

EARLY HISTORY & EXAMPLES IN ANTICIPATION LITERATURE

- **ca - 2400 BC** __ (Communication via written documents that an intermediary carries from one person or place to another almost certainly dates back almost to the invention of writing. The development of a formal postal system comes much later, however. The first documented use of an organized courier service for the diffusion of written documents is in Egypt, where Pharaohs used couriers for the diffusion of their decrees in the territory of the State (2400 BC). This practice almost certainly has roots in the much older practice of oral messaging and may have been built on a pre-existing infrastructure. The first credible claim for the development of a real postal system comes from Assyria, but the point of invention remains in question. Other sources claim much earlier dates for an Assyrian postal system, with credit given to Hammurabi (1700 BC) and Saragon II (722 BC). Mail may not have been the primary mission of this postal service, however. The role of the system as an intelligence gathering apparatus is well documented, and the service was (later) called *angariae*, a term that in time turned to indicate a tax system. The Old Testament (Esther, VIII) makes mention of this system: Ahasuerus, king of Medes, used couriers for communicating his decisions.) http://www.wikinfo.org/index.php/Postal_system

- **ca - 1400 BC** __ (Oldest record of writing in China on bones. The oldest known Chinese writing was carved on "oracle bones", bones and turtle shells used for foretelling fate in the Shang Dynasty (about 1600 to 1045 BC).) <http://china.org.cn/english/2003/Jun/66806.htm>

- **ca - 1200 BC** __ (According to Aeschylus, the conquest of the town of Troy was transmitted via torch signals. In Agamemnon, Clytemnestra describes the Progress of the Beacon Fires that carried the Tidings of the Fall of Troy. A watchman, posted for years now at the order of Clytemnestra, sights a torch which signals the fall of Troy :
« GLEAM -- a gleam -- from Ida's height, By the Fire-god sent, it came; From watch to watch it leapt, that light, As a rider rode the flame! It shot through the startled sky, And the torch of that blazing glory Old Lemnos caught on high, On its holy promontory, And sent it on, the jocund sign, To Athos, Mount of Jove divine. Wildly the while, it rose from the isle, So that the might of the journeying Light Skimmed over the back of the gleaming brine! Farther and faster speeds it on, Till the watch that keeps Macistus steep See it burst like a blazing Sun! Doth Macistus sleep On his tower-clad steep? No! rapid and red doth the wild fire sweep; It flashes afar on the wayward stream Of the wild Euripus, the rushing beam! It rouses the light on Messapion's height, And they feed its breath with the withered heath. But it may not stay! And away -- away -- It bounds in its freshening might. ») http://www.poetry-archive.com/a/the_beacon_fires.html

- **ca - 1100 BC** __ (Egyptians use homing pigeons to deliver military information. Homing pigeons are amazing birds whose use by humans has been documented as far back as ancient Egypt, Carthage and Rome. Caesar used them in his defeat of Gaul. Use of pigeons spread to India, China and Greece. In fact, China had a postal service that relied on homing pigeons to carry the mail. The Reuters News Service was created in the nineteenth century and relied upon the use of homing pigeons. Homing pigeons were used in the twentieth century in war, and are still used today to pass military communications, as well as rescue operations. Peter James and Nick Thorpe in "Ancient Inventions" state that pigeons were first domesticated in Sumer (southern Iraq) around 2000 B.C.: "Most likely it was the Sumerians who discovered that a pigeon or dove will unerringly return to its nest, however far and for however long it is separated from its home" (James and Thorpe). But the "first actual records of their use as carrier birds come from Egypt," although the authors here do not specify when this occurred (James and Thorpe). Another account in *The Early History of Data Networks* holds that "in the days of the Pharaohs the Egyptians announced the arrival of important visitors by releasing pigeons from incoming ships," which may have been prevalent as early as 2900 B.C. (Holzmann and Pehrson). Elsewhere, centuries later, it is said that "the outcomes of the Olympic Games in ancient Greece, around 776 B.C., were sent to Athens by pigeons" (Holzmann and Pehrson). [Holzmann, Gerard J. and Björn Pehrson. *The Early History of Data Networks*. California: IEEE Computer Society Press, 1995] [James, Peter and Nick Thorpe. *Ancient Inventions*. New York: Ballantine Books, 1994]) http://cultureandcommunication.org/deadmedia/index.php/Homing_Pigeons

