Hornbostel-Sachs Reconsidered

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A huge number of classification systems has or is being used over the world for musical instruments.[1] Many are local and cannot work outside their own cultural area. Others have been out-dated by modern technology – none of the pictorial systems such as Mantle Hood's *Organograms* could easily be used on a computer. Only one is universally applicable worldwide and this is the Hornbostel-Sachs Systematik. This is because it is a numerical system and because its criteria are those solely of the morphology of the instruments themselves, and therefore it is usable in all cultures, word-wide.

Any system dependent on the use of instruments immediately fails, for the instrument that one people uses for one purpose, another people uses for another, as indeed we do in our culture.

Any system dependent on instrument names is immediately contaminated by cultural connotations.

Many people have misunderstood this with Hornbostel-Sachs: they look at the names in the original German or in one of the many translations (I use here and elsewhere that of Anthony Baines and Klaus Wachsmann, published in the *Galpin Society Journal* XIV, 1961, but I know of Finnish, Catalan, Castilian, and Italian, and doubtless there are others), and they say "but guitar is a European name". So it is, and if we used it, then we would have an immediate mental pictures of Elvis, the Beatles, the Who, Segovia, whoever our favourite may be, and of the instruments that we saw in their hands. If that name is applied as a type name to an African, Chinese, Indian, or whoever, instrument, all those people are insulted. But Hornbostel and Sachs called it a 321.322, and with that name, everybody can be happy. I can explain what that is in English, as a guitar, they can do so in their own languages with the word that fits that number in their own instrumentarium, and the same with all other instruments.

I must admit that the problem of remembering the meaning of a string of numbers is one of the difficulties with the Hornbostel–Sachs. Each of the great families, idiophones,

membranophones, chordophones, and aerophones, bears a number, 1 to 4 (plus 5, which Canon Francis W Galpin added in 1937 for the electrophones),[2] with successive numbers for lower criteria. To stay with group 1 for the moment, 1 is for idiophone, 11 for struck idiophone, 111 for directly struck. That is a difficult term, but the verbal definition clarifies it: "that the player can apply clearly defined strokes and that the instrument itself is equipped for this kind of percussion," in contrast with 112 for indirectly struck, "the intention of the instrument is to yield clusters of sounds or noises, and not to let individual strokes be perceived," in other words rattles and such things.[3] Then follows 111.1, for concussion idiophones or clappers, two sonorous objects directly struck together, as distinct from 111.2, percussion idiophones, where one sonorous object is directly struck with or against a non-sonorous object, whether the hand, a beater, the ground, or anything else. Further figures are for shape, 111.11 sticks, 111.12 plaques, 111.13 troughs, 111.14 vessels, within which we have 111.141 for castanets and 111.142 for cymbals, to which I added 111.143 for bells after acquiring a pair of Nigerian double-bells that are struck concussively against each other.

Looking at it in this way makes it appear to be a divisive system, rather than the cumulative type that classifiers agree is the only proper way to work, and so initially I took it to be. However, Nazir Ali Jairazbhoy's brilliant Explication resolves any such doubts and, with the use of trees, similar to those that John Burton and I used in our Appendix 3, he shows that it is indeed a cumulative system.[4]

With all systems, including Hornbostel-Sachs, there are anomalies and problems. Some of these John Burton and I tried to address in 1971.[5] This aroused some interest, but I decided that combined with the overwhelming advantage that the Hornbostel-Sachs system is culture-free, one is better off with a system that people will use than suggesting one that they won't.

One must remember that Hornbostel and Sachs entitled their publication *Ein Versuch*, a trial or an experiment, and they expected it to result in discussion with their colleagues and gradual improvement and elaboration. That this did not happen to any significant extent must be due to the publication date, 1914, and with the First World War most people had other things to think of for the next four years. As a result there has never been the concerted effort to fill some of its gaps, nor to overcome the basic problem of any numerical system that one

can extend it longitudinally as far as one wishes, to define smaller groups in more detail, but it is impossible to extend it laterally because there is nothing between 1 and 2 save for a subdivision of 1. This causes problems introducing a newly discovered or newly recognized type of instrument.

For example, many string instruments have a neck that runs right through the body, projecting at the lower end such as the spike lutes and spike fiddles, and many have a separate neck that is attached to the top of the body, like our guitars and violins. There is an intermediate stage, the half-spike lute or fiddle, where the neck enters the body but stops partway down and is neither attached to the upper end of the body, nor projects through the bottom, but is normally held by in place by the skin belly through which the distal end projects. Here we need a number between 321.31, spike lutes, and 321.32, necked lutes, and none is available. The ideal solution would be to move the necked instruments to 321.33, but unless every organologist, worldwide, would agree to this, it is not a really helpful suggestion. Therefore I use 321.31.5 for the half-spike lutes.

Because new instruments are invented, and others are recognized, I have found it useful to introduce new numbers or modifications. The first, to take them in their numerical order, is to move the slit drum from percussion tubes (111.231) to 111.242.3, a sub-section of bells, for the equivalence between wooden bells and slit drums can easily be shown, or even to their own section of 111.243. Next, we need a new section within gongs for those with a divided surface to cover the West Indian steel drums, 111.241.12, for each is an individual multiple gong – when they are used in sets, as they usually are, then 111.241.22. Clapper bells (111.242.122) need a new distinction: that number defines those with an internal clapper, and we need -.123 for those with one or more external clappers that are attached to the bell – Hornbostel-Sachs only allow for external strikers that are separate from the bell. Another shape of percussion vessel is the trough such as the Fijian lali, so 111.243, or, if slit drums take that number, then 111.244. The rock gong, though it was possibly prehistoric in origin, was unknown in 1914 and comes at the end of the directly struck percussion as 111.25.

A shape of shaken idiophone that they forgot, though they must have heard it in the theatre often enough, is the great sheet of metal shaken for thunder, so 112.14 is needed for the Sheet rattle or thunder sheet.

112.21 is scraped sticks, followed by tubes (.22), vessels (.23), and wheels or cogs (.24), but we may also need a number for scraped boards (the jazz washboard is not the only one), objects that are wider than sticks but not hollow, so for them .25

They marked "(individual) friction plaques" as unknown, but the musical saw is an example, just as Hindemith's sandpaper blocks are friction sticks. Possibly we need a whole new category for the flexed idiophones to include not only the musical saws (which are sometimes struck with a hammer instead of bowed) and the flexatone, which, although shaken, is not really happy among the other rattles, in which case 15, suitably subdivided, would serve, for example. 151 for saws and 152 for flexatones.

Returning to the theatre, the wind machine, cloth over a rotating barrel, is a friction sheet, so again a new number, 134.

