accompanied by an improvised melodic line below, which started and finished in unison with the chant and often held the same note for some time with the chant moving above. The first method would correspond with the tuning of the organistrum described on page 62, and the second method with the drone principle as found in bagpipes with drones. It might even be, though no documentary evidence exists, that at some time one of the strings of the organistrum was used as a drone, being touched by the wheel but not by the stopping bridges. This is the more probable as we know that early mediaeval fiddles had a drone string in the oriental tradition. It is worth noting in this connection that Scotus Erigena, the first writer on polyphony, was a son of Eire, where drones in bagpipes were supposedly used early. Indeed, Irish historians trace the beginnings of mediaeval polyphony directly to the Irish bagpipe. In any case, there is food for thought in the conjecture that the development of polyphony in theory and practice was connected with the introduction of drones to the bagpipe and hurdy-gurdy.

It was perhaps because of its harmonic, chordal capacity, as well as for its use in sacred music and in instruction in the cloisters, that the hurdy-gurdy was frequently given the place of honor in the assemblage of the twenty-four elders in so many French and Spanish tympanums of the eleventh and twelfth centuries. We find the organistrum with its two players at the summit of the “rainbow” which—according to Revelation 4:3;—arches over Christ, the organistrum thus being just above Christ's head (fig. 16). The elders, it seems, preferred the apparently nobler instruments, the stringed ones, perhaps because of the stringed instruments mentioned in Revelation 14:2; as far as the writer can see they did not touch a bagpipe.

In the thirteenth century the organistrum

Fig. 16. Musicians playing a bagpipe and a symphonia. Marginal illustrations from the Loutreill Psalter, XIV century. Lulworth Castle, Dorset
shrank to more elegant size and received the easier pushing rods, which could be managed with one hand, freeing the other for the crank. So we see it later in the hands of the graceful angel from the Saint Thomas Altar in Cologne (fig. 9). It is now called symphonia, or in old French, chifonie, from its being able to produce a concord of sound.

Hurdy-gurdy and bagpipe appear side by side in secular music and, if not in church music, at least in the hands of angels. Unlike the elders, angels seem to have no social prejudices whatever; like playful children they do not hesitate to take a juggler’s or beggar’s instru-

ment for the greater glory of the Lord or his saints. In the Glorification of Saint Francis in Pistoia, by pupils of Giotto (fig. 11), we find several groups of angels before the throne of the saint, the middle group with stringed instruments, the flanking groups with winds. There is a bagpipe of considerable size, with an enormous oboe chanter and even a drone. To the right of the piper group an angel plays a hurdy-gurdy with six strings. It cannot now be ascertained whether this painting has been retouched, but if the six strings are authentic some must be drones, as the stopping rods could not very well have stopped six strings simultaneously.

We also find our two instruments in the miniatures of the Cantigas de Santa Maria of Alphonso the Wise of Castile (1252–1284) in the Escorial. These form the richest collection of popular Spanish music of the thirteenth century and present important evidence of the influence of Arabic civilization, including music, on Christian Spain (though it should not be overlooked that Arabic music in its turn then carried a good deal of European, notably Byzantine, contagion). After having reconquered Seville from the infidels, King Alphonso became enthusiastic about the Muslim civilization and kept Moorish musicians at his court. Besides occasional musical scenes, the Cantigas contain a whole gallery of musicians—forty illustrations, most of them showing two players. In some of the pictures Muslim and Jewish musicians compete with Christian Spaniards. Lute and rebec still appear in their Arabic shape alongside instruments of occidental origin, such as the portative organ. The instruments and their manipulation are drawn with great care. Among them we find the bagpipe and the hurdy-gurdy. The latter is represented by two similar specimens (fig. 12). They have the form of oblong boxes, the stopping mechanism extending over the entire length of the box and the rods now placed away from the player, unlike those of the organistrum. Bagpipes appear here in an amazing variety. One form, the simplest (fig. 14), has only one chanter, elegantly decorated with a carved head and a slightly flaring bell, possibly of oxhorn.

