JOURNAL OF THE MUSICAL BOX SOCIETY OF GREAT BRITAIN

THE MUSIC BOX

a magazine of mechanical music

Vol. 4 No. 2

Keith Harding

93 HORNSEY
ROAD,
LONDON, N.7

MORE THAN A SHOP

Books · Materials · Spares · Repairs ·

A CENTRE FOR MUSICAL BOX ENTHUSIASTS

Tel: 01-607-6181 or 3761 Open: 10a.m.to 6p.m.

THE MUSIC BOX

THE JOURNAL OF THE MUSICAL BOX SOCIETY OF GREAT BRITAIN

Vol. 4 Number 2 SUMMER 1969

CONTENTS

Published by

The Musical Box Society of Great Britain.

11, Devonshire Place, Wimpole Street,

LONDON, W. 1.

Hon. Editor: Arthur W.J.G. Ord-Hume.

The Editor writes:

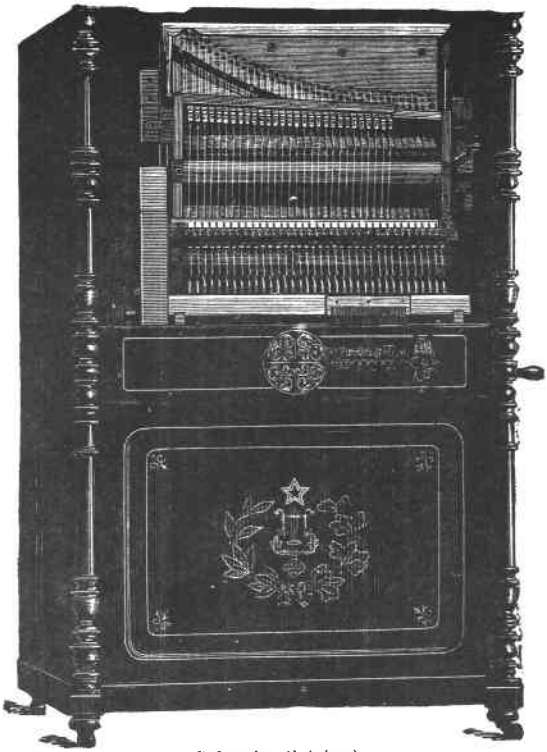
It takes a strangely insensitive person not to have been intensely awed by the events which have taken place in the history of the world since last I wrote this column. Something has happened which marks a watershed in our history. Man has been to the Moon and left his mark. The romance and mythology of our nearest heavenly body - even so a mighty step out and beyond - has been crunched up into electronic pulses, digits, magnetic tape and film emulsion. Enquiring man, long mystified by lunar phenomena, suddenly has the first positive link to the answer programme.

An age of progress is an age of wonder and perhaps we can identify our feelings during that historic week in July with the excitement which filled the English during the heydays of the British Empire as news of further discovery and exploration reached London. Or the wonders of technological achievement which were displayed in the Crystal Palace in 1851. Or the sense of well-being which the Americans experienced in the frontier-extending prelude to the foundation of the United States.

But a progressive age is often a materialistic one: one in which history and even heritage and past achievements are overtly palled into insignificance, obsolescence and valuelessness. The mass of anythingarians, spurred on by the heat of the moment, allow themselves to be culled further from the realms of the aesthetic. This is nothing new - it is, ironically, symptomatic of most civilisations.

This is why mechanical musical instruments and automata become rarer as the years go by. Only by the nurtured spread of a wider understanding of these fine pieces can their future be at least in part guaranteed. We have a responsibility to future generations to preserve and restore. More than ever before, we need a down-to-earth attitude if the musical box is to play for another hundred years.

ARTHUR W.J.G. ORD-HUME



Daimonion (Δαίμόνιον).

Das neueste und epochemachende Erzeugniß auf dem Gebiete der mechanischen Musikwerke ist unstreitig das

Daimonion

(*Δαιμόνιον*).

Dasselbe stellt Alles was bisher auf dem Gebiete der Drehpianos geleistet wurde, vollständig in den Schatten. Die Ausstattung des Instrumentes ist eine hochelegante, die Mechanik so sauber und solid gearbeitet, wie bei dem theuersten Salonflügel. Das Instrument hat

vollständigen Eisenrahmen und widerstent jedem Witterungswechsel.

Reparaturen sind fast gänzlich ausgeschlossen.

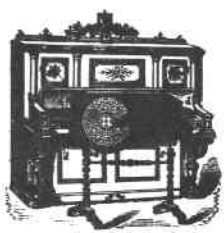
Die Tonfülle ist geradezu großartig und befriedigt auch den verwöhntesten Musikliebhaber. Es ersetzt vollkommen ein Klavier mit Streichinstrumenten-Begleitung. Zum Spielen werden die uns patentirten kreisförmigen Notenscheiben benutzt. Das Repertoir ist außerordentlich reichhaltig und wird täglich vermehrt. Bestellungen bitten wir möglichst frühzeitig zu machen, damit die Lieferung rechtzeitig geschehen kann.

Orchestrionettes.

mit endlosen, handförmigen Noten zu spielen.

Non plus ultra,

mit und ohne Deckel, in verbesserter Construction



Außerdem empfehlen wir:

Klavier-Automaten

in vorzüglich sauberer Arbeit.

Aristonettes,

10tönig.

Preis-Verzeichnisse u. Noten-Cataloge stehen zu Diensten.

Fabrik Leipziger Musikwerke

vorm. Paul Ehrlich & Co. zu Gohlis bei Leipzig.

From "Weltadressbuch der Musikindustrie" by Paul de Wit, Leipzig, 1903.

Mechanics' Magazine,

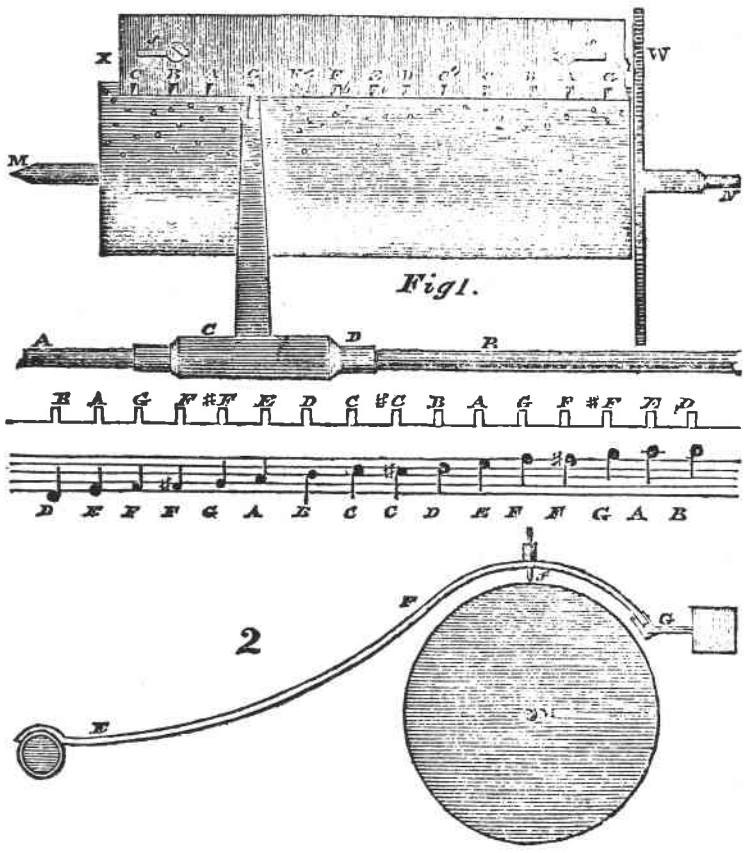
MUSEUM, REGISTER, JOURNAL, AND GAZETTE.

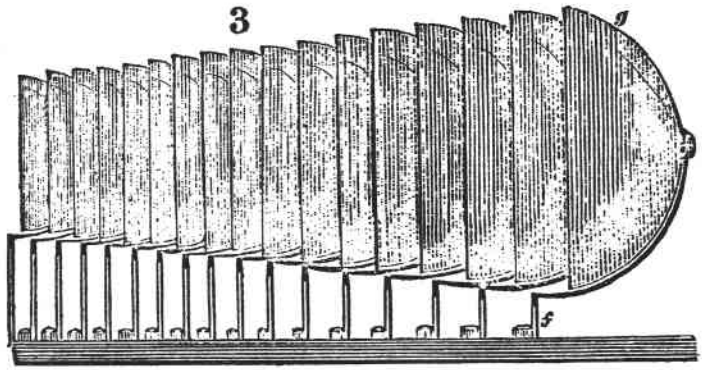
No. 212.] SATURDAY, SEPTEMBER 15, 1827. [Price 3*d*.