With the bronze drums of the Karen and the Dong-Son and other instruments, thin sheets of non-elastic materials behave in exactly the same way as stretched membranes and similar Chladni patterns can be observed on their surfaces when vibrating, and therefore we need either to change the name membranophone to diaphragmaphone or, and probably better, to add two words to the Hornbostel-Sachs definition: "MEMBRANOPHONES The sound is excited by tightly-stretched membranes *or diaphragms*." This implies that we need to fit the bronze drums in somewhere, and because shape is a criterion and into none of those listed will these fit, we are probably best off with their own section 211.27.

Two of the Hornbostel-Sachs Membranophone definitions are invalid: they say with 211.211, single-skin cylindrical drums, that when a second skin is there only as part of the lacing device to attach the main skin and is not used for beating, it does not count as a skin, but it should count, because it does affect the sound, whether it is struck or not. The obvious example is our side-drum or snare-drum. Nobody beats on the lower head, but the drum would not work without it because there would be nothing for the snares to vibrate against. And therefore the word 'usable' must be deleted from the definition of 211.212, double-skin

drums – any drum with two skins, usable or not, belongs here. More arguable is the 211.211.2, closed cylindrical drums. To my mind, if the drum is a vessel, whether cauldron-shape (kettledrums) or saucepan-shape (closed cylindrical) it should be a kettledrum. It will behave in the same way acoustically whatever the shape of the vessel, whether it is "bowl- or dish-shaped" or "tubular", and if one looks at the range of shapes that has been used for our timpani over the centuries, it is clear that they all belong together. Finally among the membranes, the plucked drums [**fig. 6**] are quite different from the friction drums. On friction drums one rubs the stick or a string and this makes the drumhead vibrate. With the plucked drums, however, one is plucking a string whose pitch can be varied by tension, and the drum is a resonator, just as a banjo has a drum as the resonator, save that the resonator of the gopi yantra is vertical to the string instead of parallel with it. So these are string instruments and therefore 22 must become 33. It is probably safer to leave 22 as a blank with the note "(plucked drums, now 33)" than to move up the present 23 to fill the gap.

Save for that and the new 321.33 for half-spike lutes, the only other change among the chordophones is a new 322.212.3 for harps with strings in two or more parallel planes. That would cover the Renaissance arpa doppia and the Welsh triple harp. 322.212.1 was for a single plane of strings, and 322.212.2 for two planes crossing each other like the Lyon double harp, but they forgot the triple harp and the older arpia doppia.

We also need further suffixes for string instruments. They start with -4 and cover sounding by hammers or beaters (-4), by bare fingers (-5), by a plectrum (-6) and by bowing (-7). We should add -2 by scraping with -21 for scraping the string as with the devil's fiddle and bumbass which use a notched stick instead of a bow, and -22 for scraping the string bearer, for example those musical bows with notches on the bow that are scraped by a stick instead of by tapping the string, and -3 for blowing, both for the aeolian harp with its sub-group of bows attached to kites as in China, and for the !gora or lesiba, the South African blown musical bow. This leaves -1 free for any new discovery.

Where we come to real problems is among the aerophones, the wind instruments. If I may say so without disrespect to two scholars of far greater stature and knowledge than I, it was a fundamental mistake for Hornbostel and Sachs to divide "422 Reedpipes" by whether they

had double reeds (oboes) or single reeds (clarinets) for two reasons. The first is that it is the shape of the bore, whether it is cylindrical or expanding, that affects the sound and the acoustical behaviour, not the type of reed. For example, there are bassoonists who use a small clarinet-like mouthpiece instead of the usual double reed, and even some oboists do the same, and in each case it makes not the slightest difference to the sound. For another, I have a pair of Batak shawms from Sumatra, and the tenor, the sarune basar, is played with a double reed, whereas the treble, the sarune getep, has a single reed. The second reason is that when an unknown instrument arrives in a museum, any curator can see whether the bore is cylindrical or expanding, but he may have no way of telling what sort of reed used to be stuck into the end of it. Had I not had reeds with my two sarune, I would never have known that they differed in this way. It is, I suppose, 94 years too late to do anything about this, and we shall have to leave things as they are and make the best of them, but it does seem silly to have to split the sarune between 422.1, oboes, for the basar and 422.2, clarinets, for the getep, and just as silly to have our clarinets, which overblow twelfths, and our saxophones, which overblow octaves, in the same group when their musical and acoustical behaviour is so different. Equally, the Hungarian tárogató would have to be treated just like the sarune, with the traditional instrument under oboes and the modern Schunda instrument (which is a wooden soprano saxophone) under clarinets.

There are a few corrections to be made. An addition is 412.15 for the instruments that Canon Galpin and Henry Balfour called "retreating reeds."[6] Examples are stalks of plants such as rice with vertical slits in the sides. When blown from one end of the stalk, the slits dilate under the air pressure, opening and closing. It is arguable that the human lips function in a similar fashion with a brass instrument.[7] The air forces them to open from a closed position, the opposite movement from a double reed of cane, where the air pressure forces them to close from an open position, but perhaps it would be better not to go into that! There is a minor error under 412.22. The bull-roarer does turn on its axis, but the whirring disk and the ventilating fan rotate in their own plane, like sirens, and therefore must move up one into 412.21.

The first of the "42 – Wind instruments proper" are "421 – Edge instruments or flutes." That leaves us with the problem of Picken's "Edgetone instruments that are not flutes" such as those double disks, with a central hole passing through both sides of the disk, that one places between the lips and teeth. These are made from tinplate, bottle-tops, or fruit-stones, and are sometimes called widgeon whistles or labial whistles, and one plays them by breathing in and out through the hole. We should follow Picken and assign them the number 420.1.[8]

There is a minor misprint with 421.112, panpipes. The next entry, open panpipes has the same number and clearly should be 421.112.1. Equally, open bundle panpipes should be 421.112.12 because as printed in the *Galpin Journal* it has the same number as the following entry.

No separate number is assigned to the notch flute and this is sufficiently distinct from the end-blown flute with a plain edge that it should have its own section. One would like it to follow the end-blown flute (421.11), but 421.12 is already occupied by side-blown flutes and 421.13 by vessel flutes, so it seems better to give it 421.14 than to shift everything else. It then has all the same further figures as other types of flute. 421.21 are duct flutes with an external duct, and 421.22 are duct flutes with an internal duct. Hornbostel-Sachs suggest including with the latter those native American flutes that have an internal plus an external duct, but they are so different that it seems better to give them their own 421.23. And if duct flutes with a stopped end without fingerholes are 421.221.31, then those Moroccan flutes that do have fingerholes, the lowest of which is not fingered but provides a side-hole substituting for the open end, should be 421.221.32.

