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THE CHURCH ORGAN- ITS EVOLUTION-  
SOME FAMOUS INSTRUMENTS.

There is probably no instrument which has so engrossed the public attention, as well as Musicians generally, as the organ, embodying in its completeness almost all the principal effects obtained from band or orchestra in solo as well as ensemble playing, even surpassing these in some respects, and as capable of the most delicate pianissimo as the thundering forte.

"The Ancient Organ, Anterior to the Invention  
of the Key-board."

It is of much importance to the history of an art that the origin, etymology, and primitive acceptance of its terms should be minutely traced. The extended use of the word ORGANUM throughout the middle ages, has given rise to much confusion. It is, however, perfectly clear, to those who have investigated the subject, that the Greeks understood by the word ORGANON, and the Romans by their ORGANUM, not an Organ in our sense of the term, but an instrument of any kind; applying the expression, however, more particularly to musical instruments.

The Organ (ougab) mentioned in Genesis (chap. IV, V.21) certainly little resembled the modern instrument of that name, although it may be regarded as furnishing the first hint. It was probably a series of reeds, of unequal length and thickness, joined together; being similar to the pipe of Pan among the Greeks, or that simple instrument called a "MOUTH-ORGAN", which is still in common use in the Island of New Amsterdam, in the South Seas, and also in different parts of Asia. The classical ancients ascribe its invention to Pan, the great sylvan god; and, accordingly, he was usually figured with the instrument in his hands. The fable states that he formed it of reeds that grew by the river, and

caused it to produce agreeable sounds, while his goats were skipping around him, and feeding on the banks. This shows that it was regarded as properly a sylvan and pastoral instrument; and so it seems to be mentioned by Job (chap. XXI, v. 11, 12)

The Greek and Latin shepherds made this primitive instrument of strong reeds, or some other suitable material. It originally consisted of seven or eight reeds of progressive lengths fastened together with wax. This number was afterwards extended to ten or twelve, and was so described by Virgil, and the use of it by Lucretius, lib. V. The syrinx, or pipe of Pan, by its form and arrangement, may be regarded as the first kind of Organ building; for it consisted of a number of pipes placed together in ranks, according to their succession of tones, and sounded by wind.

Among the Cilician antiquities discovered in Syria is the portion of a figure playing upon a musical instrument of singular interest, as, it forms a connecting link between the pipes of Pan and the organ. This instrument consists of a vertical row of pipes inserted into a small air-chest, which appears inflated in the middle part. The right hand is operating upon it with a kind of cushion or compress, by which the performer forces the air into the pipes, and which he seems to apply to different parts of the instrument at will. The left hand was employed in playing it, but we are ignorant as to the exact manner of admitting the air to the different pipes. This curious relic may be looked upon as the earliest attempt to combine the pneumatic chest with the Pandean Organ, which still retains its place on the breast of the player, though he no longer operates upon it with his mouth.

Another step was the invention of a wooden box, the top of which was bored with just so many holes as there were pipes to stand on it. In these they now placed the pipes in the same order as they occupied in the Pan-pipes. From the chest (the modern

"wind chest") proceeded a small reed (now the "wind-trunk"), into which they blew with the mouth. Now, in order to prevent the simultaneous intonation of all the pipes, a slider (now called the "valve") was placed under the aperture of each pipe, which either opened or stopped the entrance of the wind into the pipes. The slides stood in an inclined position, and, in order to open them, levers were added, which were connected with the slides by cords or strings (the origin of the "pull downs"). A further increase of the number of pipes at length caused an enlargement of the pipe-chest (the modern wind-chest); consequently human breath was no longer sufficient to supply the instrument, and then a more suitable contrivance for the production of wind was devised. Thus we have a new class of instrument called by the Romans "Tibia Utricularis". Virgil has an elegant passage, in which he describes the shepherd Tonus playing upon the "Tibia Utricularis". This instrument appears to be nothing more than the origin of the bagpipe. It consists of pipes pierced with lateral holes, and an inflating pipe, which the performer applied to his mouth to fill the leathern bag with wind. The application of the inflated tube, it is evident, related only to the smaller instruments, the larger ones were supplied with wind by the compression of the leathern bag or bellows. This contrivance proved of so much advantage to the improving instrument, that, in order to obtain a more powerful tone, a second row of pipes of the same pitch was added to the former.