Fig. 17. Angel playing a hurdy-gurdy. From a fresco by Gaudenzio Ferrari in the cupola of Santa Maria dei Miracoli in Savonno, 1535
Another (fig. 15) is furnished with double pipes, of which the outer one seems to be a drone. This is the more probable as multiple pipes without a bag occur in other miniatures of this set. A third, the largest form (fig. 13), is fitted with two separate pairs of drones besides a double chanter—an unusually complex combination for a bagpipe of that time.

The Lout trell Psalter (fourteenth century) also shows the bagpipe and the symphonia in friendly proximity (fig. 16). The symphonia has the form of a simple rectangular box. The stopping rods are of the older, clumsy type turned from above, though here with only one hand.

In the fifteenth century the hurdy-gurdy lost caste, but later it was still played by angels as in the greatest angel concert ever painted, the famous fresco at Saronno by Gaudenzio Ferrari. Like his contemporary Leonardo, Ferrari was also a musician and, moreover, an imaginative inventor of instruments, as appears from the Saronno fresco and other paintings of his. Of the total of a hundred and seventeen angels glorifying God the Father, no less than fifty-seven play instruments. The fingering is depicted with the greatest precision and alone would reveal the hand of a painter musician.

Figure 17 shows an elegant hurdy-gurdy, with three strings, to conclude from the pegs; figure 18 a fantastic bagpipe with two one-hand chanters and two conical drones; it must have been capable of exceptional harmonic effects. A slightly later French woodcut, in the Rabelaisian vein, shows the hurdy-gurdy déclassé in the hands of a “vieux des maulx vestus” (fig. 19).

It is interesting to observe how the earliest treatises on musical instruments evaluate the hurdy-gurdy. Sebastian Virdung in his Musica getutscht und ausgezogen (“Treatise on Music Put into German and Condensed”), published in 1511 in Basel, gives a woodcut of a four-stringed hurdy-gurdy (fig. 22) but apparently does not consider it worth discussing in the text. The same is true of Martin Agricola, who reprints Virdung’s woodcut in his Musica instrumentalis deutscher (Wittenberg, 1528), calling the instrument “Leyer.” In the ominous year 1618, the first year of the Thirty Years’ War, appeared the first comprehensive, systematic treatise on the subject, Michael Praetorius’s Syntagma musicum with many admirably precise woodcuts. Among them we find a five-stringed hurdy-gurdy (fig. 20, upper left) and two of its relatives, a fiddle with a wheel but no stopping rods (lower left) and a keyed fiddle with a stopping mechanism but a bow instead of a wheel (right). The latter is still used as a folk instrument in Scandinavia under the name nyckelharpa. The caption for all three instruments says, somewhat deprecatingly, “Some peasant lyres.” The text, without any
discussion, merely mentions “the peasants' and vagabond women’s lyre.” Shortly after this, in 1636, Mersenne expressed the same evaluation, though in more graceful and tolerant terms: “If men of distinction usually played ‘la Symphonie,’ which is called vielle, it would not be as scorned as it is. But because it is played only by the poor, and especially by the blind, who earn their living with the instrument, it is less esteemed than others that give less pleasure. This does not prevent my explaining it here, since skill does not belong to the rich more than to the poor and since there is nothing so base or vile in nature or in the arts as to be unworthy of consideration.” Two woodcuts from his Harmonie universelle are reproduced in figures 6 and 7, one showing an instrument identical with that in the hands of Georges de la Tour’s Hurdy-Gurdy Player (fig. 2), the other interesting because of the open pegbox with lateral pegs, a rather rare form obviously taken over from the rebec or the viol.