With vessel flutes with fingerholes (421.221.42), I would suggest 421.221.421 for those with a single fingerhole (dog whistles, bird whistles and so forth), and 421.221.422 for those with two or more fingerholes such as the ocarina.

The reed instruments we have to leave as they are despite the comments above, but among the reedpipes with free reeds, 422.3, we might place the Burmese side-blown horns that use a free reed rather than the player's lips in a group of their own since they have only a

single hole in the apex (like many African side-blown horns) rather than the number of fingerholes that those of bamboo or cane possess, and call them 422.33.

With trumpets one has to argue "what is a natural trumpet?" For Hornbostel-Sachs it is "without extra devices to alter pitch." If a fingerhole is an "extra device to alter pitch," we need to recognize that not all conch trumpets are natural, for some of those from Fiji have a fingerhole, and that many African side-blown horns have a hole in the tip for that purpose.

For chromatic trumpets with fingerholes (423.21) I would suggest 423.211 for narrowly expanding (cornetts, key trumpets), 423.212 for widely expanding (Baltic fingerhole horns, key bugles, serpents, bass horns etc), and 423.22 for cylindrical (such as the buguri of the Todas of the Nilghiri Hills in southern India).

With the valved instruments, we have to delete the word 'throughout' in "423.231 Valve bugles – The tube is conical throughout." The inventor who can produce a conical tuning slide will make a fortune. And since as Arthur Benade pointed out, today it is the horn whose tubing is predominantly cylindrical and the trumpet that is predominantly conical, we can keep the Hornbostel-Sachs numbers and names and delete those definitions, because they apply only to our own orchestral instruments, and we do know what is a horn and what is a trumpet.[9]

We also have among the trumpets my favourite misprint, 423.121, the end-blown grumpet – how many instruments can be described in this way I am not sure, but in my time as an orchestral player I have met a number of end-blown grumpeters.

So what do we do about all this? It's a matter for international discussion, so much so that I would doubt whether all those interested in the world could afford to get together for a conference. I have published an appendix much like this paper in one of my books,[10] but not everybody will read that (I have assumed that most you have not! If I am wrong, I apologise for having bored you with repetition). I could put this paper on my website, but at the moment of writing less than 1600 people have looked at that, and how many of them have ever bothered to download any of the papers I've put there for free use, I have no idea. So, much as Hornbostel-Sachs needs and deserves full study and revision, I am open to ideas of how to go about it.

This paper was given at the ESEM Seminar in Warsaw in 2008 and it, and the amended full text of the Classification that follows below (after the Notes) formed the basis of the new MIMO version of the System.

1

Margaret J Kartomi,*On Concepts and Classifications of Musical Instruments* (Chicago: Univ. Chicago Press, 1990).

2 Francis W. Galpin,*A Textbook of European Musical Instruments* (London, 1937), 27-36.

3 Baines and Wachsmann (1961), pp. 14 and 15 respectively.

4 Nazir Ali Jairazbhoy, "An Explication of the Hornbostel-Sachs Instrument Classification System," *Selected Reports in Ethnomusicology* 8: *Issues in Organology*, ed. Sue Carole DeVale (Los Angeles, 1990), 81-104.

5 Jeremy Montagu and John Burton, "A Proposed New Classification System for Musical Instruments," *Ethnomusicology* 15:1 (January, 1971), 49-70.

6 F. W. Galpin, "The Whistles and Reed Instruments of the American Indians of the North-West Coast", *Proceedings of the Musical Association* 29 (1903): 115-138. So far as I know, Balfour never referred to these in print, but they appear on his labels in the Pitt Rivers Museum, Oxford.

7 Murray Campbell and Clive Greated,*The Musician's Guide to Acoustics* (London:, 1987), 306-8.

8 Picken,*Folk Musical Instruments of Turkey* (London: OUP, 1975), 376-80. Incidentally, Picken calls the retreating reeds "multiple slit-reeds" (p. 349) and regards them as 412.11 Concussion reeds, despite their opposite movement from other concussion reeds.

9 Arthur H. Benade,*Horns, Strings & Harmony* (Garden City, 1960), 192.

10 Jeremy Montagu,*Origins & Development of Musical Instruments* (Lanham: Scarecrow, 2007), 210-14.

Erich M von Hornbostel & Curt Sachs
'Systematik der Musikinstrumente'
Zeitschrift für Ethnologie Jhrg 1914
Translated Anthony Baines & Klaus Wachsmann
Galpin Society Journal XIV, 1961

Additions and Emendations [marked by * in the margin or text]
Jeremy Montagu 2008 and before

Classification

1 IDIOPHONES The substance of the instrument itself, owing to its solidity and elasticity, yields the sounds, without requiring stretched membranes or strings

11 Struck idiophones The instrument is made to vibrate by being struck upon

111 Idiophones struck directly The player himself executes the movement of striking; whether by mechanical intermediate devices, beaters, keyboards, or by pulling ropes, etc., is immaterial; it is definitive that the player can apply clearly defined individual strokes and that the instrument itself is equipped for this kind of percussion

111.1 Concussion idiophones or clappers Two or more complementary sonorous parts are struck against each other

111.11 Concussion sticks or stick clappers *Annam, India, Marshall Is.*

111.12 Concussion plaques or plaque clappers *China, India*

111.13 Concussion troughs or trough clappers *Burma*

111.14 Concussion vessels or vessel clappers Even a slight hollow in the surface of a board counts as a vessel

111.141 Castanets Vessel clappers, either natural, or artificially hollowed out

111.142 Cymbals Vessel clappers with everted rim

* **111.143 Concussion bells** *Nigeria*

111.2 Percussion idiophones The instrument is struck either with a non-sonorous object (hand, stick, striker) or against a non-sonorous object (human body, the ground)

111.21 Percussion sticks

111.211 (Individual) percussion sticks *Japan, Annam, Balkans; also the triangle*

111.212 Sets of percussion sticks Several percussion sticks of different pitch are combined to form a single instrument *All xylophones, as long as their sounding components are not in two different planes*

111.22 Percussion plaques

111.221 (Individual) percussion plaques *In the oriental Christian Church*

111.222 Sets of percussion plaques *Lithophone (China), and most metallophones*

111.23 Percussion tubes

111.231 (Individual) percussion tubes ~~*Slit drum*~~*, tubular bell*

* * **NB** Not slit drums, which are a sub-group of bells, 111.243

111.232 Sets of percussion tubes *Tubaphon, tubular xylophone*

111.24 Percussion vessels

111.241 Gongs The vibration is strongest near the vertex

111.241.1 (Individual) gongs *S. and E. Asia;* ~~*including the so-called metal drums, or rather kettle-gongs*~~