- **ca 1000 BC** __ (Inuksuit are among the most important objects created by the Inuit who were the first people to inhabit portions of Alaska, Arctic Canada, and Greenland. The term *Inuksuk* (the singular of *Inuksuit*) means 'to act in the capacity of a human.' It is an extension of *Inuk*, meaning 'a human being. These stone figures were placed on the temporal and spiritual landscapes. Among many practical functions, they were employed as hunting and navigation aids, coordination points, indicators, and message centers. The Inuit are the descendants of what anthropologists call the Thule culture, who emerged from western Alaska around 1000 AD.) <http://www.arcticinuitart.com/culture/inuk.html>

- **ca - 976 BC** __ The first recorded example of airmail parcel post in history (Nizar Abu Mansur al-Aziz, the caliph (975-996) of North Africa, has cherries grown in Baalbek, Lebanon delivered to him in Cairo, Egypt by 600 homing pigeons each with a small silk bag containing a cherry attached to its leg (James and Thorpe 1994:526,

cited in Sterling & Kadrey 1999, note 04.1). A pigeon can fly 60-100 kms/hr at over distances of up to 800 km (500 mi) or more. It can navigate both during day and night, and feed itself during the travel [PWN 1966b:771, Grolier 1993].) <http://www.ciolek.com/GLOBAL/early.html>

- **ca 900 BC** __ (A postal service is used for governmental purposes in China. It is clear that an organized postal infrastructure is put in place during Qin Dynasty (221 BC-207 BC) and that it is substantially expanded during the subsequent Han Dynasty. The origins of a Chinese mail system may go back to the Zhou Dynasty (1122 BC - 256 BC), when Confucius (551 BC-479 BC) says "news of deeds travels faster than the mail." It may also build on a pre-existing messaging infrastructure started by the Shang Dynasty. Whatever its point of origin, the Chinese Postal Service has clear title to the world's oldest continuously operating mail system. Today's Chinese mail system is continuous with one that was probably formalized under the Qin Dynasty.)

- **ca. 624 BC** __ (It was known to the ancients at least 600 years before Christ, that a piece of amber when excited by rubbing would attract straws, and that a lump of lodestone had the property of drawing iron. A Greek legend tells us that the lodestone was discovered by Magnes, a shepherd who found his crook attracted by the rock. Thales of Miletus attributed the attractive properties of the amber and the lodestone to a soul within them. The name Electricity is derived from ELECTRON, the Greek for amber, and Magnetism from Magnes, the name of the shepherd, or, more likely, from the city of Magnesia, in Lydia, where the stone occurred. These properties of amber and lodestone appear to have been widely known. The Persian name for amber is KAHRUBA, attractor of straws, and that for lodestone AHANG-RUBA attractor of iron. [John Munro 1891]) <http://www.worldwideschool.org/library/books/tech/engineering/HeroesoftheTelegraph/chap1.html>

- **ca 550 BC** __ (The best documented claim (Xenophon) attributes the invention of the postal system to Cyrus the Great (550 BC), while other writers credit his successor Darius I of Persia (521 BC). As recorded by Herodotus and Xenophon, the first regular postal system in the history was established in Iran during the reign of the first king of the Achaemenid (Hakhamaneshi) dynasty, Cyrus the Great, in 6th century BC This communication service was covering the Persian Empire from Europe, Asia Minor, and Egypt to Babylon, Aden, and Arabia to Indian Ocean. The messengers were carrying mail by day and night; the relay stations were built only so far distant from each other so that a horse could run without resting or feeding. Thousands of kilometers roads were built to facilitate the delivery of mail throughout the Persian Empire. ANGARI'A (ἀγγαρεία, Hdt. ἀγγαρήϊον) is a word borrowed from the Persians, signifying a system of posting, which was used among that people, and which, according to Xenophon, was established by Cyrus. Horses were provided, at certain distances, along the principal roads of the empire; so that couriers (ἀγγαροί), who also, of course, relieved one another at certain distances, could proceed without interruption, both night and day, and in all weathers (Herod. VIII.98; III.126; Xen. Cyrop. viii. 6 §17; Suid. s.v.). It may easily be supposed that, if the government arrangements failed in any point, the service of providing horses was made compulsory of individuals; and hence the word came to mean compulsory service in forwarding royal messages; and in this sense it was adopted by the Romans under the empire, and is frequently found in the Roman laws. The Roman angaria, also called angariarum exhibitio or praestatio, included the maintenance and supply, not only of horses, but of ships and messengers, in forwarding both letters and burdens; it is defined as a personale munus; and there was no ground of exemption from it allowed, except by the favour of the emperor (Dig. 50 tit. 4 s18 §§4, 29; tit. 5 s10, 11; Dig. 49 tit. 18 s4 § 1; Cod. Theod. 8 tit. 5; Cod. Justin. 12 tit. 51). [Philip Smith, Univ. of London]. A pony express mail service (chaapar) exists in Persia. Darius initiated an express mail service to allow fast communication within his vast empire. This was achieved by a series of relay riders on horseback. Herodotus, said "nothing, stops these couriers from covering their allotted stages in the quickest possible time - neither snow, rain, heat, nor darkness." On the basis of information reported by the Greek historians Herodotus and Xenophon, the first regular postal service in the world was established in ancient Iran in 6th century BC during the reign of the first king of the Achaemenids, Cyrus the Great (550 BC-529 BC). The service used the system of a messenger (in Persian: Chapaar) or the relay messengers (in Persian: Chapaar-beh-Chaapar). The messengers were riding horses and carrying mails by day and night; the relay stations were built only so far distant from each other so that a horse could run without resting or feeding. The riders would stop at regularly placed Post Houses (in Persian: Chapaar-Khaneh) to get a fresh horse or to pass on their packets of dispatches to another messenger for the remainder of the distance. Herodotus also praised the swift courier posts of ancient Persian Empire.) http://penelope.uchicago.edu/Thayer/E/Roman/Texts/secondary/SMIGRA*/Angaria.html http://www.iranian.ws/cgi-bin/iran_news/exec/view.cgi/13/7579/printer http://members.ozemail.com.au/~ancientpersia/intro_frm.html