" Orpheus could lead the savage race,
And trees, uprooted, left their place,
Sequacious of the lyre:
But bright Cecilia raised the wonder higher,
When to her Organ vocal breath was given;
An angel heard, and straight appeared,
Mistaking earth for heaven."

DRYDEN.

APPARATUS FOR PRICKING MUSIC ON CLOCK BARRELS.





Sir,—You would greatly oblige several horologists in this part of the country, and, I am convinced, your ingenious readers generally, if you would procure for them some information as to the best mode of pricking music on clock barrels. We are aware of several plans for this purpose, but of none which is not extremely tedious and liable to error. Soliciting your early attention to this request, we remain,

Sir, your obliged Servants,
M. D.
A. A. F.

Bolton, 3d August, 1827.

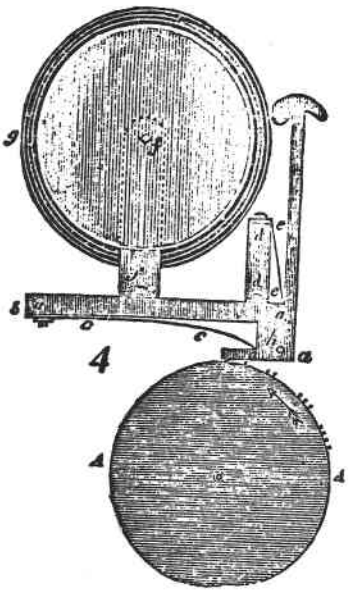
We are not acquainted with the method adopted by those workmen in London, who practise the pricking of music on clock barrels; and should be happy if any of them would favour us with an account of it, that we might make it more generally known.

We find, however, in the excellent "Treatise on Clock and Watch Making," lately published by Mr. Thomas Reid, of Edinburgh, a description of an apparatus for this purpose, which appears to us so complete, as to leave little to be desired; and this description we shall therefore extract, for the benefit of our Bolton friends, and our readers in general. Mr. Reid says that he could, by means of it, "lay on a tune with the greatest accuracy and expedition, in nearly ten minutes." Like other country watchmakers, he had experienced the imperfections of the ordinary methods of pricking, and was hence led to the invention of the improved apparatus, which he thus describes:—

Mr Reid's Apparatus for Pricking Clock Barrels.

Having a good strong turn-bench, such as those used by clockmakers for their larger sort of work, let supports be attached to the standards or heads of it, on each side; to the supports, on the side nearest the workmen, let there be fixed a straight cylindrical rod A B, fig. 1, about 10 or 12 inches long, and a quarter or even three-tenths of an inch in diameter. A spring socket C D must be made for this rod, to slide easily and steadily along it, somewhat like the socket which slides on the upright stalk or rod of a watchmaker's glass stand. In the thick and strong part of this socket, E, is fixed a steel arm F, bent into a curve, which lies over and above the music barrel, when in the turn-bench, as shown in fig. 2, at E F G. The steel rod A B may be placed at pleasure at any distance from the barrel, about an inch or rather more, and should stand parallel to the barrel arbor M N, and nearly in the same plane with it, but rather a little above this than otherwise. On the outer end of the curved arm is fixed a flat piece of steel G, a little more than half an inch long, in breadth not quite so much, and about one tenth of an inch thick. The lower and front edges of this flat piece of steel should be neatly and smoothly rounded off, so as to allow it to come easily and freely into the notches A B C, &c., which are on the edge of a thin brass scale, whose use will come afterwards to be explained. To the supports attached to the turn-bench heads, and on the opposite side to that where the

round steel rod is placed, let there be fixed a slip of brass X Y, about ten or



twelve inches long, an inch and a half broad, and nearly a tenth of an inch thick, the inner edge of which must be made to stand parallel with the barrel, and the flat side to stand nearly in a plane between the upper surface of the barrel and its centre; the edge being placed so as to stand clear of the tops of the teeth of a high numbered wheel W, screwed on to the end of the barrel. Near the ends of this slip of brass, slits are made, through which screws *s s* pass, which fix it to the upper side of the supports; the slits serving to allow it to be shoved a little occasionally lengthwise, when required. On the upper side of the slip of brass, is fixed another, but not quite so thick, the length being about that of the barrel, and breadth one inch and three quarters. On the inner edge of this are made as many notches A B C, &c. as there are hammers, bells, or notes, to be used in the tune or tunes to be marked on the barrel. These notches are equidistant, and the middle of them should correspond to the middle or line of the hammer-tails; their width being such as to admit the flat steel piece G on the end of the curved arm EFG, fig. 2; the depth of them cut on the edge of the brass should be about one quarter of an inch. The edge of this piece of brass, or music-scale, as it may be called, must also stand parallel with the barrel, and at a little distance from it, not nearer than three-tenths of an inch, so that the flat steel piece on the end of the curved arm may have room to get in a little way, and to pass through at the same time to a certain degree of depth. On the upper side of this brass slip, the letters of the scale of music, or gamut, are marked to these notches, which correspond with the hammer-tails and hammers intended to strike on the bells the notes so marked; but in an inverted order to the usual way in which they are marked in the scales of music—the lower notes being on the right-hand side, and, as they rise, going to the left. This is done to suit the way in which the bells are commonly, though not necessarily, placed in music clocks (see fig. 3); it is in the power of a clockmaker, of any ingenuity, to contrive the barrel to turn any way he thinks proper, and place the bells to stand in the order of the music-scale, if there is any advantage to be derived from it. In the curved arm E F G, fig. 2, is fixed a punch *f*, having a very fine and sharp conical point, at the distance of four inches or so from the centre of the sliding socket, and not quite an inch from the outer end of the flat steel piece; the punch, when applied to the barrel, should stand upright, and directly over the centre of it.

This apparatus being all adjusted as now directed, it is evident, that when the curved arm is raised up a little way, the socket can then be made to slide easily along the steel rod; and, by this means, bring the outer end of the flat steel piece very readily into any notch required; and the point of the pencil is brought, at the same time, with the greatest precision, to the place of the note on the barrel, leaving the flat steel piece, for the time, in the notch. The point of the punch touching or resting on the barrel, a stroke from a very small hammer on the top of it will cause the point to make a pretty deep mark or conical hole on the surface of the barrel.

It now remains to be shown how *the time or the lengths of the different notes are determined*.

Long or slow, short or quick notes—such as the minim and demi-semiquaver—are not well suited to bell-music, and of course are seldom introduced into tunes chosen for it. The *crotchet*, *quaver*, and *semiquaver*, form the greatest part of the composition; the minim and demi-semiquaver may, however, be brought in at some parts.

APPARATUS FOR PRICKING MUSIC ON CLOCK BARRELS.

It may be unnecessary to state what is pretty generally known, the proportional value of the notes to one another; suffice it to say, that a minim is equal to two crotchets a crotchet to two quavers, a quaver to two semiquavers, and a semiquaver to two demi-semiquavers.

The time in which the barrel turns, after striking or lifting a hammer tail, to strike any note on a bell, must be in the same proportion with the notes, according to their respective characters. Let a wheel of 250 teeth, for example, be fixed on the end of the barrel, and let both be placed in the turn-bench, with the apparatus which has been described. To the turn-bench is now attached a steel or brass spring, having a knee or bending at one end, so that it may fall into the spaces of the wheel teeth. Suppose the tune to be laid on the barrel contains 20 bars of 3 crotchets each, being 60 crotchets in all; if 250, he number of the wheel teeth, be divided by 60, the number of the crotchets, we shall have 4 for the quotient, and 10 for the remainder; showing that we may take 4 teeth spaces for every crotchet; 10, the remaining part of it, serving as a run for locking, and the other part for a run at unlocking, for a tune to be played.

Now, as a crotchet is equal to four spaces, a quaver must be equal to two, and a semiquaver equal to one. Suppose the first note in the tune proposed is F, (see fig. 1) the curved arm is brought to the left hand, and the flat steel piece put into that notch; the punch is then made to mark the barrel; and this being a semiquaver, or the fourth part of a crotchet, the spring index is shifted into the next space of the wheel teeth, and the curved arm moved to the next note, which is G on the left hand, and the flat steel piece being put into the notch corresponding to G, the punch is made to mark it on the barrel. This being a semiquaver also, the spring is shifted into the next space, and the curved arm moved to note A on the left; the steel piece is put into the corresponding notch, and the punch marks this on the barrel. A is here equal to a quaver and a half; therefore the spring index must be moved over three, or into the third space, and the curved arm moved to the next note, being B, on the left hand; the steel piece being put into this notch, the note is marked on the barrel; and as it is a semiquaver, one space is taken for it, and the arm moved to G. This being marked, and as it is a quaver, two spaces are taken, and so on. When crotchets are marked, four spaces are taken after marking them.