The pipes having been thus increased and enlarged, and the box widened, the next improvement was the enlargement of the wind-tube (trunk). The leathern bag being insufficient to supply the proper quantity of wind required for the enlarged organ, this was remedied by the invention of "bellows", yielding a continuous supply to the leathern bag, which, from this time, served the office of our modern "wind-chest".

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From the progressive inventions here recorded, it will be observed that many portions of the modern organ were already to be met with in the instruments of the ancients, in a more or less complete state. The invention of the organ may be assigned to this period, though no precise date can be given; thus much can be stated with certainty, that all these inventions date from a period before the birth of Christ.

Vitruvius, in his celebrated work on Architecture, has left us a curious chapter on the "hydraulic" or "water organ", which, from its complicated character, has much puzzled investigators. The bellows of the first organs were very small, and so imperfectly constructed, that they could not supply a steady wind; the organ in consequence did not produce a uniform tone. Thus, the improvement of the wind apparatus, was not seriously thought of, and the result was the invention of the "water-organ", the water being used in such a manner as to counter-balance the hitherto variable pressure. From the description given by Vitruvius, it seems that the water which forced the air into the pipes was pumped by men. Indeed, it has been much disputed whether the instrument was played with "fingers", by means of levers or "Keys". The latter was impossible as they were not invented until about one thousand years afterwards. Yet, the description of the "hydraulicon" by Claudian seems such a one as would suit a modern organ, only blown by the aid of water. The English translation by Dr. Busby being:-

"With flying fingers, as they lightsome bound,  
From brazen tubes he draws the pealing sound.  
Unnumbered notes the captive ear surprise,  
And swell and thunder as his art he plies:  
The beamy bar he heaves; the waters wake!  
And liquid lapses liquid music make."

Athenaeus, who flourished in the third century, has left

us an account of the "hydraulic-organ", which is probably the most ancient and authentic extant. He tells us that it was invented, in the time of the second Ptolemy Euergetes, by Ctesibius, a native of Alexandria (B. C. 200), and by profession a barber; or rather that it was improved by him, for Plato furnished the first idea of the "hydraulic-organ", by inventing a night clock, which was a "clepsydra", or water-clock, that played upon flutes the hours of the night at a time when they could not be seen on the index.

Hitherto we have been obliged to rely on Vitruvius for our knowledge of the ancient organ, but we have now an independent authority in one, Hero of Alexandria, supposed to have been a pupil of Ctesibius, whose interesting treatise on pneumatics has been lately discovered. The work of Hero was unknown to Vitruvius, and both describe, with considerable differences, the construction of the hydraulic and of the pneumatic organ.

The mechanical operation of the "water-organ", as we have said, is scarcely intelligible; this much, however, is certain, that the "hydraulicon" was provided with pipes and a wind-chest, and registered like the wind-organ. The water gave the wind, by means of its counter-pressure, equality and power. Ctesibius' object was "to employ a row of pipes of great size, and capable of emitting the most fanciful, as well as the softest sounds". He is also said to have invented, or perfected, the perforated slide, by which means he was enabled to open and shut the mouths of the pipes with greater facility.

Instruments of the "hydraulic" kind were made of different sizes, and in different forms. Athenæus, in his chapter on musical instruments, refers to a water-organ small enough to be transported from place to place. A representation of this instrument is rudely indicated on a contorniate coin of the Emperor Nero. It is a medal of Valentinian, showing an organ of eight pipes placed

upon a round pedestal. No performer or mode of performing appears; but two figures, one on each side, are engaged in pumping the water by which it is worked.

Tertullian, the patriarch, who declares Ctesibius, of Alexandria, to be the inventor, and Archimedes the improver of the water-organ, expresses himself in the following extravagant terms of eulogy:-

"Observe the extraordinary genius of Archimedes: I mean the water-organ; so many members, so many parts, so many joinings, so many roads or passages for the voices, such a compendium of sounds, such an intercourse of modes, such troops of tibiae, and all composing one great whole! The spirit or air which is breathed out from this engine of water is administered through the parts, solid in substance, but divided in operation."