- **ca 500 BC** __ (Greeks use smoke signals, mirrors, beacon fires, trumpets and shouting to relay messages. Aeneas Tacitus, a Greek military scientist and cryptographer, invented an optical communication system that combines water and beacon telegraphy. Torches indicated the beginnings and the ends of message transmissions while water jars were used to transmit the messages. These jars had a plugged standard-size hole drilled on the bottom side and were filled with water. As those who sent and those who received the message unplugged the jars simultaneously, the water drained out. Because the transmitted messages corresponded to water levels, the sender indicated by torch signal that the appropriate water level has been reached. It is a disadvantage that the possible messages are restricted to a given code, but as this system was mainly used for military purposes, this was offset by the advantage that it was almost impossible for outsiders to understand these messages unless they possessed the codebook. [World-Information.Org, Unesco]) http://www.smith.edu/hsc/museum/ancient_inventions/decoder2.html

- **ca 350 BC** ___ Water Telegraph (*The first recorded telegraph was built around 350 BC by a Greek named Aeneas. A torch gave the signal for sender and receiver to start water flowing out of out of identically sized vessels. A floating marker, with a series of possible messages, falls with the water. When the desired message lines up with rim, the sender signals again and the receiver stops the water and reads off the message. The Roman historian Polybius (ca. 200-118 BC) says this 'hydraulic telegraph' was used to send military messages from Sicily to Carthage during the First Punic War (264-241 BC). In the year 360, "Aeneas the Tactician" describes in his book, "The Art of Beset", his invention of a hydro-optical telegraph. His basic idea was to store the signals of earlier torch telegraphs so they could be read at a later time. At both telegraph stations equivalent water vessels with taps were posted. With torch signals, orders were given to open and close the taps. This way the level of the water within the vessel sank. In advance there were messages assigned to every level of the water. On the one hand you couldn't send any message you wanted, but on the other hand you could store a message.*) http://science.uniserve.edu.au/school/curric/stage6/phys/communicates/History_section/history_narrative.htm

- **ca 200 BC** ___ (*Human messengers on foot or horseback common in Egypt and China with messenger relay stations built. Sometimes fire messages used from relay station to station instead of humans. [Larry J. Ray]*)