In the tune which we have just exemplified, nine bells or notes are all that are required; and three more, or a dozen, would give such a compass as to take in almost any tune that might be required.

In place of the spring index, it would be better to have a single-threaded endless screw to work into the wheel teeth; one turn of which would be equal to a tooth or space. The arbor of the screw being squared at one end, and a small handle for turning it being put on, there would be less danger of making mistakes with the screw than with the index. On the arbor of the screw there might also be put a hand or index, to point to a circular space or dial of eight or ten divisions. This would give room to make *parts* of a turn, where great nicety is wanted.

After one tune is laid on the barrel, either the barrel, or what is, perhaps, preferable, the music scale, must be shifted a short space when the next tune is to be put on. The spaces for shifting should be marked on the top of one of the supports, and close by one end of the long slip of brass; or they may be marked on a short line drawn longitudinally on the surface of the barrel, at or towards one of the ends of it; or, by taking both methods, the one would serve as a check on the other. The *length* of shifting depends on the distance between the hammer-tails, and the number of tunes to be put on the barrel. For example: if the distance between the hammer-tails is four tenths of an inch, and it is proposed to put eight tunes on the barrel, then, if we divide four tenths by eight, we shall have half a tenth for the length, or space to shift for each time; and this is taking advantage of the whole space between the hammer-tails,—a circumstance frequently overlooked; for where the shifts have been confined to a less space for shifting than might have been got, so much room is lost. The distance between the hammer-tails depends on their number, and on the length of the barrel. Mr. Reid has made the distance a quarter of an inch, where the number of hammers was eleven; the length of barrel about three inches and a quarter; the number of tunes put on the barrel seven; the spaces for shifting three hundredth parts of an inch, or thereabouts; and where the clock of itself shifted the tune. The diameter of the lifting pins must also be taken into account, being of some consideration where the spaces for shifting are extremely limited.

Although the number of the wheel-teeth for dividing the notes has been taken at 250, yet either a greater or less number may be assumed: all that is required, is to proportion the number of turns of the endless screw, and parts of a turn, to the number of bars in the tune; to the notes in each bar; and to have the tunes to go nearly round the barrel, so that a small part of a revolution of it, after the tune is played over, may be left for what is called locking and running.

When the tunes are all marked on the barrel, each mark must be drilled. Great care should be taken to have a stiff and excellent drill, so as to run no risk of breaking; and it should be of such a temper, and so well and judiciously whetted up, that it may drill all the holes without requiring to be once sharpened: the object here is to have all the holes of the same width.

The holes being drilled, and the barrel polished, a number of pins should be prepared into lengths of half an inch or so each, and a very little tapered at one end. The stronger and harder the brass wire for the pins is, so much the better; some of the best kind of pins used in the female dress are very fit for this purpose. In placing the pins in the holes, if they should be found too long for knocking in by the hammer, they should be shortened by the cutting plyers before the hammer is applied, which will prevent bending, and allow the pins to have a more secure hold of the barrel rim.

After all the pins are put in, they must be shortened to an equal and proper length or height. For this purpose prepare a hard cylindrical steel collet, having a hole in its centre sufficiently wide to allow it to be put readily on the pins; the lower end of it hollowed, the upper end rounded, and the height of the collet about one twentieth of an inch, or a little more; the height depending on the size of the barrel and the diameter of the pins. The collet being placed on a pin, the cutting plyers are applied, to cut the pin just over by the rounded end; a small touch of a file takes away the burr made by cutting, and as the hardness of the collet prevents the file from taking any more away from the height of one pin than from another, they must all be of equal height. The small burrs made on the top of the pins by the file must next be taken off; which is done by a piece of steel wire, about six or seven inches long. The end where it is whirled about by the fore finger and thumb, should, for the length of an inch or so, be made into an octangular form, for the more readily turning it round, backward, and forward. On the face or point of the other end two notches are made across each other, which may be either angular or round at bottom. The point where the notches are cut should be hardened, and the inside and bottom of the notches polished; so that a sharpness may be given, to take away the burrs easily from the tops of the pins.

The shape of the hammer tail is such as is represented at fig. 4 (p. 131); a form which makes the hammer easy enough to be drawn. The nib of the tail, too, takes little or no room when falling, and should two pins or notes succeed each other rapidly, the nib will not be interrupted by the succeeding pin.

In the *first musical clocks*, and even in those made long afterwards, the bells were all placed on one strong iron bell-stud, the opposite end of which was supported by what may be called an auxiliary stud, which occasioned a crampness that prevented the bells, when they were struck, from vibrating or giving out that full tone which they might otherwise have been made to produce; and the improvement afterwards made on this, as well as on the quarter bell-studs, was effected by placing each bell separately on its own bell-stud, which was made of well-hammered brass, having some degree of elasticity. The sweetness given to the tone of the bells, by this method, was truly surprising.

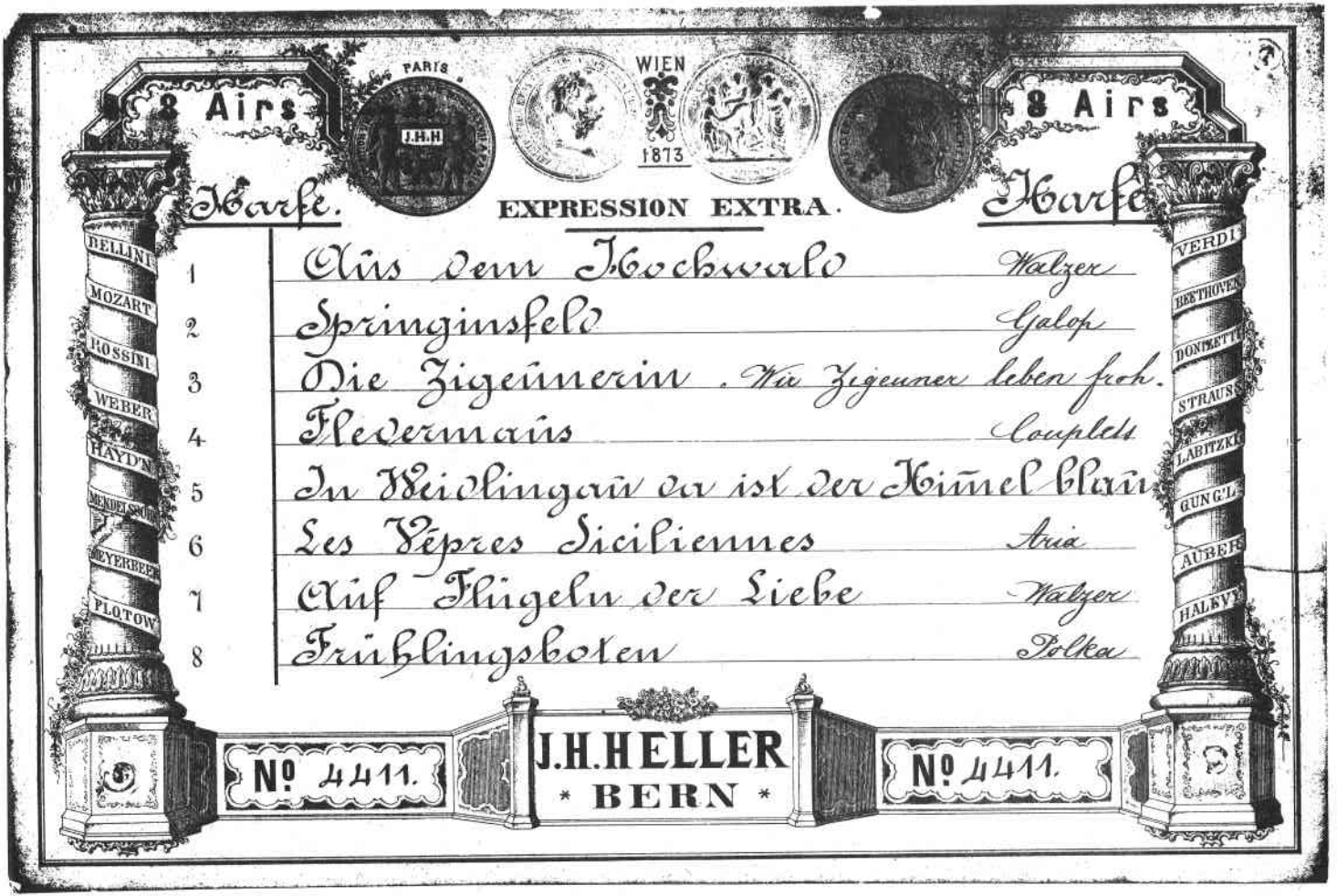
The bells, in this kind of music, may be sounding at the time that a succeeding note is struck out and sounding too, which may not be so pleasant to a very nice ear. This can be prevented by having a double set of hammers, and having every tune pricked twice over on the barrel; one set of the hammers having the heads of buff leather, or having brass heads, with pieces of cloth sewed over them. These, when they strike the bell, will damp the sound of the note which is last struck. The buff hammer should fall on the bell to be damped, at the same instant that the brass hammer strikes the succeeding note on its bell. This improvement, however, must greatly increase the expense of such a clock; but the effect of buff or cloth hammers is so striking, that the additional price ought not to be grudged.