The "hydraulic-organ" was occasionally used down to a comparatively late period. In the year 323, a certain Venetian called Gregorius, constructed an hydraulic-organ for Louis the Pious, at Aix-la-Chapelle, and that after the manner of the ancients

Dom Bedos, an industrious Benedictine monk, who wrote, about the middle of the eighteenth century, a voluminous work, entitled "L'Art des Facteur des Orgues", cites a very curious passage from the Chronicle of William of Malmesbury, which is thus translated. Speaking of Pope Silvester II. (who died in 1003), he says "In the church of Rheims are still extant (A. D. 1123), as proofs of his science, a clock constructed on mechanical principles; and an hydraulic-organ, in which the air, escaping in a surprising manner, by the force of heated water, fills the cavity of the instrument, and the brazen pipes emit modulated tones through the multifarious apertures."

The various contrivances to introduce the wind into the pipes by means of water were not found to be successful, in spite

of their seeming superiorities. A return was therefore made to the ancient bellows filled by manual labor. The Emperor Julian, (who died A. D. 363) is the reputed author of a Greek enigmatical epigram the solution of which is evidently the "pneumatic-organ". The literal translation being the following:-

"I see a species of reeds: surely from another and a brazen soil have they quickly sprung-rude. Nor are they agitated by our winds, but a blast rushing forth from a cavern of bull's hide makes its way from below the root of reeds with many openings; and a highly-gifted man, with nimble fingers, handles the yielding rods of the pipes, while they, softly bounding, press out a sound."

Another curious description of the pneumatic-organ is given by Cassiodorus, who flourished under King Vitigas, the Goth, A. D. 514, in his Commentary on the 150th Psalm. "The Organ", he says, "is an instrument composed of divers pipes, former into a kind of tower, which, by means of bellows, is made to produce a loud sound; and, in order to express agreeable melodies, there are, in the inside, movements made of wood, that are pressed down by the fingers of the player, which produce the most pleasing and brilliant tones".

The "Organ" was early used in the public service of the church. According to Platina the organ was first used for religious worship by Pope Vitalian 1. A. D. 666; but Julius, a Spanish bishop A. D. 450, tells us that it was in common use in the Spanish Churches at least 200 years before Vitalian lived. The use of instruments in churches dated from a period much earlier. St. Ambrose used instruments with the public service in the cathedral of Milan and this became a general custom in other churches. If the testimony of Justin Martyr can be relied upon, we may say that instrumental music in churches was known at least 200 years before the time of St. Ambrose.



It was some time before organs became common in the churches of Europe. Pepin, the father of Charlemagne, King of the Franks, an ardent worshipper of God, was the first to introduce singing and the ceremonies of the Romish Church into France. He quickly saw that an organ was necessary, both as an aid to devotion, and as a proper support to the choir. The instrument being unknown at that time both in France and Germany, this King applied to the Emperor Constantine, requesting that he forward an instrument to France, which request was complied with in the year 757, and a great organ with leaden pipes, was placed in the church of St. Cornelle, at Compiègne.

French mechanics were eager to equal these instruments of foreign make, and so successful were they, that, in the ninth century the best organs were made in France.

The Organ came into use in England shortly after this period, they were constructed by English artists, with pipes of copper fixed in gilt frames. St. Dunstan, in the reign of Edgar, erected an organ, the pipes of which were made of brass. William of Malmesbury mentions this instrument and also had an organ erected in the abbey church of Glastonbury.

In the monastic church of Winchester was a large organ built about the close of the tenth century, by order of Bishop Elphege. The following metrical translation by Mason refers to this monster instrument, which was described by the monk Wulston.

\*Twelve pair of bellows, ranged in stated row,  
 Are joined above and fourteen more below;  
 These the full force of seventy men require,  
 Who ceaseless toil, and plenteously perspire,  
 Each aiding each, till all the wind be prest  
 In the close confines of the incumbent chest,  
 On which four hundred pipes in order rise