- **ca 62 BC** ___ (*The first best-documented postal service is that of Rome and was created during the time of Augustus Caesar (62 BC-AD 14). The service was called 'cursus publicus' and had light carriages (rhedae) with fast horses. There was also a slower service which had two-wheels carts (birolae) pulled by oxen. Thus the concept of regular and speed post was very much in existence even then. The service was originally for Government correspondence but soon even citizens had access to it. About the creation of the cursus publicus Suetonius (Aug. 49.3) noted: So that he [Augustus] quickly and easily could receive reports of events in every province, he stationed first young men, and later carriages, at points along the military roads. The latter system proved itself more advantageous, because then the same courier could deliver the message to its destination and, if necessary, also personally be questioned. The text states clearly that Augustus' primary concern was the transportation of important messages. Suetonius describes two methods by which messages were transmitted. At first, young men from local communities were posted at points along the viae militares, apparently as a sort of relay system of runners, who passed messages at each station from one to the next. As Suetonius notes, this system had the disadvantage that the courier had no personal knowledge of his messages' content and, therefore, could neither answer questions nor provide supplementary information about conditions or events at the place where the message originated. The system was later changed to include vehicles that could be exchanged at the staging posts. Under the revised system, the same messenger could travel from his point of departure directly to his destination. The cursus publicus was a government transportation system based on obligations placed by the Roman state on private persons. They provided equipment, animals and wagons used by government agents during their travels. In the early empire, compensation had to be paid for this service, but that had fallen into abeyance in late antiquity. The burden of this munus then fell completely on the inhabitants, who also had to maintain the way stations and care for the animals. [Anne Kolb - Transport and Communication in the Roman state]) <http://www.ancientworlds.net/aw/Places/Property/881679>*

- **ca 37** ___ Heliograph (*A device for transmitting messages by reflecting sunlight*) (*first recorded use of mirrors to send messages by Roman Emperor Tiberius. It is a wireless solar telegraph that signals using Morse code flashes of sunlight reflected by a mirror. The flashes are produced by momentarily pivoting the mirror, or by interrupting the beam with a shutter. The heliograph was a simple but highly effective instrument for instantaneous optical communication over 50 km or more. The first recorded use of the heliograph was in 405 BC, when the Ancient Greeks used polished shields to signal in battle. In about 35 AD, the Roman emperor Tiberius, by then very unpopular, ruled his vast empire from a villa on the Isle of Capri. It is thought that he sent coded orders daily by heliograph to the mainland, eight miles away.*) <http://www.smsnet.net/Heliograph>

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- **ca 100** ___ « **The Pneumatics** », Hero (or Heron) of Alexandria (*A collection of around 80 mechanical apparatus, that work with air, steam or hydraulic pressure. This includes a fire extinction apparatus, automata that provide water if a coin is inserted and the first steam engine (Aeolipile). The Heronball, Thermoscope, Syphon, Fountain, and Aeolipile. "The investigation of the properties of Atmospheric Air having been deemed worthy of close attention by the ancient philosophers and mechanists, the former deducing them theoretically, the latter from the action of sensible bodies, we also have thought proper to arrange in order what has been handed down by former writers, and to add thereto our own discoveries : a task from which much advantage will result to those who shall hereafter devote themselves to the study of mathematics. We are further led to write this work from the consideration that it is fitting that the treatment of this subject should correspond with the method given by us in our treatise, in four books, on water-clocks. For, by the union of air, earth, fire and water, and the concurrence of three, or four, elementary principles, various combinations are effected, some of which supply the most pressing wants of human life, while others produce amazement and alarm."* (excerpt of the Preface). Heron of Alexandria, who lived in the first century AD, wrote an extended treatise on Pneumatics, in which he described his use of pneumatic power to control a variety of mechanisms, including automata and whistling birds. It is clear that his birds emitted their tweets by means of air forced through small organ-like pipes, and anyone who has heard the bird sounds in Haydn's Toy Symphony will know that this simple means of sound production can give remarkably

realistic results. But perhaps the most important aspect of the multiple bird automaton is that it laid down a sequence in which the birds would sing, and so it stands as one of the very earliest precursors of what we know nowadays as mechanical music. Heron from Alexandria (Heron Alexandrinus) was a Mathematician, Physicist and Engineer who lived in 10-70 AD but some references consider also 150 AD which is probably wrong, as in one of his works he referred to a recent eclipse which is now thought to have occurred in 13 March 62 AD.) <http://www.history.rochester.edu/steam/hero/index.html> <http://www.mlahanas.de/Greeks/HeronAlexandria.htm>