The bagpipe retained its status longer, particularly in the country of exceptions, the British Isles. We have reports that it enjoyed royal favor from Edward II to Henry VIII. On the Continent, too, it was used at courts and in the free cities, but on the whole it was the folk instrument which it has always been, played by beggars and at folk dances. The famous Dance of the Peasants (about 1568) by Peter Bruegel the Elder shows a large bagpipe with two
Fig. 20. Hurdy-gurdy and related instruments from plate XXII of Praetorius’s “Syntagma musicum,” 1618
drones (fig. 24). Its structure remains the same as that of the instrument played by Dürer’s Bagpiper (1514) (fig. 1) and of the instrument illustrated by Virdung in 1511 (fig. 21). A simpler instrument, with only one drone, is shown in Bruegel’s Fat Kitchen (fig. 25). The skinny piper, thrown out of the well-stocked kitchen by its well-fed inhabitants and their equally corpulent dog, leaves no doubt as to his social standing.

So far we have considered chiefly Western Europe and Italy; we should now glance at Eastern and Central Europe. There another type of bagpipe was in use and still prevails unaltered in the Balkans. It is the old Persian-Arabian type having a small double chanter formed of two cylindrical clarinets but no drones. Among the most striking decorative features are the animal horns attached to the chanter and serving as bells (fig. 26). Sometimes each pipe has its own horn, sometimes one horn embraces both pipes.

These East European instruments of old oriental type must have exerted a decisive influence in Central Europe, particularly in Germany, through the mediation of the Slavs. From a comparison of Virdung’s (1511) and Dürer’s bagpipes (1514) (figs. 21 and 1) with those in Praetorius (1618) (fig. 23), it seems likely that this influence was exerted in the sixteenth century; for, besides the bagpipe shown in Virdung (fig. 21), with a conical ‘oboè chanter that reappears practically unaltered in Praetorius (fig. 23, left, no. 7), we find there three new forms (nos. 6, 8, and 9) with small cylindrical chanters apparently identical with Eastern clarinet chanters. In Germany the instrument now underwent a strange transformation into the satanic grotesque. It grew, often into weird size; the hide retained its black fur; the pipes—not joined in the same stock but separated—were enormously expanded and with them the oxhorns which were attached as bells, the latter being sometimes lengthened even more by the addition of metal cones (figs. 28 and 30). This bagpipe was called the Bock (“billy goat”), and frequently the upper end of the melody pipe was fitted with a carved-wood head of a goat, which looked out convincingly enough from the dark fur. The old cloven-footed Pan, or as we might call him now, Satan, must have enjoyed this development. As

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the devil smelled of goat, so the bagpipe now smelled of the devil—"Forthwith the devil did appear, for name him and he's always near." The Bock played for peasant dances that must have been coarse enough. We recollect the even coarser dance of Walpurgis Night, when witches rode on goats to the Blocksberg to hold revels with the Prince of Hell under the guise of a gigantic goat—and all this in the heart of a Germany depaganized, we are told, long before.

The Bock had a sturdy life. Even in Viennese prints of Mozart's time we find street musicians with this instrument. Much earlier, in the time of the Reformation, the archfiend did not disdain to play the bagpipe himself. It was, however, a rather dainty one, a monk's head, apparently supposed to lure the faithful (fig. 33). This woodcut is one of the grim, political broadsides against the Church.

Turning again to Western Europe, we have to deal with one of the most decisive stages of the development leading to the assimilation of the bagpipe and hurdy-gurdy. It was the absorption into the pastoral fashion—or rather the pseudobucolic fashion—which put shepherd and peasant instruments in a refined and prettified form into the hands of the courtiers of Versailles. Two events at the end of the sixteenth century are of consequence for our story: the appearance of Giovanni Battista Guarini's pastoral drama, Il Pastor fido, and the addition of bellows to the bagpipe.

The bellows is a very ancient tool; its story contains a good deal of the history of civilization. It was originally connected not with music but with fire, serving forges, furnaces, and foundries. It helped to melt metal in Thebes in 1500 B.C. Pyramidal bellows were known to the Romans. Bellows were added to bagpipes in the last quarter of the sixteenth century, either in Ireland, as the Irish claim,
Fig. 26. Bagpipe of Near Eastern type. Turkey, XIX century.