* * **NB** The tops of Dongson, Karen etc metal drums are diaphragms, thus a form of membranophone, 211.27

* **111.241.12 Gongs with divided surface** *Steel drums, Caribbean*

111.241.2 Sets of gongs *[gong chimes]* *S.E.Asia*

111.242 Bells The vibration is weakest near the vertex

111.242.1 (Individual) Bells

111.242.11 Resting bells The cup is placed on the palm of the hand or on a cushion; its mouth faces upwards *China, Indo-China,Japan*

111.242.12 Suspended bells The bell is suspended from the apex

111.242.121 Suspended bells struck from the outside No striker is attached inside the bell, there being a separate beater

111.242.122 Clapper bells A striker (clapper) is attached inside the bell

* **111.242.123 Bells with attached external clapper/s**

111.242.2 Sets of bells *[chimes]* (subdivided as 111.242.1)

* **111.243 Slit Drums**

* **111.244 Percussion troughs** e.g. some forms of 'slit drum' such as Fijian *lali* where the whole 'mouth' is open

* **111.25 Percussion boulders** *Rock gongs*

112 Indirectly struck idiophones The player himself does not go through the movement of striking; percussion results indirectly through some other movement by the player. The intention of the instrument is to yield clusters of sounds or noises, and not to let individual strokes be perceived

112.1 Shaken idiophones or rattles The player executes a shaking motion

* *** NB** *GSJ* has a misprint of 112.2 here instead of 112.1

112.11 Suspension rattles Perforated idiophones are mounted together, and shaken to strike against each other

112.111 Strung rattles Rattling objects are strung in rows on a cord

Necklaces with rows of shells

112.112 Stick rattles Rattling objects are strung on a bar (or ring) *Sistrum with rings*

112.12 Frame rattles Rattling objects are attached to a carrier against which they strike

112.121 Pendant rattles Rattling objects are hung from a frame

Dancing shield with rattling rings

112.122 Sliding rattles Non-sonorous objects slide to and fro in the slots of the sonorous object so that the latter is made to vibrate; or sonorous objects slide to and fro in the slots of a non-sonorous object, to be set in vibration by the impacts

Anklung, sistrum with rods

112.13 Vessel rattles Rattling objects enclosed in a vessel strike against each other or against the walls of the vessel, or usually against both. NB The Benue gourd rattles with handle, in which the rattling objects, instead of being enclosed, are knotted into a net slipped over the outer surface, count as a variety of vessel rattle *Fruit shells with seeds, 'pellet bells' enclosing loose percussion pellets*

* **112.14 Sheet rattle** *Theatrical thunder-sheet*

112.2 Scraped idiophones The player causes a scraping movement directly or indirectly: a non-sonorous object moves along the notched surface of a sonorous object, to be alternately lifted off the teeth and flicked against them; or an elastic sonorous object moves along the surface of a notched non-sonorous object to cause a series of impacts. This group must not be confused with that of friction idiophones

112.21 Scraped sticks A notched stick is scraped with a little stick

112.211 Scraped sticks without resonator

S. America, India (notched musical bow), Congo

112.212 Scraped sticks with resonator *Usumbara, E. Asia (tiger)*

112.22 Scraped tubes *S. India*

112.23 Scraped vessels The corrugated surface of a vessel is scraped

S. America, Congo region

112.24 Scraped wheels or cog rattles A cog wheel, whose axle serves as the handle, and a tongue fixed in a frame which is free to turn on the handle; when whirled, the tongue strikes the teeth of the wheel one after another *Europe, India*

* **112.25 Scraped boards** *Jazz washboard*

112.3 Split idiophones Instruments in the shape of two springy arms connected at one end and touching at the other: the arms are forced apart by a little stick, to jingle or vibrate on recoil *China (huan t'u), Malacca, Persia (qašik), Balkans*

12 Plucked idiophones Lamellae, i.e. elastic plaques, fixed at one end, are flexed and then released to return to their position of rest

121 In the form of a frame The lamella vibrates within a frame or hoop

121.1 Clack idiophones (cricri) The lamella is carved in the surface of a fruit shell, which serves as resonator *Melanesia*

121.2 Guimbardes (Jews harps) The lamella is mounted in a rod- or plaque-shaped frame and depends on the player's mouth cavity for resonance

121.21 Idioglot guimbardes The lamella is carved in the frame itself, its base remaining joined to the frame *India, Indonesia, Melanesia*

121.22 Heteroglot guimbardes A lamella is attached to a frame

121.221 (Single) heteroglot guimbardes *Europe, India, China*

121.222 Sets of heteroglot guimbardes Several heteroglot guimbardes f different pitches are combined to form a single instrument *Aura*

122 In board- or comb-form The lamellae are tied to a board or cut out from a board like the teeth of a comb

122.1 With laced-on lamellae

122.11 Without resonator *All sansas on a plain board*

122.12 With resonator *All sansas with a box or bowl below the board*

122.2 With cut-out lamellae (musical boxes) Pins on a cylinder pluck the lamellae

13 Friction Idiophones The instrument is made to vibrate by friction

131 Friction sticks

131.1 (Individual) friction sticks *Unknown * ? Sandpaper blocks*

131.2 Sets of friction sticks

131.21 With direct friction The sticks themselves are rubbed *Nail.fiddle, nail piano, Stockspiele*

131.22 With indirect friction The sticks are connected with others which are rubbed and, by transmitting their longitudinal vibration, stimulate transverse vibration in the former *Chladni's euphon*

132 Friction plaques

132.1 (Individual) friction plaques *Unknown*

132.2 Sets of friction plaques *[livika] New Ireland*

133 Friction vessels

133.1 (Individual) friction vessels *Brazil (tortoise shell)*

133.2 Sets of friction vessels *Verillon (glass harmonica)*

* **134 Friction sheet** *Theatrical wind machine*

14 Blown idiophones The instrument is made to vibrate by being blown upon

141 Blown sticks

141.1 (Individual) blown sticks *Unknown*

141.2 Sets of blown sticks *Aeolsklavier*

142 Blown plaques

142.1 (Individual) blown plaques *Unknown*

142.2 Sets of blown plaques *Piano chanteur*

* **15 Flexed plaques**

* **151 Played by friction** *Bowed musical saw*

* **152 Played by striking** *Hammered musical saw*

* **153 Played by shaking and striking** *Flexatone*

Suffixes for use with any division of this class (idiophones):

-8 **with keyboard**
-9 **mechanically driven**

2 **MEMBRANOPHONES** The sound is excited by tightly-stretched membranes *** or diaphragms**