- **ca 100** __ « **Automaton Theater** », Hero (or Heron) of Alexandria (Heron's work *The Automaton Theater* describes theatrical constructions that move by means of weights on strings wrapped around rotating drums. With this power source, Heron constructed an automatic theater that presented *Nauplius*, a tragic tale set in the period after the Trojan War. As (presumably) amazed playgoers watched, the doors to a miniature theater swung open, and animated figures acted out a series of dramatic events, including the repair of Ajax's ship by nymphs wielding hammers, the Greek fleet sailing the seas accompanied by leaping dolphins, and the final destruction of Ajax by a lightning bolt hurled at him by the goddess Athena. Perhaps inspired by Hephaestus's obedient moving tables, Heron also made wheeled stands and used an ingenious trick to move them, apparently self-animated, around the theater. A weight rested on a hopper-full of grain, which leaked out through a small hole in the bottom. As the weight gradually sank, it pulled a rope wound around an axle of the stand to turn its wheels and make it move. Along with the power of falling weights, these figures used the basic mechanical resources of wheels, pulleys, and levers to create a variety of motion, but there were drawbacks. While a weight resting on slowly leaking grain delivers power over a relatively long period, it is not very compact, or usable on demand. And beyond repetitive actions like hammering, a system based on simple machines gives little scope for flexible and responsive motion. But better techniques to provide and control power came along, although only long after Greek times. The new power source was the coiled metal spring, and the new means of control was clockwork. We do not know who first noted that a flexible piece of metal could store energy, but we use the method daily; for example, in the common safety pin. Early Greek artisans such as Philon and Heron understood that a "springy" material could act as a power source. Philon even designed a crossbow that used bronze springs to fling missiles. But these early springs were too weak to be useful, and it was not until the fifteenth century that good-quality coiled springs came into use. In their time, springs played the role that electrical batteries now do in powering devices. They animated the next wave of artificial beings, once ways were found to control their stored power through their use in clocks. [Sidney Perkowitz - *Digital People: From Bionic Humans to Androids*, 2004]) <http://www.mlahanas.de/Greeks/HeronAlexandria2.htm>

- **ca 150** __ (The Roman smoke signals network consisted of towers within visible range of each other and had a total length of about 4500 kilometers. It was used for military signaling. [World-Information.Org, Unesco])

- **ca 560** __ (Diarmait mac Cerbaill (died c. 565) was King of Tara or High King of Ireland. Diarmait was defeated at the battle of Cúl Dreimne (near Ben Bulbin in modern County Sligo) in 560 or 561. This was the "Battle of the Books", supposedly the result of Diarmait's judgement in a dispute between Columba and Finnian of Moville. Columba, it is said, had secretly copied a book belonging to Finnian, and the matter of ownership of the copy had come to be settled by Diarmait, who adjudged in Finnian's favour, reportedly saying « [t]o every cow its calf and to every book its copy. » Columba sought support from his kinsmen among the Cenél Conaill and the Cenél nEógain of the northern Uí Néill who went to war with Diarmait. This is a late tradition, and annalistic accounts claim that the battle was fought over Diarmait's killing of Diarmait of Curnán, son of Áed mac Echach (d.575), the King of Connacht who was under Columba's protection. (La première dispute connue sur la paternité d'un texte eut lieu aux alentours de 560 entre saint Colomban et saint Finnian. Le premier aurait secrètement copié un psautier que le second lui avait confié. Finnian aurait ainsi contesté à Colomban le droit de faire cette copie, et Diarmaid mac Cearbhaill, haut roi d'Irlande, aurait tranché le cas en faveur de Finnian, bien que la copie elle-même soit le fruit d'un travail de Colomban. L'histoire, sujette à caution, est racontée par Montalembert dans "Les Moines d'Occident, depuis saint Benoît jusqu'à saint Bernard", 1860.) [Byrne, p. 95. A recent work on the battle is Brian Lacey, "The battle of Cúl Dreimne – a reassessment" in the *Journal of the Royal Society of Antiquaries of Ireland*, volume 133 (2003)])

- **ca 750** __ Drum Telegraph (The talking drum is a West African drum whose pitch can be regulated to the extent that it is said the drum "talks". The player puts the drum under one shoulder and beats the instrument with a stick. A talking drum player raises or lowers the pitch by squeezing or releasing the drum's strings with the upper arm. This can produce highly informative sounds to convey complicated messages. The ability to change the drum's pitch is analogous to the language tonality of some African languages. Talking drums are hour-glass shaped with two heads (made from either goat, lizard (iguana), or fish skin) tuned by straps that connect the heads with each other. They are some of the oldest instruments used by west African griots and their history can be traced back to ancient Ghana Empire. The Hausa people (and by influence, the Yoruba people of south western Nigeria and Benin and the Dagomba of northern Ghana) have developed a highly sophisticated genre of griot music centering on the talking drum. Many variants of the talking drum exist, with essentially the same construction mentioned above. Interestingly, this construction is limited to within the contemporary borders of West Africa, with exceptions to this rule being northern Cameroon and western Chad; areas which have shared populations belonging to groups predominant in their bordering West African countries, such as the Kanuri, Djerma, Fulani and Hausa. The explorer and journalist, Stanley, - famous for having found Dr Livingstone - when he was travelling the Congo river (now the River Zaire), was mystified to find that the villagers knew he was coming in advance. Of course the answer to the mystery was the talking drum. The drum is made from a tree trunk, hollowed out and shaped. Depending on how you hit it, different notes are produced which can sound like the local language. A means of communicating ideally suited to a country with dense forest, where one cannot see from one village to the next.

