

## Mechanical Organs\*

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*This article was taken from the weekly journal "Le monde illustré" [The illustrated world] from 11th November 1899. It's very informative, and explains to the reader the commercial benefits of these instruments, their evolution from pinned cylinder to perforated cardboard, and enlarges on the manufacture of fairground rides.*

At all times, music has played its role in open air parades, and its spectacular splendor is really necessary to keep the attention of the onlookers during the more or less eloquent talks that are dished up by buffoons with great enthusiasm. But like everywhere else, times have changed. Where are the musicians dressed in scarlet of the old days, blowing on their dented brass instruments till they are out of breath and torturing your ears with savage and off key chords. Long before motorized vehicles, automatic music has since long made disappear these primitive artists.

Barrel organs (apologies—mechanical organs) show with pride their painted and gilded façades, embellished with colorful figures, full of horns of threatening trumpets, and today even a minor show mechanical Organs

The reason for it is quite simple. Although the price of large instruments can often be quite high, the price of one of these is nothing compared to the costs of an orchestra, even the simplest one can think of. Their magnificent sound carries far, and even though the nuances and variation sometimes leave a bit to be desired, at least it always plays right, which certainly has to be taken into consideration.

Moreover, the developments in this field are remarkable. Thanks to new perfections, the repertoire of the instru-

ments offers endless variation: fantasies, overtures, and dance tunes or opera arias—these days, the mechanical organ plays them all with equal pleasure.

The manufacture of these instruments certainly is a Parisian industry. A handful of firms, located near the Place du Trône, have a monopoly in this field and export their products, not only in France, but even to the USA.

There's nothing more interesting than a visit to one of these enormous factories, comprising numerous workmen and constructing down to the smallest detail these "appliances," which are far more complicated than one might think at first sight. In former years, people already have

built mechanical organs—albeit exceptionally and out of curiosity—that were not less complicated or perfect than even the best instruments of our days.

But all these instruments, even those that our manufacturers built yesterday, were cylinder instruments. The main component of their mechanism was a bulky wooden cylinder, full of pins of various forms which seem to have

been inserted randomly on its surface. The mechanism (which is set into action by the handle of the instrument) not only operate the bellows which provide air allowing the pipes to sound, but also slowly rotates this cylinder on its axis. To each pipe corresponds a valve which, when lifted, allow the flow of compressed air that is necessary to produce the sound. These valves are activated by a series of small levers of which the tips almost touch the cylinder. When one of the pins now "brushes" one of these levers, the lever is immediately lifted; the corresponding valve opens and the pipe sounds as long as the pin and the lever remain in contact. Also, an additional mechanism slightly shifts the cylinder on its axis, providing new combinations, and this allows five or six tunes to be marked on a single cylinder.



Figure 1. The sculpting studio.

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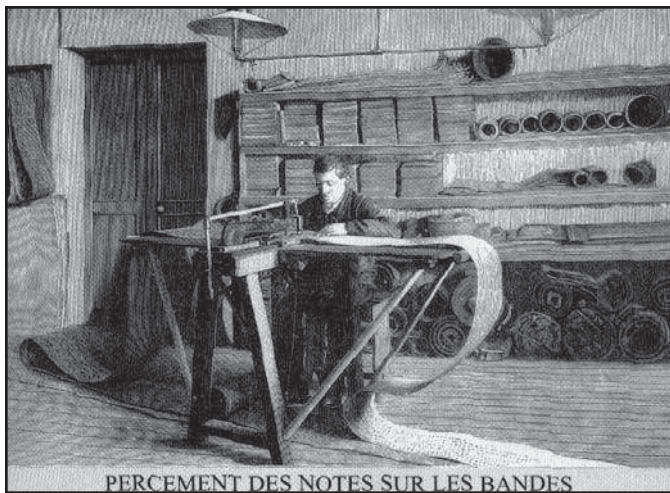


Figure 2. Punching of notes into strips.

Nothing is more fascinating than the job of those who are charged with the pinning of the cylinders. Nothing is more meticulous or demanding either, because rigorous precision is absolutely required. A pin in a wrong place, inserted too deep, or not deep enough, would inevitably result in a dissonance. But the skills of the artists entrusted with this task are such that only rarely they make a mistake. This is true of the man who is responsible for marking by pencil the places of the pins on the cylinder, based on piece of music which he has in front of him, but also of the man who has to place the pins on these indicators, using special pincers and an very varied assortment of brass pins, in all sorts of shapes and sizes.