In fig. 4 (p. 131), A A is a circle, representing an end view of a clock music barrel, and a few of the lifting pins. The dart shows the direction in which it turns. The letters *a a a a* represent a section or end view of the brass piece called the hammer-frame. The length depends on that of the barrel, and the number of hammers to be let into this

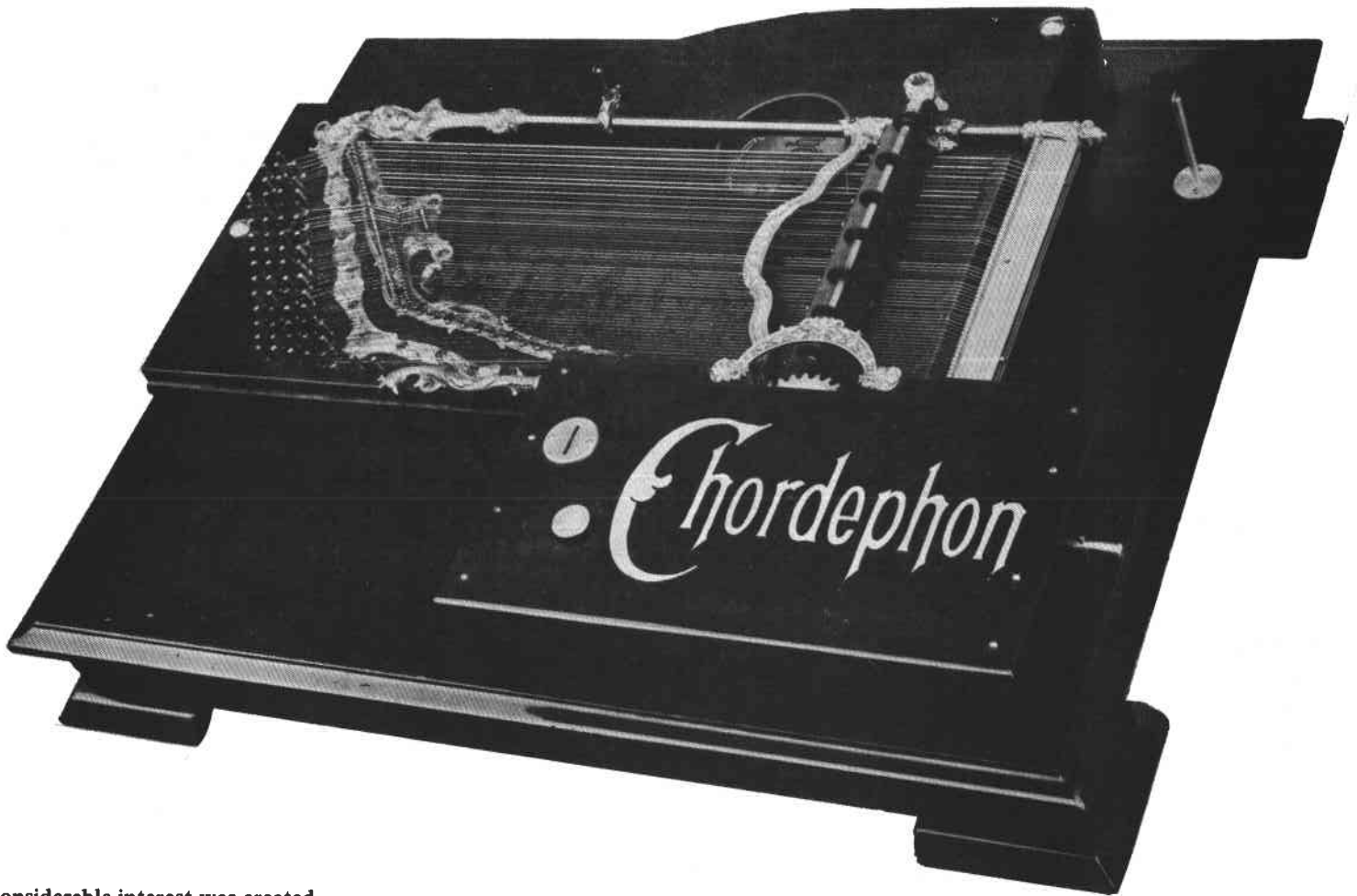
brass piece; it is sometimes 3 or 4 inches, sometimes 10 or 12. The flat part of the hammer-tails fills up the thick part of the hammer-frame, into which slits are made to receive the hammers. Near to the outer and lower angular part at *a* of the frame, a hole *h* is made through the whole length of it; not drilled, but ploughed (as the workmen term it), and this is done before any slits are made in it for the hammers. A wire is put through this hole, and through corresponding holes in the flat part of the hammer-tails. This wire is their centre of motion, and the holes in them are made so as to have freedom on it; and the flat parts of the hammer-tails are also made to have freedom on the slits made to receive them. On the under side of the hammer-frame, at *b*, the hammer-springs *c c* are screwed, one for each hammer, acting on that part of the hammer-tail just where it comes out of the thick part of the hammer-frame. When the pins in the barrel raise up any hammer by the nib, and carry it away from the bell, at the instant the pin quits the nib, the spring *c c*, by its returning force, makes the hammer-head give a blow on the bell to elicit the sound. To prevent any jarring in the bell by the hammer-head resting on or touching it, after having given the blow, each hammer has a counter spring acting near the lower end of the shank and inside of it. All the counter springs are made to project from one slip of well-hammered brass, and screwed on the top of three kneed brass cocks, fixed to the upper side of the brass frame. *d d* represent the side of one of the cocks; *e e* an edge view of one of the counter springs; *f f* a side view of one of the bell-studs, which are also screwed on the upper side of the hammer-frame; *g* an edge view of the bells; *g*, fig. 3 (p. 130), a side view of the bells, as fixed to their studs.

The apparatus which has been thus fully described, for marking the tunes on clock barrels, is stated by Mr. Reid, "to be equally suited to do the same on barrels intended by machinery to work or to sound the pipes of an organ; the difference consisting in marking off on the barrel the spaces of the longer and shorter notes, as, in place of pins, they have staples or bridges of various lengths, according to the length of the note or the time which the pipe should be allowed to sound it."

From "Weltadressbuch der Musikindustrie" by Paul de Wit, Leipzig, 1903.



J.H. Heller named tune sheets are unusual. Two interesting points about this one are the outer, printed medallions of the Paris exhibition of 1867, and the two embossed medallions of the 1873 Vienna exhibition. The title "Expression Extra" is also new to your Editor. Compare this with the earlier tune sheet on page 269, Vol. 3, No. 4. From Graham Webb.



Considerable interest was created at the Annual General Meeting by an instrument of unusual appearance and great charm - this Chordephon disc-playing Zither belonging to Graham Webb. The discs are 19.7/8 inches in diameter, and the peripheral serrations engage in a clockwork-driven pinion. The casework is a reconstruction.

Chordephon
DRPT
No. 370
Chordephon

SOME THOUGHTS ON REPAIRS

by

"Endless Screw"

THE VEXED question as to what work may legitimately be done under the guise of overhaul is one that may never be solved so long as different people have different ideas. For my money, though, it was summed up succinctly in the words of our Editor. Once when I was talking about restoration to him, he said: "If it worked once, then should be capable of being made to work again if one concentrates only on restoration of its principle and realization". He also said, on another occasion, that true restoration consisted of applying nothing more advanced than the state of technology available when the piece was first conceived.

It took me a while to comprehend both these things but gradually I came to see that he was substantially correct although most of us would want to reach this past level of technology using modern tools and equipment even if only on the grounds that it saves time.