Another very apt name for the drums is the 'Jungle Telegraph'. In areas of forest, which are difficult to see through, the drum telegraphy developed as a means of telecommunication. Above all the natives of Africa, New Guinea and the tropical America introduced drum telegraphy. When scientific expeditions came to the jungle, to explore the primeval forest, they were accompanied by a never-ending roar of signal drums. So the message of their coming and their intention was carried through the woods always a step in advance. In the old China, people used the "Tamtam" as a telecommunication appliance, a big, free hanging, circular plate of metal. The keystroking of this plate created a far-reaching audible tone. « African drum telegraphy is structurally identical not only to the radio but also to the press [...] and also to the Roman circus [...]. However, when using this model one must remember that there is not some mythical principle hidden behind the station broadcasting amphitheatrically – as some communicologists who are autonomizing mass media will have us believe. Rather, the intention behind the broadcasting station is to provoke a particular behavior via irradiation of the message to all accessible recipients." [V. Flusser - *Kommunikologie*, Mannheim: Bollmann, p. 275, 1996]. "Many Bantu languages have drum equivalents, which work like Morse code except that the fundamental message unit is words rather than letters. Drum languages is based on the fact that a key determinant of meaning in Bantu words is high versus low intonation. In the Bantu language Kele, for example, liala means "fiance" if the syllables are intoned low-high-low and "rubbish pit" if pronounced L-L-L. You will appreciate therefore the importance of keeping Bantu intonations straight. "Drum telegraphy is accomplished using tow-tone drums that duplicate these tonal patterns. You are thinking you see a fatal flaw in this approach: like there's only one three-syllable word in Kele that's intoned L-H-L? Of course not. To provide unique tonal combinations common words are replaced by stock phrases. Thus songe (moon, H-H) is distinguished from kaka (fowl, also H-H) by stretching out the former into songe ti tange la manga, "the moon looks down at the earth," H-H-L-H-L-L-L-L, and the latter into kaka olongo la boki-okio, "the fowl, the little one which says 'kiokio,'"H-H-L-H-H-L-L-H-L-H-L. "This procedure gives drum messages a somewhat discursive quality. The English sentence, "The missionary is coming upriver to our village tomorrow. Bring water and firewood to his house," parses out to the drummed equivalent of the following: "White man spirit from the forest/ of the leaf used for roofs/ comes upriver, comes upriver/ when tomorrow has risen/ on high in the sky/ to the town and the village/ of us/ come, come, come/ bring water of lakaila vine/ bring sticks of firewood/ to the house with shingles high above/ of the white man spirit from the forest/ of the leaf used for roofs." Such a message, combined with stop and start signals, repetition, parity bits--wait a sec, wrong technology. Anyway, it might take 10 minutes or more to pound this baby out, and the idea that Johnny Weissmuller could get the drift in two seconds is strictly Hollywood. But eventually the drift could be gotten, and in fairly precise terms. For more, see J.F. Carrington's *Talking Drums of Africa* (1949), from which all the above examples are drawn." [Cecil Adams 1994]. "These people can talk to each other on their drums almost as well as we can send a message in this country by telegraph. They have schools in which to teach their children this drum-beating telegraphy. On this occasion this man said on his drum, "White man come into our country." The natives with us, twelve in number, did not tell me of this till the next day. » [Thomas Lewis Johnson - *Twenty-Eight Years a Slave, or the Story of My Life in Three Continents*, 1909] <http://www.time.com/time/magazine/article/0,9171,773609,00.html> http://www.straightdope.com/classics/a5_158.html <http://docsouth.unc.edu/neh/johnson1/johnson.html> http://www.si.umich.edu/chico/instrument/pages/tlkdrum_gnrl.html