21 **Struck drums** The membranes are struck

211 **Drums struck directly** The player himself executes the movement of striking; this includes striking by any intermediate devices, such as beaters, keyboards, etc.; drums that are shaken are excluded

211.1 **Kettle drums** (timpani) The body is bowl- or dish-shaped

211.11 **(Separate) kettle drums** *European timpani*

211.12 **Sets of kettle drums** *W. Asian permanently joined pairs of kettle drums*

211.2 **Tubular drums** The body is tubular

211.21 **Cylindrical drums** The diameter is the same at the middle and the ends; whether or not the ends taper or have projecting disks, is immaterial

*** 211.211** **Single-skin cylindrical drums** The drum has only one ~~usable~~ membrane. ~~In some African drums a second skin forms part of the lacing device and is not used for beating, and hence does not count as a membrane in the present sense~~

* This restriction is invalid; the second head will always affect the sound and therefore any cylindrical drum with two skins should come under 211.212

211.211.1 **Open cylindrical drums** The end opposite from the membrane is open *Malacca*

211.211.2 **Closed cylindrical drums** The end opposite from the membrane is closed *West Indies*

* * It is arguable that all drums with a closed shell are kettledrums irrespective of whether the shell is cauldron or saucepan shape

*** 211.212** **Double-skin cylindrical drums** The drum has two ~~usable~~ membranes

211.212.1 **(Individual) cylindrical drums** *Europe (side drum)*

211.212.2 **Sets of cylindrical drums**

211.22 **Barrel-shaped drums** The diameter is larger at the middle than at the ends; the body is curvilinear *Asia, Africa, Ancient Mexico*

211.23 **Double-conical drums** The diameter is larger at the middle than at the ends; the body is rectilinear with angular profile *India (mrdanga, banya, pakhavaja)*

211.24 **Hourglass-shaped drum** The diameter is smaller at the middle than at the ends *Asia, Melanesia, E. Africa*

211.25 **Conical drums** The diameters at the ends differ considerably; minor departures from conicity, inevitably met, are disregarded here *India*

211.26 **Goblet-shaped drums** The body consists of a main section which is either cup-shaped or cylindrical, and a slender stem; borderline cases of this basic design like those occurring notably in Indonesia, do not affect the identification, so long as a cylindrical form is not in fact reached *Darabuka*

[Each of these numbers is to be divided as 211.21]

*** 211.27** **Bronze drums** *Burma, S.E.Asia, Dongsong*

211.3 **Frame drums** The depth of the body does not exceed the radius of the membrane. NB The European side-drum, even in its most shallow form, is a development from the long cylindrical drum and hence is not included among frame drums

211.31 **Frame drums (without handle)**

211.311 **Single-skin frame drums** *Tambourine*

211.312 **Double-skin frame drums** *N. Africa, Portugal*

211.32 **Frame drum with handle** A stick is attached to the frame in line with its diameter

211.321 **Single-skin frame drums with handle** *Eskimo*

211.322 **Double-skin frame drums with handle** *Tibet*

212 **Rattle drums** (sub-divisions as for drums struck directly, 211) The drum is shaken; percussion is by impact of pendant or enclosed pellets, or similar objects

India, Tibet

***** **~~22~~** **~~Plucked drums~~** ~~A string is knotted below the centre of the membrane; when the string is plucked, its vibrations are transmitted to the membrane~~

India (gopi yantra, anandalahari)

*** NB** **These are string instruments – their pitch is determined by the tension of the string, not of the drumhead, so they move to Chordophones and become 33**

23 **Friction drums** The membrane is made to vibrate by friction

231 **Friction drums with stick** A stick in contact with the membrane is either itself rubbed, or is employed to rub the membrane

231.1 **With inserted stick** The stick passes through a hole in the membrane

231.11 **Friction drums with fixed stick** The stick cannot be moved; the stick alone is subjected to friction by rubbing *Africa*

231.12 **Friction drums with semi-fixed stick** The stick is movable to a sufficient extent to rub the membrane when it is itself rubbed by the hand *Africa*

231.13 **Friction drums with free stick** The stick can be moved freely; it is not itself rubbed, but is employed to rub the membrane *Venezuela*

231.2 **With tied stick** The stick is tied to the membrane in an upright position *Europe*

232 **Friction drum with cord** A cord, attached to the membrane, is rubbed

232.1 **Stationary friction drums with friction cord** the drum is held stationary

Europe, Africa

232.11 **Single-skin stationary drums with friction-cord**

232.12 **Double-skin stationary drums with friction-cord**

232.2 **Friction drum with whirling stick** The drum is whirled on a cord which rubs on a [resined] notch in the holding stick

Waldteufel [cardboard buzzer] (Europe, India, E. Africa)

233 **Hand friction drums** The membrane is rubbed by the hand

***** *** NB** This does not include our orchestral tambourine which remains a frame drum

24 **Singing membranes** (Kazoos) The membrane is made to vibrate by speaking or singing into it; the membrane does not yield a note of its own but merely modifies the voice *Europe, W. Africa*

241 **Free kazoos** The membrane is incited directly, without the wind first passing through a chamber *Comb-and-paper*

242 **Tube- or vessel-kazoos** The membrane is placed inside a tube or box

Africa; while also, E. Asian flutes with a lateral hole sealed by a membrane, exhibit an adulteration with the principle of the tube kazoo

Suffixes for use with any division of this class (membranophones):

-6 **With membrane glued to drum**

-7 **With membrane nailed to drum**

-8 **With membrane laced to drum**

-81 **Cord-(ribbon-) bracing** The cords are stretched from membrane to membrane or arranged in the form of a net, without employing any of the devices described below

-811 **Without special devices for stretching** *Everywhere*

-812 **With tension ligature** Cross ribbons or cords are tied round the middle of the lacing to increase its tension *Ceylon*

-813 **With tension loops** The cords are laced in a zigzag; every pair of strings is caught together with a small ring or loop *India*

-814 **With wedge-bracing** Wedges are inserted between the wall of the drum and the cords of the lacing; by adjusting the position of the wedges it is possible to control the tension *India, Indonesia, Africa*

-82 **Cord-and-hide bracing** The cords are laced at the lower end to a non-sonorous piece of hide *Africa*

-83 **Cord-and-board bracing** The cords are laced to an auxiliary board at the lower end *Sumatra*

-84 **Cord-and-flange bracing** The cords are laced at the lower end to a flange carved from the solid *Africa*

-85 **Cord-and-belt bracing** The cords are laced at the lower end to a belt of different material *India*

-86 **Cord-and-peg** bracing The cords are laced at the lower end to pegs stuck into the wall of the drum *Africa*