I was listening intently to our Treasurer, David Tallis, delivering his excellent lecture and demonstration on the subject of comb-tuning at the A.G.M. when these thoughts began to form in my mind. It occurred to me that David Tallis, who had obviously put in a lot of research into his study of combs, as a man of combined integrity and ability, might be sowing the seeds of a problem by passing on his skills to lesser mortals who might mis-apply his words due to an incomplete understanding of the subject.

The one point which I do not think Mr. Tallis managed to get home is that if a comb was once in tune, then it must for ever remain in tune unless – and this is the issue at stake – unless it has suffered some drastic change. By change, I mean that if it has become rusted badly, then it must be out of tune; if its lead resonators have become oxidised, then it must lose its tune; if it has new teeth put into it then these new teeth will be out of tune. The original, unblemished téeth will not be out of tune always providing that they are fitted with the proper size dampers and the proper size of anvil pin to hold the dampers into position.

A good rule is that if the comb has original teeth in it, those teeth were originally in perfect tune and they must never be altered. The teeth which are going to need tuning will be the new ones – the ones added in repair work. The haphazard whittling away of the original perfection of a musical movement is only a slower way of achieving what you can do far quicker just by smashing out the endless.

The important part of repair work starts before you ever pick up a screwdriver or file. It starts by thinking – thinking out carefully just what you want to do and then deciding in your own mind (a) if it can be done, and (b) if you have the skills to do it.

There is, in fact, a strong sention of our membership which is against the dissemination of this type of repair knowledge. They believe that a little knowledge is dangerous and that, armed with a few facts and massive overconfidence, overhaul instructions in the hands of many may well spell death to a box which deserves to survive a little longer in more prudent hands. Of course, this is like sex education in schools - it doesn't matter whether you teach it or not, they'll find out about it sooner or later and probably the wrong way and probably have their own disastrous experiences. So it is possibly better to make sure that all the facts are known and that the proper warnings are given in the hope that the person

who decides to have a go (at restoring his musical box, that is) is clever enough to be able to assess whether what he is doing is likely, in the final analysis, to prove to be right or wrong.

And so, when someone with experience shows you how to do a job, such as Mr. Tallis with his comb-tuning, don't immediately rush to your nearest musical box, decide that it is out of tune and then go grinding away madly at the teeth without first ascertaining what is wrong, why it is wrong and whether there are some other forces or circumstances at work to produce the effect which you may have wrongly diagnosed.

"Harpe Harmonie Piccolo Zither"
interchangeable cylinder box made by Billon-Haller. From Graham Webb collection.

THE ART OF ENAMEL

by

Arthur W.J.G. Ord-Hume

EXAMINATION of musical snuff boxes and singing birds reveals not just a beautiful and delicate mechanism, but casework which is often of the highest quality and decorated in a most exquisite manner. These boxes were frequently masterpieces of craftsmanship, exhibiting the finest metalwork, enamelling and inlay.

The better the movement, the better the box which it justified, and during the years until about 1830, almost every box was a work of art to behold as well as a joy to listen to.

Silversmiths in London were renowned for their superb work throughout Europe and many Swiss movements were sent to London to be fitted in English made cases for sale elsewhere in Europe. This is why many silver musical boxes bear London hall marks. The English goldsmith was also employed to make many decorative cases for Swiss movements which would then be advertised as being in English boxes.

The silver boxes were decorated, in the case of the expensive ones, by applique designs in silver; in cheaper ones by repousse work (where the design is pushed put from the other side); or by engraving and tooling.

Goldsmiths also embellished with applique or tooling. However, the loveliest work was in enamelling. The technique of enamelling achieved its peak of perfection during the early years of the nineteenth century when the most exquisite paintings and decorations were applied to snuff boxes (musical and otherwise), scent bottles and, of course, watch faces. Enamel offered the craftsman many advantages over the traditional oil painting. Not only was the surface very hard, scratch and wear resistant, but it could be brought to a high polish without any fear of the colours altering or imparting unwanted tints to other colours.

The basis of every kind of enamel is glass which can be made either almost transparent or perfectly opaque or any stage between the two by mixing it with various metallic oxides. By varying the nature of the oxide, almost any desired tint could be obtained. For example, the oxide of tin mixed with glass would produce a white enamel; oxide of lead or of antimony would make yellow; oxide of silver a fine, primrose yellow; oxides of gold and of iron would be used for differing shades of red, copper, cobalt and iron would produce greens, violets and blues, and by mixing many of these oxides a whole spectrum of intermediate tints could be achieved.

Some craftsmen enamellers became, as one might say, craftsmen craftsmen, capable of producing one particular colour of such quality as to be bettered or equalled by no other. This man, having formulated his colour, would jealously guard the secret of its ingredients, a secret which often died with him. And so one man would achieve fame for his prowess in making just one colour and other craftsmen would bring to him their work just to have him fire one colour into it. It would then be taken to another man who, renowned for his skills in making another colour, would fire in that colour. And so on until the piece was finished.

Perhaps the most beautiful examples of enamel work is to be found in the enamel painting wherein pictures, closely resembling the finest miniature paintings, are produced on small plates of gold or copper which were then fixed into the lids of small musical boxes. Some boxes, such as those for musical singing birds and very high quality musical movements, would be enamelled with a picture painted in

enamel tints on the lid and with enamel decorations on the sides.

The making of enamels and enamel designs was a lengthy and painstaking business. Where a relatively large area of one colour was to be enamelled, the enamel would be prepared in the form of broken glass melted and prepared with the right oxides. For other, finer work, lead, pounded flint and an alkali (the chief ingreeients of glass) would be selected and prepared with the oxides. In the clockmaking industry, hard white enamel could be purchased in cakes weighing about two pounds each and which were imported from Venice where it was prepared by a secret process. However, the craftsman enameller almost always chose to make his own colours and even his own glass base by the method described above.

The finest men in the profession were to be found in England and France. They worked with gold and copper, for these are the only metals which possess the requisite properties of a foundation upon which to lay enamel. Other metals either distorted or melted in the furnace, or would crack in the preparation or would unite chemically with the enamel and give it a false colour. The preparation of the metal to receive enamel was important. The design would either be hammered into the metal or engraved or etched out of it, so that each area of colour was retained by a slight raised edge. The prepared piece would then be cleansed in a solution of nitric acid using a brass wire brush.

A portion of solidified enamel would then be broken into a steel mortar as particles of sand and then washed in clean, pure water several times. This produced a coloured liquid consisting of water in which would be suspended the finest particles of the enamel. This was drained off and used for the best quality work. The resulting powder was then washed in nitric acid which removed all foreign metallic particles, the acid being removed by washing in water. The prepared powder was then kept under the surface of pure water until required for use to ensure its cleanliness.

The prepared enamel would then be applied with the greatest care using a fine spatula, ensuring that it did not extend beyond the area allocated to it, and also that there was sufficient powder so that, after firing, the surface would not have drawn down concavely.

If the craftsman was applying all his own colours, and providing that each area was clearly separated by raised metal, he would apply each area of pigmented powder in the same way.

The next stage was to fire the enamel in a muffler furnace. First of all, the piece would be placed on a packing of pipeclay which itself would stand on a slab of Stourbridge clay, and the whole placed into the muffler oven. This was then placed in a furnace and surrounded by charcoal and coke. As the whole heated up, the fine particles of enamel would melt and unite into one continuous glassy surface. Considerable care was needed to ensure that overheating did not cause the enamel to form pools and run to one side, and to this end a workman would constantly keep the piece and its clay support turning round and round in the muffle.

On some large pieces, the surface, after firing presented slight irregularities. These would be ground flat using rag-stone and silver sand mixed with water if much grinding was necessary, otherwise with much finer substances. However, the action of this would be to destroy all polish, so the piece would be replaced in the muffler and reheated just sufficiently to remelt the surface and bring back a glassy polish.

The application of fine decoration as in the case of an enamel painting would then go ahead, the finest powdered coloured enamel being applied with a camel-hair brush. So fine would be this powder that eight hours might be spent in pulverising one drachm to the correct consistency using an agate pestle in an agate mortar. Oil of spike and turpentine would then be mixed with the powder to allow it to flow from the brush in a manner similar to that of ordinary oil paint. Firing would take place again to bring the brush work into a layer of enamel fused into the first.