- ca 900 ___ (The earliest medieval accounts of automatic singing birds date from the ninth century. It is said that Leo the Mathematician (or Leo the Philosopher) (b. Sept. 19, 866--d. May 11, 912, Constantinople, the cleverest man in Byzantium in the 9th century, built two automatons for the Emperor Theophilus Ikonomachos which had artificial trees and singing birds. Liudprand, later Bishop of Cremona, was sent on an embassy to Constantinople in 949, and reported on the appearance of just such a mechanism: « In front of the Emperor's throne was set up a tree of gilded bronze, its branches filled with birds, likewise made of bronze gilded over, and these emitted cries appropriate to their different species. Now the Emperor's throne was made in such a cunning manner that at one moment it was down on the ground, while at another it rose higher and was seen to be up in the air. This throne was of immense size and was, as it were, guarded by lions, made either of bronze or wood covered with gold, which struck the ground with their tails and roared with open mouth and quivering tongue » [Bishop Lindprand - *Narrative of the voyage to Constantinople in 949*]. Around 1250 Konrad von Würzburg described an artificial tree with automated birds that could sing and flap their wings (The *New Grove Dictionary of Musical Instruments*, s.v. "bird instruments"). [Joseph Dillon Ford] [Buchner, Alexander. *Mechanical Musical Instruments*. Trans. Iris Urwin. London: Batchworth Press, 1954] http://www.newmusicclassics.com/resume_folder/cela_1995.html

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- 1066 ___ (The town crier's job can be traced back as far as 1066, when news of Britain's first invasion by King William of Normandy [and the defeat and death of Harold] [were] passed from town to town by people specifically employed to call out the king's proclamation.)

- ca 1300 ___ (The alphorn or alpenhorn is a labrophone, consisting of a natural wooden horn of conical bore, having a wooden cup-shaped mouthpiece, used by mountain dwellers in Switzerland and elsewhere. Similar wooden horns were used in most mountainous regions of Europe, from Sweden to the Romanian Carpathians. Documented records of alpine societies using signal horns date back to a 2nd century Roman mosaic fragment in Orbe, depicting a shepherd blowing an instrument shaped like a bucina. The *Acta Sanctorum* report how, in 397 AD, the Val di Non's pagan inhabitants responded to the arrival of three Christian missionaries, by using an unspecified tuba to convene the community, and later sacrificing one of the missionaries, by beating him to death

with axes while sounding the tuba at him. 17th-19th century collections of alpine myths and legends suggest that alphorn-like instruments had frequently been used as signal instruments in village communities since medieval times or earlier, sometimes substituting for the lack of church bells. Surviving artefacts, dating back to as far as ca. AD 1400, include wooden labrophones in their stretched form, like the alphorn, or coiled versions, such as the "Büchel" and the "Allgäuisches Waldhorn" or "Ackerhorn". The alphorn's exact origins remain indeterminate, and the ubiquity of horn-like signal instruments in valleys throughout Europe may indicate a long history of cross influences regarding their construction and usage.) (Le cor des Alpes est un instrument de musique à vent utilisé initialement pour communiquer à distance en montagne. On le trouve surtout en Suisse, mais aussi en Autriche, en Allemagne, en France, en Pologne, en Ukraine et en Roumanie ; son apparition remonte au XIVe siècle.) <http://www.hls-dhs-dss.ch/textes/f/F11890.php>

- **1407** __ Le Droit des Pauvres (An amusement tax, le droit des pauvres, is introduced in France. It persists into the twentieth century, when the rate is 10 per cent of box office revenue.) (La progression de la pauvreté pousse Louis XIV à instituer le 'droit des pauvres' par une ordonnance de 1699. L'idée même de cet impôt remonte très haut, jusqu'à une ordonnance de Charles VI de 1407, mais Louis XIV régleme et organise ce droit. Son taux variera pendant tout le XVIIIème siècle, jusqu'à ne valoir qu'un dixième du prix du billet d'entrée dans les spectacles publics à partir de l'an V et pendant le XIXème siècle. L'idée qui a présidé à sa création est surtout morale : il faut que le plaisir comble et finance le malheur. Cet impôt est alors effectué aux institutions charitables de la commune. [In Dominique Leroy - Histoire des arts du spectacle en France])

- **1455** __ (Publication at Mainz of the Mazarin Bible, the first book printed from moveable type by Johann Gutenberg (c1397-1468).)