NB -82 to -86 are sub-divided as -81 above

-9 **With membrane lapped on** A ring is slipped over the edge of the membrane

-91 **With membrane lapped on by ring of cord** *Africa*

-92 **With membrane lapped on by a hoop**

-921 **Without mechanism** *European drum*

-922 **With mechanism**

-9221 **Without pedal** *Machine timpani*

-9222 **With pedals** *Pedal timpani*

3 **CHORDOPHONES** One or more strings are stretched between fixed points

31 **Simple chordophones or zithers** The instrument consists solely of a string bearer, or of a string bearer with a resonator which is not integral and can be detached without destroying the sound-producing apparatus

311 **Bar zithers** The string bearer is bar-shaped; it may be a board placed edgewise

311.1 **Musical bows** The string bearer is flexible (and curved)

311.11 **ldiochord musical bows** The string is cut from the bark of the cane, remaining attached at each end

311.111 **Mono-idiochord musical bows** The bow has one idiochord string only *New Guinea (Sepik R.), Togo*

311.112 **Poly-idiochord musical bows or harp-bows** The bow has several idiochord strings which pass over a toothed stick or bridge *W. Africa (Fan)*

311.12 **Heterochord musical bows** The string is of separate material from the bearer

311.121 **Mono-heterochord musical bows** The bow has one heterochord string only

311.121.1 **Without resonator** NB If a separate, unattached resonator is used, the specimen belongs to 311.121.21. The human mouth is not to be taken into account as a resonator

311.121.11 **Without tuning noose** *Africa (ganza, samuius, to)*

311.121.12 **With tuning noose** A fibre noose is passed round the string, dividing it into two sections *South-equatorial Africa (n'kungo, uta)*

311.121.2 **With resonator**

311.121.21 **With independent resonator** *Borneo (busoi)*

311.121.22 **With resonator attached**

311.121.221 **Without tuning noose** *S. Africa (hade, thomo)*

311.121.222 **With tuning noose** *S. Africa, Madagascar (gubo, hungo, bobre)*

311.122 **Poly-heterochord musical bows** The bow has several hetero chord strings

311.122.1 **Without tuning noose** *Oceania (kalove)*

311. 122.2 **With tuning noose** *Oceania (pagolo)*

311.2 **Stick zithers** The string carrier is rigid

311.21 **Musical bow cum stick** The string bearer has one flexible, curved end. NB Stick zithers with both ends flexible and curved, like the Basuto bow, are counted as musical bows *India*

311.22 (True) stick zithers NB Round sticks which happen to be hollow by chance do not belong on this account to the tube zithers, but are round-bar zithers; however, instruments in which a tubular cavity is employed as a true resonator, like the modern Mexican *harpa*, are tube zithers

311.221 With one resonator gourd *India (tuila), Celebes (suleppe)*

311.222 With several resonator gourds *India (vina)*

312 Tube zithers The string bearer is a vaulted surface

312.1 Whole-tube zithers The string carrier is a complete tube

312.11 ldiochord (true) tube zithers *Africa and Indonesia (gonra, togo, valiha)*

312.12 Heterochord (true) tube zithers

312.121 Without extra resonator *S.E.Asia (alligator)*

312.122 With extra resonator An internode length of bamboo is placed inside a palm leaf tied in the shape of a bowl *Timor*

312.2 Half-tube zithers The strings are stretched along the convex surface of a gutter

312.21 ldiochord half-tube zithers *Flores*

312.22 Heterochord half-tube zithers *E. Asia (k'in, koto)*

313 Raft zithers The string bearer is composed of canes tied together in the manner of a raft

313.1 ldiochord raft zithers *India, Upper Guinea, Central Congo*

313.2 Heterochord raft zithers *N. Nyasa region*

314 Board zithers The string bearer is a board; the ground too, is to be counted as such

314.1 True board zithers The plane of the strings is parallel with that of the string bearer

314.11 Without resonator *Borneo*

314.12 With resonator

314.121 With resonator bowl The resonator is a fruit shell or similar object, or an artificially carved equivalent *Nyasa region*

314.122 With resonator box (box zither) The resonator is made from slats

Zither, Hackbrett, pianoforte

*** * NB** This is true of the early piano only; modern pianos have no bottom and are board zithers. Harpsichords are box zithers; clavichords arguably frame zithers

314.2 Board zither variations The plane of the strings is at right angles to the string bearer

314.21 Ground zithers The ground is the string bearer; there is only one string

Malacca, Madagascar

314.22 Harp zithers A board serves as string bearer; there are several strings and a notched bridge *Borneo*

315 Trough zithers The strings are stretched across the mouth of a trough

Tanganyika

315.1 Without resonator

315.2 With resonator The trough has a gourd or a similar object attached to it

316 Frame zithers The strings are stretched across an open frame

316.1 Without resonator *Perhaps amongst medieval psalteries*

316.2 With resonator *W. Africa, amongst the Kru (kani)*

32 Composite chordophones A string bearer and a resonator are organically united and cannot be separated without destroying the instrument

321 Lutes The plane of the strings runs parallel with the sound-table

321.1 Bow lutes *[pluriarc]* Each string has its own flexible carrier

Africa (akam, kalangu, wambi)

321.2 Yoke lutes or lyres The strings are attached to a yoke which lies in the same plane as the sound-table and consists of two arms and a cross-bar

321.21 Bowl lyres A natural or carved-out bowl serves as the resonator

Lyra, E. African lyre

321.22 Box lyres A built-up wooden box serves as the resonator *Cithara, crwth*

321.3 Handle lutes The string bearer is a plain handle. Subsidiary necks, as e.g. in the Indian *prasarini vina* are disregarded, as are also lutes with strings distributed over several necks, like the *harpolyre,* and those like the Lyre-guitars, in which the yoke is merely ornamental

321.31 Spike lutes The handle passes diametrically through the resonator

321.311 Spike bowl lutes The resonator consists of a natural or carved-out bowl *Persia, India, Indonesia*

321.312 Spike box lutes or spike guitars The resonator is built up from wood *Egypt (rebab)*

321.313 Spike tube lutes The handle passes diametrically through the walls of a tube *China, Indochina*

* **321.315 Half-spike lutes** The handle is neither attached to the resonator nor passes all the way through it but terminates within the body *W.Africa*

321.32 Necked lutes The handle is attached to or carved from the resonator, like a neck

321.321 Necked bowl lutes *Mandoline, theorbo, balalaika*

321.322 Necked box lutes or necked guitars NB Lutes whose body is built up in the shape of a bowl are classified as bowl lutes *Violin, viol, guitar*

322 Harps The plane of the strings lies at right angles to the sound-table; a line joining the lower ends of the strings would point towards the neck