Fig. 27. ABOVE. Zampogna. Italy, XIX century. Length of longest drone 4 feet. BELOW. Musette. France, XVIII century. Length of chanter 9½ inches, of bourdon cylinder 5½ inches.

Nos. 343, 1629, and 2042 in the Crosby Brown Collection.
Fig. 28. Bock. Germany, XVIII century. Length of chanter 2 feet 5 inches, of drone 5 feet 4 inches. No. 2086 in the Crosby Brown Collection
or probably before, in Central Europe, as a bagpipe with bellows still in existence is mentioned in the inventory of the collection of Duke Ferdinand of Tyrol (Castle Ambras in the Tyrol) taken after his death. It may seem almost absurd that bellows found their way to the bag that late; they are so convenient and besides they had been connected with a musical instrument, the organ, for almost two thousand years. But technical inventions, as history proves, must be timely; if they do not fill a pre-existing need, they are not absorbed by their age.

This need, in our case the application of bellows to bagpipes, was brought about by the pastoral fashion in the Latin countries of Europe. The story of conventional bucolics cannot be written here: a few reminders must suffice. Nature as the subject of fashion is by no means peculiar to the seventeenth and eighteenth centuries. Every advanced epoch of urban civilization has had its retour à la nature as an antidote. Old Pan never died. It is the legendary herdsman, Daphnis, of whom Thyr-sis sings to his goatherd in Theocritus's Bu-colics. There is an almost uninterrupted chain of attitudes toward nature from Virgil’s Eclogues to the French rococo: mystical, philo-

Fig. 29. Player with zampogna

sophical, or merely recreational retreats to the innocence of nature. We may mention at random Saint Francis’s praise of Brother Wind and Sister Water; Petrarch’s wonderful descriptions of the Bay of Spezia and the woods of Reggio; Boccaccio’s Ninfale Fiesolano; the landscape backgrounds of Antonello da Messina, Giovanni Bellini, Filippo Lippi.

The most influential early work of the poesia boschereccia was Sannazzaro’s Arcadia (1504). It presents contests on the humile fis-tula di coridone (“the humble pipe of Corydon”) and, as an epilogue, a “Farewell to the Zampogna”—the bagpipe of the South and Central Italian mountain people. Then follow in Western Europe, to mention only the most outstanding, Remi Belleau’s Bergerie (1565), Tasso’s Aminta (1573), Spenser’s Shepheardes Calender (1579), and Cervantes’s Galatea (1584). True, there is much imitation of the ancient classics in these works. But on the other hand we feel in them a good deal of real nostalgia for nature, just as we find it later in the Aeolian harps of the dying eighteenth century, the romantic horns of Weber’s Freischütz and Mendelssohn’s overture to a A Midsummer Night’s Dream, French plein-air painting, and Debussy’s Après-midi d’un faune. We cannot help recalling how much our own time is also imbued with an innocent longing for nature, to be satisfied, it is true, in the mill of mass amusement by Ersatz, by jungle and South Sea pictures and cartoons, by Tarzan and Dorothy Lamour.

A quite different spirit permeated the French pastoral fashion of the seventeenth and eighteenth centuries. It was rustic life conventionalized as a pleasant game for the nobility. Its upbeat was Guarini’s Pastor fido (1590), strangely enough the very same poem that was the finale of pastoral poesy in Italy. Il Pastor fido is a pastoral drama, its stage in Arcadia, but in it country life is far from being naïve or innocent shepherdry. It is rather a slightly veiled satire contrasting the corruption of the court of Ferrara with blameless rural life, and it was this which made Il Pastor fido the enormous literary success that it was. It mirrored its time, decadent and dissolute, and became the
Fig. 30. Bock with bellows. Germany, XIX century. Length of chanter 1 foot 9 inches, of drone 3 feet 6 inches. Both are fitted with single-beating reeds. No. 2769 in the Crosby Brown Collection
Of this brand was the rustic fashion that pervaded the court life of France. What a spectacle—a noble society that has conventionalized even its vices! There is some grandeur in it, no doubt: classical balance is carried to extremes, with Apollo entertaining Dionysus. It may be a triumph of civilization to rationalize even passion, but this triumph is dangerous, for moral boundaries are blurred when sins become socially acceptable.