- **ca 1500** __ (Around 1500 the Archbishop of Salzburg in Austria ordered a mechanical organ to be built, so that its roar could be heard throughout the city, and thereby act as a signal for the local population at the start and end of each day, and no doubt in time of war as well. Nearly 150 years later a barrel mechanism was added, which now plays music by Leopold Mozart, Joseph Haydn and others, but the original signal organ had no keyboard or barrel. Salzburg was not the only fortified town to have had such an early municipal alarm clock, but the instrument is the earliest to have survived until the present day. In 2002 it was restored and re-opened, to celebrate its five hundredth birthday. The Salzburg organ is located in a small chamber (ringed in the photograph above) which juts out dizzyingly from the high walls of Fortress Salzburg, a vast fortification overlooking the whole city. The roar that it still produces by a thick F major triad at all octaves can be distantly heard on a dedicated website : <http://www.salzstier.com/slideshow/play.htm> [The origins of mechanical music] http://www.pianola.org/history/history_mechanical.cfm

- **1525** __ (The theft of intellectual property was lamented by great authors down the centuries, from Plato (who was furious that his dialogues were being pirated in Sicily) to Martin Luther (whose printer in 1525 was able to publish an unfinished draft of the Postillae which had been removed from Luther's workroom. [David Sutton - International Perspectives on Archival Copyright, 2004]) (Luther proteste pour réclamer la protection de ses droits, en 1525, en accusant les imprimeurs de piller et voler publiquement : « J'ai écrit les Postillae depuis le jour des rois jusqu'à Pâques, et voilà que le compositeur qui s'engraisse de mes sueurs vole mon manuscrit avant que j'aie fini et va le faire imprimer ailleurs pour ruiner ma dépense et mon travail » [E. Laboulaye et G. Guiffrey, La propriété littéraire au XVIIe siècle, Librairie de L. Hachette, Paris, 1859, p. VII-VIII, cité par Alain Viala, Naissance de l'écrivain, Les éditions de Minuit, Paris, 1985, p. 96.]. [Anne Latournerie, Petite histoire des batailles du droit d'auteur, Multitudes n°5, May 2001]) <http://multitudes.samizdat.net/spip.php?article168> http://www.wien2004.ica.org/imagesUpload/pres_254_SUTTON_C-USA%20ILL%2001.pdf?PHPSESSID=4fd5aa626c09bc01c5e4bdb09429a6

- **1532** __ « **Le Quart Livre – Les Paroles Gelées** » (Frozen Words), Rabelais (« How among the frozen words Pantagruel found some odd ones. The skipper made answer: Be not afraid, my lord; we are on the confines of the Frozen Sea, on which, about the beginning of last winter, happened a great and bloody fight between the Arimaspians and the Nephelibates. Then the words and cries of men and women, the hacking, slashing, and hewing of battle-axes, the shocking, knocking, and jolting of armours and harnesses, the neighing of horses, and all other martial din and noise, froze in the air; and now, the rigour of the winter being over, by the succeeding serenity and warmth of the weather they melt and are heard. By jingo, quoth Panurge, the man talks somewhat like. I believe him. But couldn't we see some of 'em? I think I have read that, on the edge of the mountain on which Moses received the Judaic law, the people saw the voices sensibly. Here, here, said Pantagruel, here are some that are not yet thawed. He then threw us on the deck whole handfuls of frozen words, which seemed to us like your rough sugar-plums, of many colours, like those used in heraldry; some words gules (this means also jests and merry sayings), some vert, some azure, some black, some or (this means also fair words); and when we had somewhat warmed them between our hands, they melted like snow, and we really heard them, but could not understand them, for it was a barbarous gibberish. » « En pleine mer nous banquetant, grignotant, devisant et faisant beaux et courts discours, Pantagruel se leva et tint en pieds pour découvrir l'environ. Puis nous dit: "Compagnons, oyez vous rien ? Me semble que j'ouïs quelques gens parlant en l'air, je n'y vois toutefois personne. Ecoutez." A son commandement nous fûmes tous attentifs, et à pleines oreilles humions l'air, comme belles huitres en écaille, pour entendre si voix ou son aucun y serait épars (.....) "Seigneur, de rien ne vous effrayez ! "dit le pilote. "Ici est le confin de la mer Glaciale, sur laquelle fut, au commencement de l'hiver dernier passé, grosse et félonne bataille entre les Arismapiens et les Nephelibares. Lors gelèrent en l'air les paroles et cris des hommes et femmes, les chaplis des masses, les hurrys des harnais, des bardes, des hennissements des chevaux et tout autre effroi de combat. A cette heure, la rigueur de l'hiver passée, advenant la sérénité et