322.1 Open harps The harp has no pillar

322.11 Arched harps The neck curves away from the resonator *Burma and Africa*

322.12 Angular harps The neck makes a sharp angle with the resonator *Assyria, Ancient Egypt, Ancient Korea*

322.2 Frame harps The harp has a pillar

322.21 Without tuning action *All medieval harps*

322.211 Diatonic frame harps

322.212 Chromatic frame harps

322.212.1 With the strings in one plane *Most of the older chromatic harps*

322.212.2 With the strings in two planes crossing one another *The Lyon chromatic harp*

* **322.212.3 With the strings in two or more parallel planes** *Triple harp*

322.22 With tuning action The strings can be shortened by mechanical action

322.221 With manual action The tuning can be altered by hand-levers *Hook harp, dital harp, harpinella*

322.222 With pedal action The tuning can be altered by pedals

323 Harp lutes The plane of the strings lies at right angles to the sound-table; a line joining the lower ends of the strings would be perpendicular to the neck. Notched bridge *W. Africa (kasso, etc.)*

* **33 Plucked drums**

* **331 With loose string attached to the drum-head** *India (anandalahari)*

* **332 With string attached to the end of a neck and to the drum-head** *India (gopi yantra)*

Suffixes for use with any division of this class (chordophones):

* **-2 sounded by scraping**

* **-21 scraping the string** *(devil's fiddle)*

* **-22 scraping the string bearer** *(some musical bows)*

* **-3 sounded by blowing** *(!gora, aeolian harps)*

-4 sounded by hammers or beaters

-5 sounded with the bare fingers

-6 sounded by plectrum

-7 sounded by bowing

-71 with a bow

-72 **by a wheel**
-73 **by a ribbon** *[Band]*
-8 **with keyboard**
-9 **with mechanical drive**
* These last two are secondary to -4 to -7 above; i.e. 314.122-6-8 would define the harpsichord

4 **AEROPHONES** The air itself is the vibrator in the primary sense
41 **Free aerophones** The vibrating air is not confined by the instrument
411 **Displacement free aerophones** The air-stream meets a sharp edge, or a sharp edge is moved through the air. In either case, according to more recent views, a periodic displacement of air occurs to alternate flanks of the edge
Whip, sword-blade
412 **Interruptive free aerophones** The air-stream is interrupted periodically
412.1 **Idiophonic interruptive aerophones or reeds** The air-stream is directed against a lamella, setting it in periodic vibration to interrupt the stream intermittently. In this group also belong reeds with a 'cover', i.e. a tube in which the air vibrates only in a secondary sense, not producing the sound but simply adding roundness and timbre to the sound made by the reed's vibration; generally recognizable by the absence of fingerholes *Organ reed stops*
412.11 **Concussion reeds** Two lamellae make a gap which closes periodically during their vibration *A split grass-blade*
412.12 **Percussion reeds** A single lamella strikes against a frame
412.121 **Individual percussion reeds** *Brit. Columbia*
412.122 **Sets of percussion reeds** *The earlier reed stops of organs*
412.13 **Free reeds** The lamella vibrates through a closely-fitting slot
412.131 **(Individual) free reeds** *Single-note motor horn*
412.132 **Sets of free reeds** NB In instruments like the Chinese *sheng* the fingerholes do not serve to modify the pitch and are therefore not equivalent to the fingerholes of other pipes *Reed organ, mouthorgan, accordion*
412.14 **Ribbon reeds** The air-stream is directed against the edge of a stretched band or ribbon. The acoustics of this process has not yet been studied *Brit. Columbia*
* **412.15** **Retreating reeds** Elements naturally or artificially sprung together that separate periodically when blown *Brit. Columbia*
412.2 **Non-idiophonic interruptive instruments** The interruptive agent is not a reed
412.21 **Rotating aerophones** The interruptive agent rotates in its own plane
Sirens, ** whirring disc*
412.22 **Whirling aerophones** The interruptive agent turns on its axis
Bull-roarer, ~~whirring disc~~, ventilating fan
* * The whirring disc rotates in its own plane and does not turn on its axis
413 **Plosive aerophones** The air is made to vibrate by a single density stimulus condensation shock
* **413.1** **Explosive aerophones** The air is forced out *Pop guns*
* **413.2** **Implosive aerophones** The air is forced in *W.Africa, shantu*
42 **Wind instruments proper** The vibrating air is confined within the instrument itself
420 **Edge-tone instruments that are not flutes** *Widgeon whistles*
421 **Edge instruments or flutes** A narrow stream of air is directed against an edge
421.1 **Flutes without duct** The player himself creates a ribbon-shaped stream of air with his lips
421.11 **End-blown flutes** The player blows against the sharp rim at the upper open end of a tube
421.111 **(Single) end-blown flutes**
421.11I.1 **Open single end-blown flutes** The lower end of the flute is open

421.111.11 Without fingerholes *Bengal*
421.111.12 With fingerholes *Almost world-wide*
421.111.2 Stopped single end-blown flutes The lower end of the flute is closed
421.111.21 Without fingerholes *The bore of a key*
* **421.111.211 Used in sets** *Lithuania, S.Africa Venda and others*
421.111.22 With fingerholes *Especially New Guinea*
421.112 Sets of end-blown flutes or panpipes Several end-blown flutes of different pitch are combined to form a single instrument
421.112.1 Open panpipes *** NB** The final '.1' is missing in *GSJ*
421.112.11 Open (raft) panpipes The pipes are tied together in the form of a board, or they are made by drilling tubes in a board *China*
421.112.12 Open bundle (pan-) pipes The pipes are tied together in a round bundle *Solomon Is., New Britain, New Ireland, Admiralty Is.*
* **NB** This is misprinted as 421.112.2 in *GSJ*
421.112.2 Stopped panpipes *Europe, S. America*
421.112.3 Mixed open and stopped panpipes *Solomon Is., S. America*
421.12 Side-blown flutes The player blows against the sharp rim of a hole in the side of the tube
421.121 (Single) side-blown flutes
421.121.1 Open side-blown flutes
421.121.11 Without fingerholes *S. W. Timor*
421.121.12 With fingerholes *European flute*
421.121.2 Partly-stopped side-blown flutes The lower end of the tube is a natural node of the pipe pierced by a small hole *N. W. Borneo*
421.121.3 Stopped side-blown flutes
421.121.31 Without fingerholes
421.121.311 With fixed stopped lower end *Apparently non-existent*
421.121.312 With adjustable stopped lower end (piston flutes) *Malacca, New Guinea*
421.121.32 With fingerholes *E. Bengal, Malacca*
421.122 Sets of side-blown flutes
421.122.1 Sets of open side-blown flutes *Chamber flute orum*
421.122.2 Sets of stopped side-blown flutes *N. W. Brazil (among the Siusi)*
421.13 Vessel flutes (without distinct beak) The body of the pipe is not tubular but vessel-shaped *Brazil (Karaja), Lower Congo (Bafiote)*
* **421.14 Notch flutes** The player blows into a notch at the top of the tube (treat as 421.11)
421.2 Flutes with duct or duct flutes A narrow duct directs the air stream against the sharp edge of a lateral orifice
421.21 Flutes with external duct The duct is outside the wall of the flute; this group includes flutes with the duct chamfered in the wall under a ring-like sleeve and other similar arrangements
421.211 (Single) flutes with external duct
421.211.1 Open flutes with external duct
421.211.11 Without fingerholes *China, Borneo*
421.211.12 With fingerholes *Indonesia*
421.211.2 Partly-stopped flutes with external duct *Malacca*
421.211.3 Stopped flutes with external duct
421.212 Sets of flutes with external duct *Tibet*
421.22 Flutes with internal duct The duct is inside the tube. ~~This group includes flutes with the duct formed by an internal baffle (natural node, block of resin) and an exterior tied-on cover (cane, wood, hide)~~
* I believe these to be different enough that they should have their own number: 421.23
421.221 (Single) flutes with internal duct
421.221.1 Open flutes with internal duct