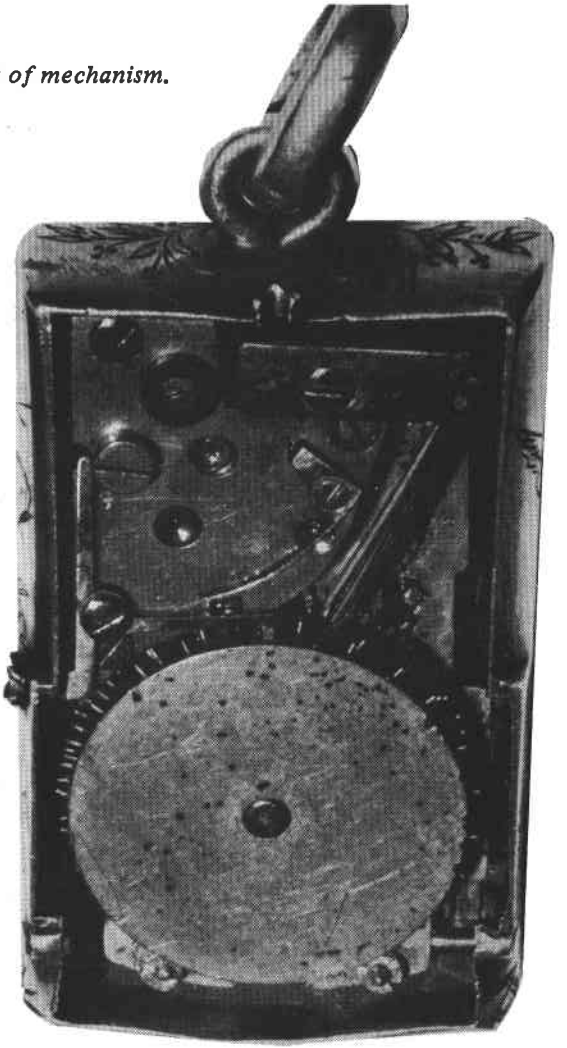
The work of the enameller, further embellished by the mounting of pearls in the final stages, characterises some of the rarer and more valuable pieces.

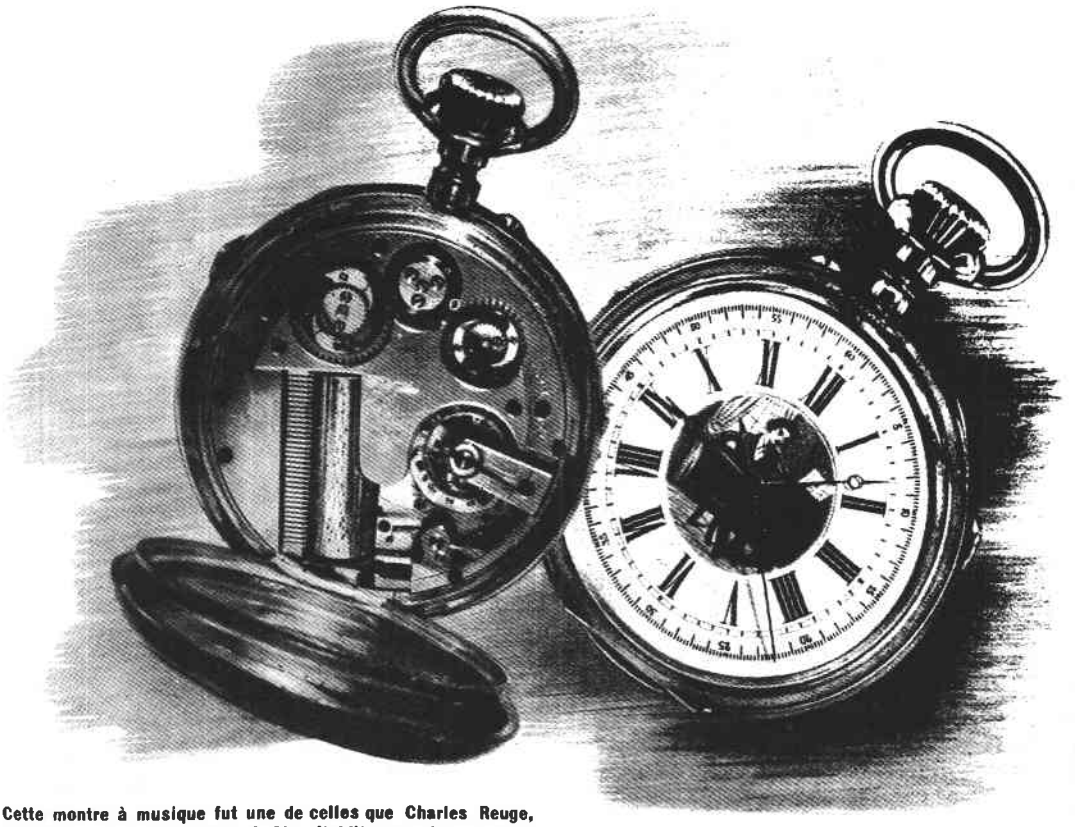
A beautiful gold musical pendant belonging to the private collection of Graham Webb. Length is 1.5/16" x 3/4" wide by 3/8" deep. The laminated comb has six teeth and is played by projections on the outer surface of the spring barrel. The automaton compon–

ent comprises three movements on the front of the case – the movement of the flames of the fire, the pumping of the blacksmith's bellows and the movement of his hammer.

Backplate of case removed.

View on back of mechanism.





Cette montre à musique fut une de celles que Charles Reuge, prédécesseur de MM. Reuge & Cie, établit vers 1880. A quelques-unes, comme à celle-ci, il avait adapté un petit automate violoniste.

This extract is reprinted from the "Journal Suisse d'Horologerie et de Bijouterie" for Nov./Dec. 1945.

FORTHCOMING FEATURES INCLUDE:-

A description, with engraving, of Vaucanson's famous duck and other automata.

Catalogue of Merlin's Museum of automata. Catalogue of Week's Musuem of automata.

Catalogue of Cox's Museum of automata.

Extract from a German musical instruments catalogue referring to organettes.

A series of articles on the most famous 'automaton' of all time (?) - the fake Chess Player of von Kempelen.

The story of tortoiseshell and horn, and how to work and repair it.

Lists of tunes played on the Monopol, Gem organette, Polyphon, Stella, etc.

The following article appeared in the "Encyclopaedia Metropolitana" published in London about 1840 and is reprinted as being of great interest on Automata. The paper on the mechanism of Vaucanson's flute-player, referred to herein, will appear in a forthcoming issue along with contemporary material on the Kempelen chess-player. From the collection of the Editor.

AUTOMATON

AUTO'MATON
AUTO'MATOUS
AUTOMA'TIC

The etymology of this word is unsettled. Its modern application will be best collected from the citations.

Clocks or *autmatous* organs, whereby we now distinguish of time, have found no mention in any ancient writers: but are of late invention, as Pancirollus observeth.

Brown's Vulgar Errors. ——

God having an understanding infinitely superior to that of man, in extent, clearness and other excellencies, he may rationally be supposed to have framed so great and admirable an automaton as the world, and the subordinate engines comprised in it, for several ends and purposes, some of them relating chiefly to his corporeal, and other to his rational creatures; of which ends he hath vouchsafed to make some disciverable by our dim reason, but others are probably not to be penetrated by it, but lie concealed in the deep abyss of his unfathomable wisdom.

Boyle's Inquiry into Nature. ——

I conceive then in the first place, that the wise and beneficient Maker of the world, and of man, intending that men should for the most part, live a considerable number of years, in a condition to act their part on the mundane stage; He was pleased to frame those living automata, human bodies, that withthe ordinary succours of reason, making use of their exquisite structure fitted for durableness, and of the friendly, though undesigned, assistance of the various bodies, among which they are placed, they may, in many cases recover a state of health, if they chance to be put out of it by lesser accidents than those, that God, in compliance with the great ends of his general providence, did not think fit to secure them from, or enable them to surmount.

Boyle. Inquiry into Nature. ——

The difference between an animal and *automatic* statue, consists in this – that, in the animal, we trace the mechanism to a certain point, and then we are stopped; either the mechanism becoming too subtile for our discernment, or something else besides the known laws of mechanism taking place; whereas, in the *automaton,* for the comparatively few motions of which it is capable, we trace the mechanism throughout.

Paley. Natural Theology. ——

AUTOMATON, in *Mechanics,* from αὐτόματος, spontaneous; a machine possessing apparently spontaneous action. Machines of this kind are kept in motion for a limited time by means of springs or weights. When they represent human figures they are called *androides:* but clocks, watches, jacks and the like, are all included under the name *automaton.*

The earliest mention of *automata* occurs in Homer. Vulcan is employed upon them, when Thetis comes to request the arms of immortal temper for her son:

That day no common task his labour claimed:
Full twenty tripods for his hall he framed,
That placed on living wheels of massy gold,
Wond'rous to tell, instinct with spirit rolled
From place to place, around the blest abodes.
Self-moved, obedient to the beck of gods:
For their fair handles now, o'erwrought with flowers,
In mould prepared the glowing ore he pours.
Justas, responsive to his thoughts, the frame
Stood prompt to move the azure goddess came.