The fashionable shepherds, smelling rather of perfume than of the stable, took over the pastoral bagpipe along with the hats and ribbons. This folk instrument, as it then was, did not, of course, fit the hand of courtiers. It had to be refined: its most awkward, heavy parts, particularly the drones, were reduced; the chanter became smaller in size and sweeter in tone and received more conveniently spaced finger holes and, later, even keys; and, as mentioned before, the blowpipe, unbecoming to a lady’s mouth, was replaced by bellows. Thus arose the musette, which remained in vogue from the early seventeenth century until almost the end of the ancien régime. The story of its gradual refinement would form a chapter in itself. How great a reduction in size took place one can realize by comparing the musette (fig. 27) with the gigantic Italian zampogna still played in the Abruzzi (fig. 29).

The contraction of the long drones of earlier bagpipes was achieved through the adaptation of an ingenious instrument, the rackett, also called ranket or sausage bassoon. This instrument, which can be traced back to the late Renaissance, consisted of a short wooden or ivory barrel within which a cylindrical bore of remarkable length was bent several times in U-shape and fitted with an oboe reed. Now it was constructed so as to enclose the drones of the bagpipe: instead of a single bore, there were several independent ones, each fitted with an oboe reed. This is the drone cylinder, or bourdon, which is found in the musette. Mersenne’s woodcuts show four drones concealed in the bourdon (figs. 31 and 32). Later the number grew to six. Each of the drones could be tuned by an ivory slide (layette) running in a groove along the bourdon.

textbook of feigned innocence, and probably it was no gross exaggeration for a contemporary voice to state that it had done more harm to Christendom by its blandishments than Luther by his heresy.
About 1650 Jean Hotteterre, the founder of a dynasty of instrument makers and virtuosos (flutists, oboists, and hurdy-gurdy players), added to the chanter of the musette a smaller chanter which ran alongside the other and extended its compass upwards. The chanters were now called le grand and le petit chalumeau. This fully developed form of the musette appears regularly in Watteau’s fêtes champêtres (see figs. 34 and 35). The earlier form is found, for example, in Van Dyck’s Portrait of a French Nobleman (fig. 38). Nothing was spared in decorating the musette with the finest material. The leather bag was covered with brocade or velvet; rosewood and ivory were used for the pipes; ribbons and tassels were added.

These refinements affected another, simpler type: the cornemuse, a bagpipe that still retained its blowpipe but reduced its drone, so that it lay alongside the chanter in the same stock (fig. 39).

The importance and diffusion of the musette were enormous and perhaps comparable to those of the saxophone and the jazz trumpet in our times. In fêtes rustiques and in the ballet it was indispensable. Lully soon took it into his opera orchestra. Its most rapid rise took place under Louis XIV: the king himself danced to the musette in the court ballet; it was used in the orchestra of the Grand Écurie. Learned treatises were written on it. The first systematic method appeared anonymously in 1672 in Lyons, the Traité de la musette, "with a new method for easy and quick self-instruction." Its author was the jurist Charles Emmanuel Borjon, “avocat au parlement de Paris,” known for his Compilations du droit romain, du droit français, et du droit canon. A characteristic passage from the Traité runs as follows: “There is nothing so common nowadays as to see the nobility, especially those who spend much time in the country, finding enjoyment in playing the musette. How many worthy men of science and affairs relax their minds by this charming exercise, and how many women make the effort to add to their other good qualities that of playing the musette." Later, in 1737, there followed the

Fig. 33. German woodcut, about 1535

Nouvelle Méthode pour la musette by Jacques Hotteterre Le Romain, the grandson of Jean Hotteterre, inventor of the petit chalumeau.