421.221.11 Without fingerholes *European signalling whistle*
421.221.12 With fingerholes *Recorder*
421.221.2 Partly-stopped flute with internal duct *India and Indonesia*
421.221.3 Stopped flutes with internal duct
421.221.31 Without fingerholes
421.221.311 With fixed stopped lower end *European signalling whistle*
421.221.312 With adjustable stopped lower end *Piston pipes [swannee whistle]*
* **421.221.32 Stopped flutes with internal duct with fingerholes** *Morocco*
421.221.4 Vessel flutes with duct
421.221.41 Without fingerholes *Zoomorphic pottery whistles (Europe, Asia)*
421.221.42 With fingerholes ~~*Ocarina*~~
* **421.221.421 With single fingerhole** *Dog whistles etc*
* **421.221.422 With two or more fingerholes** *Ocarina*
421.222 Sets of flutes with internal duct
421.222.1 Sets of open flutes with internal duct
421.222.11 Without fingerholes *Open flue stops of the organ*
421.222.12 With fingerholes *Double flageolet*
421.222.2 Sets of partly-stopped flutes with internal duct *Rohflöte stops of the organ*
421.222.3 Sets of stopped flutes with internal duct *Stopped flue stops of the organ*
* **421.23 Flutes with internal plus external duct** *American Plains, S.E.Asia, Indonesia*

422 Reedpipes The air-stream has, through means of ~~two~~ lamellae placed at the head of the instrument, intermittent access to the column of air which is to be made to vibrate ***** Better without the number, or 'with one or two'

422.1 Oboes The pipe has a [double] reed of concussion lamellae (usually a flattened stem)
422.11 (Single) oboes
422.111 With cylindrical bore
422.111.1 Without fingerholes *Brit. Columbia*
422.111.2 With fingerholes *Aulos, crumhorn*
422.112 With conical bore *European oboe*
422.12 Sets of oboes
422.121 With cylindrical bore *Double aulos*
422.122 With conical bore *India*

422.2 Clarinets The pipe has a [single] 'reed' consisting of a percussion lamella
422.21 (Single) clarinets
422.211 With cylindrical bore
422.211.1 Without fingerholes *Brit. Columbia*
422.211.2 With fingerholes *European clarinet*
422.212 With conical bore *Saxophone*
422.22 Sets of clarinets*Egypt (zummara)*

422.3 Reedpipes with free reeds The reed vibrates through [at] a closely fitted frame. There must be fingerholes, otherwise the instrument belongs to the free reeds 412.13 *S.E. Asia*

422.31 Single pipes with free reed
422.32 Double pipes with free reeds
422.33 Horns with free reed *Burma*
* **422.4 Dilating reeds** Grass and similar stems with one or more longitudinal slits
* **422.41 Dilating reeds with fingerholes** *Lapp fadno*

423 Trumpets The air-stream passes through the player's vibrating lips, so gaining intermittent access to the air column which is to be made to vibrate

423.1 Natural trumpets Without extra devices to alter pitch
423.11 Conches A conch shell serves as trumpet
423.111 End-blown
423.111.1 Without mouthpiece *India*

423.111.2 With mouthpiece *Japan (rappakai)*
423.112 Side-blown *Oceania*
423.12 Tubular trumpets
423.121 End-blown grumpets The mouth-hole faces the axis of the trumpet
***** I could not bear to correct my favourite misprint
423.121.1 End-blown straight trumpets The tube is neither curved nor folded
423.121.11 Without mouthpiece *Some alphorns*
423.121.12 With mouthpiece *Almost world-wide*
423.121.2 End-blown horns The tube is curved or folded
423.121.21 Without mouthpiece *Asia*
423.121.22 With mouthpiece *Lurs*
423.122 Side-blown trumpets The embouchure is in the side of the tube
423.122.1 Side-blown straight trumpets *S. America*
423.122.2 Side-blown horns *Africa*
423.2 Chromatic trumpets With extra devices to modify the pitch
423.21 Trumpets with fingerholes *Cornetti, key bugles*
* **423.211 With cylinder bore** *Key trumpet*
* **423.212 With [narrow] conical bore** *Cornetti*
* **423.213 With [wider] conical bore** *Key bugles, serpents*
423.22 Slide trumpets The tube can be lengthened by extending a telescopic section of the instrument *European trombone*
423.23 Trumpets with valves The tube is lengthened or shortened by connecting or disconnecting auxiliary lengths of tube *Europe*
423.231 Valve bugles The tube is conical throughout **[*** except for tuning slides]
423.232 Valve horns The tube is predominantly conical
423.233 Valve trumpets The tube is predominantly cylindrical
* These last two distinctions were true in the 19th century but are true no longer, but we all know what is a horn and what is a trumpet, so we can ignore the definitions

Suffixes for use with any division of this class (aerophones):
-6 with air reservoir
-61 with rigid air reservoir
-62 with flexible air reservoir
-7 with fingerhole stopping
-71 with keys
-72 with *Bandmechanik* [presumably a perforated roll or ribbon]
-8 with keyboard
-9 with mechanical drive

* We can cover ‘Natural Trumpets’ that have a fingerhole, such Fijian conches and African side-blown horns, by using the suffix -7.

I would welcome any discussion, debate, dispute, or other feedback.