Pope's Iliad, xviii, 439 ——

Plato and Aristotle (Maenon, 426, *Eutyphron,* 8. ed. Francfort, 1602) both mention certain statues made by Daedalus which could not only walk, but which it was necessary to tie in order to prevent them from moving. The latter speaks of a wooden Venus of this kind; and remarks, somewhat obscurely, that Daedalus made it move by pouring in quicksilver.

Aulus Gellius (lib. x. 12) describes a wooden pigeon made by Archytas, of Tarentum, which possessed the power of flying: but which, when it had once settled, could not renew its flight. Cassiodorus, in the sixth century, speaks some machines invented by Boetius, in the following terms: "Metals lowe, the birds of Diomedes trumpet in brass, the brazen serpent hisses, counterfeited swallows chatter, and such as have no proper note, from brass send forth harmonious music", (lib. i. Var. *Epist.* 45). The little we know of the heads formed by Roger Bacon and Albertus Magnus is so mixed with fable, that it cannot be relied on. They are said not only to have moved but to have spoken; and that their inventors resorted to them as oracles. He who possessed the secret of their movement and articulation, if they possessed it, is little likely to have been so deceived by the work of his own hands; and we may class this part of the story with the legend which informs us that Thomas Aquinas was so alarmed when he saw the head of Albertus, that he broke it in pieces, whereupon the sage exclaimed "there goes the work of thirty years!"

The accounts of the *automata* made by John Muller, better known by the name of Regiomontanus, in the fifteenth century, rest only upon the authority of Peter Ramus, who did not flourish till a hundred years afterwards. Regiomontanus is said to have constructed an eagle, which upon the approach of the Emperor Maximilian to Nuremberg, June 7th, 1740, perched upon the town gate, stretched out its legs and saluted him by an inclination of the body. He is also said to have made an iron fly, which he produced one day to his friends after dinner. The insect flew from his hand, took a circle round the room, and returned again to its master. A German writer, J.W. Baier, has thought it worth his while to compose an express dissertation *"de Regiomontani aquila et mused ferred."*

Charles V. after his abdication, employed himself in the study of mechanism. For this purpose he engaged Turriano, one of the most ingenious artists of his day, to accompany him to the monastery of St. Justin. Here he laboured with him sometimes in useful experiments, sometimes in slighter and more fantastic works. Strada *(de bello Belgico)* informs us that he often introduced puppets upon table after dinner, some beating drums, some blowing trumpets, some charging each other with couched spears and mimic ferocity. In his cell he contrived wooden sparrows, which by their flight terrified the ignorant and superstitious monks into a belief that he was a magician who commanded the infernal powers. He framed also iron mills, which moved of themselves, so minute in size that a monk could carry one in sleeve; and yet it was powerful enough to grind in a single day, grain enough for the consumption of eight men.

In the middle of the sixteenth century, Hans Bullman. a padlock maker of Nuremberg made figures of men and women which moved backwards and forwards, beat a drum, and played upon the lute by clock-work. There are remarkable clocks of this kind at Lyons and at Strasbourg. But even before this time the attention of artists in the east had been directed to the automatical embellishment of horological machines. Bossut, in his *History of Mathematics,* gives an account of a *clepsydra,* or water clock, presented by the Caliph Haroun Alraschid to Charlemagne. Twelve small doors in the dial respectively opened at the hour which they represented: and little balls, equalling the particular hour in number, falling out, struck the time upon a brazen bell. The doors continued open till noon, when twelve little knights mounted on horseback, issued forth, one from each door; and having paraded round the dial, shut themselves in again.

The volume of *Memoires de l'Academie des Sciences,* for 1729, contains an account of an extraordinary piece of mechanism, invented by Pere Truchet, for the amusement of Louis XIV. when a child. It consisted of a series of moving pictures, representing an opera in five acts, in which the little actors performed their parts in pantomime. M. Camus constructed, for the same purpose, (and he has himself given a

description of the toy) a little carriage drawn by two horses, containing the figure of a lady with a coachman driving, and a footman and page behind. When placed upon the table, the coachman smacked his whip, the horses proceeded moving their legs naturally: and when the carriage arrived opposite to the king's seat it stopped, and the page getting down, opened the door, the lady alighted, and with a curtsey, presented a petition to the king. After a short pause she curtsied again, and re-entered the carriage. The page remounted, the coachman flogged his horses, the carriage moved on, and the footman running after it, jumped up again behind.

M. Vaucanson, in 1738, exhibited in Faris three *automata,* one of which represented a flute-player in a sitting posture, and performed twelve tunes; the second was a standing figure, which played on a shepherd's pipe held in its left hand; and with its right, beat upon a tabor; the third was a duck of the size of life, which moved its wings, quacked, drank water, ate corn, and, after a short time, dropped its dung.

None of these, however, appear to have been then invented for the first time. The anonymous author of the *Zodiacus Vitae* describes a breathing image which he had himself seen at the beginning of the sixteenth century.

Vidi ego dum Romae, decimo regnante Leone,
Essem, opus a figulo factum, juvenisque figuram
Efflantem angusto validum ventum oris hiatu.
xi. 846

And Labat, in his *Nouveau Voyage aux Isles d'Amerique,* (vol.ii. p. 298, 384.) relates that the French general, De Gennes, who about the year 1688 defended the colony of St. Christopher against the English, constructed a peacock, which performed all the functions of Vaucanson's duck.

The secret of the flute-player was explained by Vaucanson himself, in three sheets quarto, printed at Paris in 1738, under the title of *"Le Mechanisme du Fluteur automate, par* Vaucanson". From this it appears that the figure was five feet and a half high, seated upon a fragment of rock, which was supported by a pedestal four feet and a half high, by three and broad. Within the pedestal nine pair of bellows were set in motion by clock-work. A peculiar contrivance in the valves prevented the fluttering noise which usually attends their opening, and the wind was forced into three tubes, which, ascending through the trunk, terminated in a single reservoir connected with the cavity of the mouth.

Another piece of clock-work within the pedestal, was applied to communicate the necessary motions to the fingers, lips and tongue. A revolving cylinder, with various pegs inserted in it, raised or depressed several levers on the principle of a barrel organ: and in this manner music is said to have been produced little inferior, if not fully equal, to the performance of a skilful living flute-player.

The piper depended upon the same principles: but from the imperfection of the instrument, presented far greater difficulties in in its completion. A weight of fifty-six pounds was required for the bellows which produced the highest note; such therefore is the effort required from the lungs of a living performer; while one ounce only sufficed for the lowest note. Different proportions of wind also became necessary to produce even the same note according as it succeeded one part or another of the scale of the flageolet. But in the end the mimic piper is said to have much excelled his flesh and blood rivals. The fatigue of the instrument is such, that in a rapid movement the notes are generally slurred: the automaton was enabled to produce all these with distinct separate articulations of the tongue.

We have not met with any description of the duck; but Beckmann, in his *History of Inventions,* vol. iii. p. 307, mentions a similar automaton, which he had seen himself. Counsellor Beireis, of Helmstadt, had bought of one Du Moulin, a silversmith, who travelled through Germany in 1752, three automata, similar to those of Vaucanson. They had either never been completed, or were designedly spoiled; and Beckmann, who does not appear to have been a mechanist, says only that the motion was communicated to the duck by means of a cylinder and fine chains, like those of a watch, all proceeding through the feet of the duck, which are of the usual size.

In our own times, one of the most ingenious *automatical* mechanists has been Mons.

Maillardet, a Swiss. He exhibited in London a female figure, which performed eighteen tunes on the pianoforte, at the same time that she imitated the motions of natural life. The bosom heaved, the eyes appeared to follow the movements of the fingers over the keys, the pressure of which produced the notes; and at the commencement and conclusion of each air, the image saluted the spectators by a graceful inclination of the head. The action of the machine, when wound up, continued for an hour.