The number of compositions for the musette is legion: it suffices to mention those of the three brothers Chédeville who wrote for this instrument concerts champêtres, symphonies, sonates, duos gallantes, fêtes pastorales, gallanteries amusantes, as well as Les Pantomimes italiennes dansées à l’Académie royale de musique, mises pour la musette, vielle, flute traversière, et hautbois.”

The rise of the hurdy-gurdy (in French, vielle à roue) followed that of the musette. The climax, it seems, came under Louis XV. Two wandering virtuosos, Janot and La Rose, excited the nobility. The queen herself, Marie Leszczyńska, was a famous amateur of the vielle. In the arts it is found even in chinoiserie; an engraving after Watteau shows a chinoiserie vielle probably never built in reality (fig. 37).

The vielle did not have to undergo such essential changes as the musette to become courtly and convenient. It had shrunk in size in the thirteenth century, as we have seen, but
Fig. 34. Musette player with other musicians.
From Watteau's L'Amour au Théâtre Français

Fig. 35. Musette player. Detail from a Fête Champêtre by Watteau

Fig. 36. Musette and vielle played for dancing.
Detail from L’Accordée de Village by Watteau

Fig. 37. Chinoiserie musician with a vielle.
After a painting by Watteau
its range now had to be expanded. The famous virtuoso Charles Baton increased the number of stopping rods to twenty-three, that is, two tones less than two octaves. This made the range of the *vielle* equivalent to that of the chanter of the *musette*. In 1757 Charles Baton published a “Mémoire sur la vielle” in the *Mercure de France*. In 1741 the Abbé Terrasson, professor of Greek and Latin philosophy at the Collège de France, had published his learned *Dissertation sur la vielle*. In 1763 there appeared a *Méthode pour jouer la vielle, instrument agréable, brillant et bon pour jouer seul et faire danser*, by Michel Coret. We have reports that innumerable lutes, theorbs, and guitars were rebuilt into *vielles* by adding a wheel and stopping mechanism. One can only guess how many magnificent renaissance instruments fell victims to this fashion.

In Watteau we find occasionally the two drone instruments, *vielle* and *musette*, side by side (fig. 36), but their gradual convergence is evident from the increasing number of scores first with parts for both and later parts to be played by either one *ad libitum*. Already the great Antonio Vivaldi had composed *Il Pastor fido, Sonates pour la musette, vielle, etc.* (Op. XIIIa). About 1700 Esprit Philippe Chédeville, known as le Cadet, the second of the three brothers mentioned before, published *Les Défis, ou l'Étude amusante pour la musette ou [!] la vielle*. We quote from the dedication, “As for you, gentlemen, whom the god of war drafts to his colors, I have your applause if I have the ladies’. The clash of arms will not make you forget my concerts, and the blare of trumpets that proclaim your laurels will not render you insensible to the soft harmonies of the sweet *musette*.” How far is the pastoral *musette* of France from the martial bagpipe of Britain!

About 1755 there finally appeared a treatise that to a particular degree reveals the complete assimilation achieved between the *vielle* and the *musette*. This was the *Méthode raisonnée pour apprendre la musique d'une façon plus claire et plus précise à laquelle on joint l'étendue de la flute traversière, du violon, du pardessus de viole, de la vielle et de la musette.*

Fig. 38. French nobleman playing the *musette*, a painting by Van Dyck. Note the bellows straps on the right arm and the single chanter. Compare figures 34 and 35.

... *Ouvrage fait pour la comodité des Maîtres et l'utilité des Écoliers*, by M. Bordet, “Maitre de flute traversière.” On page twenty-three (fig. 40) the tuning and the compass of the two instruments are set against each other. At the left is shown the complete coincidence between the tuning of the drone strings of the *vielle* (*chanterelles, trompette, mouche, bourdon supprimé, and bourdon de sol*) and that of the drone pipes of the *musette*. At the right is shown the close analogy in the compass of the two instruments, which is now almost identical.