The cylinder organ is still being used today and many showmen don't own any other type, but hardly any of this



Figure 3. Pinning of notes onto a cylinder.

type are still being built. This system has many drawbacks. Only a very limited number of tunes can be played; if one wants to bring variation into his repertoire, he has to purchase new cylinders at great expense, and the low portability of these materials is highly inconvenient. Being obliged to move from place to place, the everyday clients of the manufac-

turers of cylinder organs don't want to drag along impractical stuff. Also, since the public doesn't want to hear the same tunes over and over again, all stops had to be pulled out to find another solution for this problem.

About sixty years ago, the instrument builder Debain thought about replacing the cylinders by short planchettes pinned in the same way and used in a similar way. This system, later on improved by Thibouville, the inventor of the pianista, ended in perforated cardboard which is used today.

Long strips of cardboard, folded like the pages of a book, are perforated with holes of various dimensions based on the notes of the tunes. These strips unfold continuously and during their movement, they slide onto a key frame, consisting of small, movable and very delicate pointed keys, which are placed alongside one of the large sides of the organ. Each of these keys operates the valve of one pipe; there are as many valves as there are pipes in the instrument. As long as the cardboard is on the key frame, the keys are pressed down, and the valves are closed. But when there's a hole in the cardboard, the key can pop up, and the corresponding pipe sounds immediately.

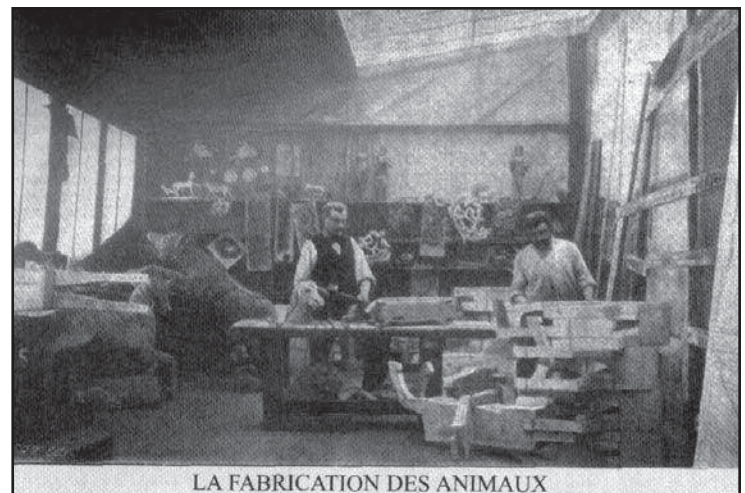


Figure 4. The manufacture of animals.

Every manufacturer constructs variations on this system, but the principle remains the same. The advantages are clear enough. No more costly and inconvenient cylinders.

They have been replaced by cardboard books, which in their whole are not more voluminous than a book of normal dimensions. Each book contains one tune; one can have as many as desired, so he can vary the repertoire of his instruments endlessly. Depending on the type of organ, the dimensions of the books change, which is obvious, as each instrument has a specific number of pipes? One organ can have 48 keys; others have 52, 67, and 83. Rarely more than 83 keys are used, not because manufacturers can't create larger instruments, but because the cardboard books, during their constant movement, would risk tearing apart. Moreover, those large organs with 105 or more keys are too bulky to be practical.



The cardboard is perforated by means of a special device, a kind of punch that faithfully follows the indications applied by the person who marks the tune. In addition, this system allows *rallentandos*, *accelerandos*, and all the tempo variations of expressive music. It suffices to lengthen the subdivision of a book (which represents one measure) by a small amount so it differs slightly from the basic subdivision, to achieve this effect. The markers use all kinds of such “tricks:” lengthening of some notes, shortening others, etc. These allow a much more refined performance than the all-mechanical one of cylinder organs. The main manufacturers don’t limit themselves to the construction of the mechanical and musical parts of these instruments. Even the smallest details of the decoration are being made in their workshops.