Before the French Revolution the *vielle* had passed its zenith and returned to the street, where it had meanwhile maintained a humble existence (fig. 41). But at the same time, and for the last time, a great master wrote for it, Joseph Haydn. King Ferdinand IV of Naples, an ardent admirer of Haydn’s art, had been inspired to play the *vielle* by a secretary at the Austrian Legation at the Court
of Naples, Norbert Hadrava, who must have been one of those numerous and cultivated Czecs in the diplomatic service of the Austrian monarchy. Haydn, commissioned upon Hadrava’s suggestion, wrote five concertos for the vielle and later several notturni, each of three movements, for two vielles and orchestra, magnificent pieces that found enthusiastic reception when they were performed again—with the vielle parts executed by flute and oboe—at the famous Salomon concerts Haydn gave in London. Even in the notturni the vielles are treated as typical solo instruments, successively alternating, imitating, and uniting. It was a magnificent finale for the vielle in art music.

But still the drone went on humming. Bagpipe and hurdy-gurdy had early been imitated by other instruments, such as the organ or the harpsichord, or by groups of instruments whenever it was desirable to create a pastoral atmosphere. From many suites of the seventeenth and eighteenth centuries we know dance forms which were based completely or partly on a drone bass, often strengthened by its fifth. Among them was the graceful “musette,” in calm three-four time. It had received its name from the bagpipe musette, just as about five hundred years earlier the organistrum had probably been named after the harmony it was fitted to perform, the organum. Another drone dance, in two-four time, was the “tambourin,” derived again from the instrument of the same name, which is a stringed drum producing a drone bass in the tonic and dominant of the melody of a little one-hand pipe. There are countless “musettes” and “tambourins” in the harpsichord and orchestra suites of the rococo. Anyone who wants a vivid idea of the vigor of the drone in typical tunes for the vielle may find imitations of this and other drone instruments in the “11ième Ordre” of Couperin’s Pièces de clavecin. One of these is Les Fastes de la grande et ancienne ménestrandise, in five acts—a clever satire, by the way on the clashes between the musicians’ unions of that time. The second act is called “Bourdon” and carries the subtitle “Les Vielleux et les gueux.” It consists of two “airs de vielle.” The third act, which introduces jugglers with their animals, is a characteristic pipe tune upon a drone bass in the tonic and dominant, suggesting a drum accompaniment.

The drone effect is also found in numerous pastorales of the middle of the seventeenth century. These are idealized shepherd tunes retaining the six-eight or twelve-eight rhythm and frequently the drone bass. Such tunes were played in South and Central Italy by the zamponari and pifferai who surrounded the cradle of the Child, a custom still alive. Thus it came about that pastorales were used in Christmas music, for example, the sixth movement of Corelli’s Concerto da natale and the “sinfonia” in the Christmas Oratorio by J. S. Bach. Handel must have heard the pifferai when he lived in Rome, and he used this effect in the “sinfonia pastorale” of the Messiah, in his oratorios Semele and Acis and Galatea, and in many other pieces. Other pastorales are found in works by Scarlatti, Couperin, Pachelbel, Telemann, and so forth. One of the most famous is the great organ Pastorale in F major by J. S. Bach. Joseph Haydn, whose art was so deeply rooted in the fertile ground of folklore, employs drone tunes of all sorts, from literal quotations of bagpipe melodies to faintly suggestive uses of the drone effect. We mention only two examples, the finale of his Paris Symphony No. 1, L’Ours (1786), based upon a real bagpipe tune, and the main theme in the finale of his celebrated Second London Symphony.

Not before Beethoven was there an entire symphony entitled Pastorale. In one of his sketch books it is called Sinfonie caracteristica: Die Erinnerungen von dem Landleben, or, as we might translate today, “A programmatic symphony: Reminiscences of rural life.” Beethoven, moreover, took the utmost care to explain to the hearer what he wanted to express. Each movement is given a title suggesting the rustic scene it depicts. Was this necessary at the time? When the symphony started, with the violoncellos and violas droning the tonic and dominant as pedal point and the violins followed with their characteristic capping melody, the audience, we may safely assume, understood the connotation. In another
mood, it seems that Beethoven himself took this response for granted, for a second note in his sketch book says, "It is left to the hearer to find out the situations." No doubt they did.