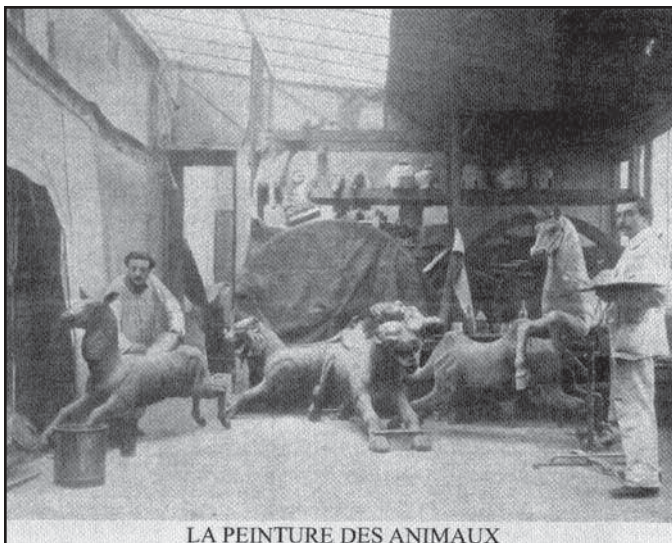


Figure 5. The painting of the animals.

Sculptors and painters make those automatic figures that seem to indicate the beat or to waltz to the music.

Some manufacturers have even added to their business the construction of fairground carousels, which they deliver, complete with an organ that animates and leads them.

It’s also by means of air, accumulated in the bellows of the instrument, that the figures (Lohengrin or Cyrano de Bergerac, depending on what’s in vogue) are being moved. The same “power source” operates the percussion, triangle, snare drum, cymbals, and bass drum—indispensable embellishments of fairground music.

The price of these organs is relatively moderate. One such firm, in the rue de la Vége<sup>1</sup>, which mainly targets the cheaper market, builds complete organs with 45 up to 83 keys, with trumpets and percussion, from 1.500 up to 5.000 francs. If in some cases the price is higher, it is due to the desire of the buyer for an exceptionally complicated and rich exterior decoration.

The editor wishes to thank Björn Isebaert for the translation of this informative, historic document.

The cardboard books are sold per metre. A normal piece of music requires about 15 meters of cardboard, an overture about thirty, and even 60 meters and more are possible. Depending of the size of the organ, the price per metre varies from 2 francs up to 3.50. Therefore it is possible to put together a very varied repertoire at a low cost.

A small orchestra with some musicians, even when very mediocre, would cost 25 to 30 francs a day—so it’s easy to see what profits the owners of fairground spectacles gain by the purchase of a nice organ.

Profits, elegance, and convenience: these are the main advantages of a mechanical organ. Even if it sometimes leaves to be desired with regard to expression “gentleness,” these imperfections can easily be overlooked, in favor of its good qualities. It never complains and is always ready to play: the steam engine of the ride or stand will be used to bring it into action at the first signal, and all night long; it plays its repertoire tirelessly into the distance, with an undisturbed accuracy and certainty. This obedient servant will never claim the right to have a rest for a single moment.

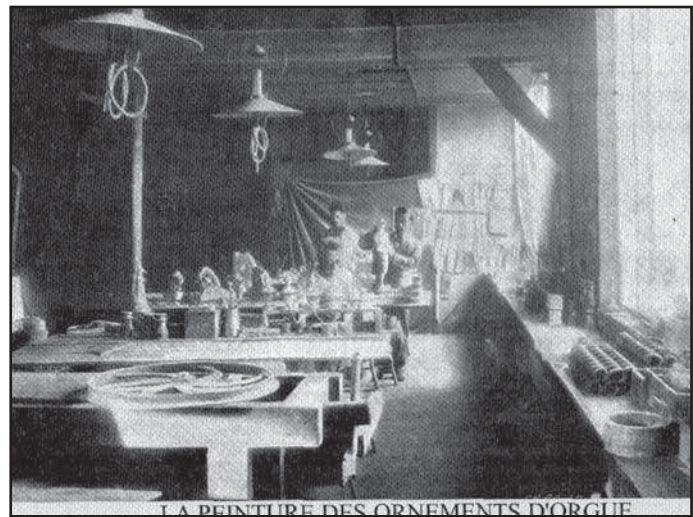


Figure 6. The painting of organ ornaments.

To a certain extent, the instrument has also helped to popularize good music and has contributed to improve the taste of the masses. Instead of a cacophony—in former times heard too often—now resound, thanks to the organ, the harmonies of the great masters (sometimes slightly violated, but . . . only slightly); and the crowd gathering around the melodious instrument testifies by its enthusiasm to its understanding of the importance of the progress realized by the ingenious machine.

1. This address matches with the second address of the organ and fairground rides manufacturer Alexandre Gasparini.