Today, however, a hundred and thirty years farther from the musette, the situation is different. Many listeners, more familiar with nineteenth-century music than with earlier music, may draw their interpretation of the drone as rustic from the mere fact that the drone occurs in a symphony which is entitled Pastorale.

Strange, indeed, are the mechanics of style. In the beginning there was a shepherd, his instrument the bagpipe, which happened to acquire a drone. The shepherd became fashionable; so did his drone. Thus the drone in art music became the symbol of the pastorale. Later generations, finding such effects used in music entitled Pastorale, learned its connotation from the name; they might never have seen a shepherd or heard a bagpipe. A short cut is formed: where grandfather knew the whole story, we react and interpret automatically. Thus a fashion hardened by tradition becomes second nature. So crystallize the habits of the ear.

The hurdy-gurdy as a folk instrument has not yet entirely died out. An imitation of a characteristic vielle tune is found in Schubert's melancholy "Der Leiermann," the last song in the Winterreise cycle, ending with the words,
Strange old man, say, will you go with me,  
Crank your lyre to my melody?

In our time it has been manufactured for the people of the Auvergne and Bourbonnais, of Berry, and of Savoy. How it hibernates today we have no report.

The bagpipe, however, is still very much alive, not only as a folk instrument in many mountain valleys of Europe but as a military instrument in the British Isles. The mechanical peculiarities of English and Irish bagpipes are beyond the scope of this article. They belong in a world of their own. Two facts only may be stressed: while the French musette symbolizes peace, for many centuries past the Highland pipes have led men to battle and still do all over the globe where the British are fighting. Secondly, the Scotch bagpipes reveal their oriental origin more strikingly than do other occidental bagpipes. It has been pointed out that the Piob Mor, the great Highland bagpipe, is not based on our equal-tempered scale, but that its scale, as determined by the spacing of the finger holes on its chanter, is actually based on the Arabian. The sound of the Piob Mor on the North African battlefields this year closes a cultural circle of thousands of years.

He who would convince himself of the longevity of one of the oldest of musical instruments may consult the New York Times of May 16, 1943, where an American officer, First Lieutenant Daniel G. Kennedy, asks for bagpipes and discusses the value of this instrument for a soldier's morale. “Even in the African campaign,” he says, “they were reported to be a factor in the dogged, relentless drives at El Alamein and the Mareth line. Here at this infantry replacement center where the American doughboys train we have long wanted to add bagpipe music to our band.” Who knows how soon the fine old bagpipe tune so irresistible in 1702 will sound again: “The Day We Beat the Germans at Cremona”? 

Fig. 40. Page from Bordet’s “Méthode raisonnée,” Paris, about 1755
The writer is indebted to the Pierpont Morgan Library for the photographs reproduced in figures 12-15.

Out of the enormous literature on musical instruments the reader is referred for specific information to the numerous standard works of Curt Sachs and to the following writings: on the vielle and musette—Count Eugène de Bricqueville’s monographs Les Musettes (Paris, 1894) and Notice sur la vielle (2nd ed., Paris, 1911); on English instruments—Francis W. Galpin, Old English Instruments of Music (London, 1910); William H. Grattan Flood, The Story of the Bagpipe (London, 1911); and W. L. Manson, The Highland Bagpipe (Paisley, 1901). An original and illuminating examination of the Uilleann pipe will be found in Nicholas Bessaraboff’s Ancient European Musical Instruments (Boston, 1941).

The instruments shown in figures 3, 4, 26, 27, 28, 30, 39, and 41 are to be seen in the current exhibition of Ancient European Musical Instruments in Galleries F 2-4 of the Morgan Wing.

Fig. 41. Street singer with hurdy-gurdy, from the case of a South Tyrolean psaltery, XVIII century. No. 1002 in the Crosby Brown Collection