Besides this, Mons. Maillardet constructed the figure of a boy kneeling on one knee, and holding a pen in his hand, with which he executed various drawings and pieces of writing; also an *automaton* tumbler, a little image, a few inches only in height, and enclosed in a glass case. The lower part of this case contained the mechanism; and, the figure, when set in motion threw itself into a variety of elegant and grotesque attitudes, keeping time to some music produced by the machine. The remaining human *automaton* was a magician, who returned answers to any question chosen at random from twenty different medallions. The medallion was placed in a drawer and after some minutes spent in consultation of his books, and solemn movement of his wand, the soothsayer struck two folding doors above his head, which opened and dsiplayed the appropriate answer.

The other *automata* of Mons. Maillardet were an oval box, about three inches in the major axis, which opened of itself; a humming-bird flew up from its nest, and after fluttering for some time with its wings, commenced warbling. The notes were loud and clear, and when the bird had finished, it darted into its nest, and the lid closed: the action of the machine lasted four minutes. A spider, of steel, ran upon a table for three minutes; a serpent crawled about, and hissed for seven; and a caterpillar, a lizard, and a mouse, all closely imitated the natural actions of the beings they represented.

The real *automatical* pretensions of the celebrated chess-player have been doubted: but as the question is yet undecided, our account of *automata* would be incomplete, if we omitted to mention it. M. Wolffgang de Kempelen, a Hungarian gentleman, Aulic counsellor to the Royal Chamber of the domains of the Emperor of Germany in Hungary, devoted himself from a very early age to mechanics. Being in Vienna in the year 1769 upon business of office, he was invited, by order of the Empress Maria Theresa, to be present at certain magnetical experiments, exhibited by a Frenchman, of the name of Pelletier. While in familiar conversation with the empress, during this exhibition, M. Kempelen hinted that he thought himself competent to construct a piece of mechanism far more surprising than those which she now witnessed. The curiosity of the empress was excited; and she bound M. Kempelen to the attempt by a promise. He kept it, and in six months produced the chess-player.

At Vienna the *automaton* excited the highest astonishment and admiration. Its inventor, however, declined exhibiting it in public, refused considerable offers from persons willing to purchase it, laid it aside, and even took some of it to pieces. In this state it remained for several years, till on a visit made by the Grand Duke Paul of Russia, and his consort, to the court of Vienna, the empress signified a wish that it should be exhibited for their gratification. In five weeks it was repaired, and the august visitors were so delighted by its performances, that they urged the proprietor to permit its public exhibition, till at length he complied. It was at that time shown in various parts of Germany and France, and in 1785, it was brought to England. At M. Kempelen's death, which took place about 1803, his son sold it to Mons. Maelzel; and in 1819, the automaton again visited London.

The room in which it was then exhibited had an inner apartment, within which appeared the figure of a Turk of the natural size, sitting behind a chest three feet and a half in length, two in breadth, and two and a half in height: to this was attached the wooden seat on which the figure sate: the chest was moveable on castors to any part of the room. On its top in the centre, was an immoveable chess-board, upon which the eyes of the figure were fixed. Its right hand and arm were extended on the chest, and its left, somewhat raised, held a pipe.

Certain doors, two in the front, and two in the back of the chest were opened, and a

drawer in the bottom of it, containing the chess men. and a cushion whereon to place the arm of the figure, were pulled out. Two lesser doors were also opened in the body of the figure, and a candle was held within the cavities thus displayed: the same, if requested, was done at the conclusion of the exhibition. The chest appeared divided by a partition into two unequal chambers: that to the right of the figure was narrowest, and occupied about one-third of the whole. It was filled with small wheels, levers, cylinders &c. That to the left contained a few wheels, some small barrels with springs, and two quadrants placed horizontally. The door and the drawer having been closed, the exhibitor wound up the works with a key inserted in a small opening in the side of the chest, placed a cushion under the arm of the figure, and challenged any individual among the company present to play.

In playing the automaton always made choice of the white pieces and had the first move. It played with the left arm: the inventor, as it is said, not having perceived the mistake till his works were too far advanced to permit its rectification. In making a move, it slowly raised the left arm from the cushion, and directed it towards the square of the piece to be moved. Its hand and fingers opened on touching the piece, which it grasped, and conveyed to the proper square: the arm then returned to the cushion. In taking a piece, the same motion of the arm and hand was made to lay hold of the the piece, which it conveyed from the board, and then returning to its own piece, placed it on the vacant square.

After a move made by its antagonist, the *automaton* paused for a few moments, as if contemplating its own. On giving check to the king, it made a signal with its head. If a false move was made by its antagonist, it tapped on the chest impatiently, replaced the piece, and claimed the move for itself as an advantage. If its antagonist delayed any considerable time, it tapped smartly on the chest with the right hand. During the time that the arm was in motion, a low sound of clock-work running down was heard. The works were wound up at intervals by the exhibitor, who was generally employed in walking up and down the room. At the close of the game, (which in M. Kempelen's time, was, we believe, invariably won by the *automaton,* though it has repeatedly been lost under M. Maelzel's superintendence,) the *automaton* moved the knight, with its proper motion, over each of the sixty-three squares of the board in turns, without missing one, and without a single return to the same square.

These phenomena are plainly inconsistent with the effects of mechanism only: and various conjectures have been proposed as to the mode of communication between the figure and the intelligent agent who conducts its operation. The most probable opinion is offered in a pamphlet, published in 1821, under the title of *An Attempt to analyse the Automaton Chess Player.* In this tract it is shewn, that notwithstanding the apparent display of the interior of the chest and the figure, yet ample space is left unopened for the concealment of a person of the common size behind a false back to the narrowest division only. That such is the secret of the *automaton* is corroborated by the following circumstances:-.that the machinery when at rest is ostentatiously shewn, and carefully secluded from view when in motion; so that it is impossible to ascertain how far it is in truth connected with the *automaton:* that no variation ever takes place in the precise order in which the several doors are opened: that in winding up the clockwork, the key always appears limited to a certain number of revolutions, however different may have been the number of moves performed. Sixty-three moves have sometimes been executed without winding up; and once it was observed to be wound up without the intervention of a single move.

Whether the action of the *automaton* was that produced by a concealed figure, or was not, we do not take upon ourselves to pronounce: that it *might* be so produced, we think the plates, accompanying the little tract to which we refer above, distinctly prove. Certain varied positions of the assistant's body easily permit the several parts of the chest to be thrown open in the order in which they are exhibited: and these positions moreover require that the doors should be closed precisely as they are closed. *(opened? ED.)*

M. Kempelen is said to have proceded to a still more extraordinary exertion of his mechanical talent, in the. production of a speaking automaton. The following account of it is

extracted from Dr. Brewster, who states that he believes that no other description of it is known in England:-

"M. Kempelen having directed his attention towards the practicability of forming a speaking machine, limited his expectations to the production of vowels only. At first he entertained no hopes of obtaining consonants, far less did he deem it possible to unite them with vowels, and thus express words or syllables. In the course of his investigations, he tried all musical instruments, even horns and trumpets, with a view of finding which of them emitted sounds approaching nearest to the human voice: but although he was aware that the reeds of hautboys, clarionets, and bassoons, came nearer the voice of mankind, because there is a faint resemblance between their operations and the functions of the human glottis; and also knew that a reed stop, called *voce humana,* had been adapted to organs, his researches were ineffectual. The sound of those reeds was found, on comparison, to be a very imperfect imitation of what they were intended to represent. At length, having accidentally heard the reed of a bagpipe, he conceived that it exceeded all others in this respect, and thence made it the subject of his future experiments.

"M. Kempelen then proceded to a minute and assisuous study of the mode in which the human speech is produced, which has led to an interesting dissertation, *On the Mechanism of Speech.* There the anatomical position of all the different organs is shewn and described, and also the different relations of each sound to another. After considering these things, he supposed that the fundamental part of the voice consist in A. But this was far from aiding his purpose; and he could obtain no other vowel whether grave or acute, from a reed connected with a tube. However, after long study, he contrived a hollow oval box, divided into halves, which were attached by a hinge, thus resembling jaws. These were adapted so as to receive the sounds issuing from the tube; and by means of opening and closing them, he heard the sounds, A, O, OU, and an imperfect E; but no indications of I, or the German ü. His attention was next directed to consonants; and after the labour of two years, he obtained from different jaws, P. M. L. With these vowels and consonants, he could compose syllables, and even words, – as *mama, papa, aula, lama, mulo,* because each touch of his instrument produced a different sound. Still he had to conquer a great difficulty in the first letter not having ceased when the second commenced; and on attempting to procure the sounds in immediate succession, the letters were confounded together. *Papa,* instead of being one word, evidently consisted of so many different letters; and also the too sudden discharge of air into the tube produced a faint K. Thus *aula* nearly resembled *ka-ku-kl-ka.* Another imperfection likewise arose in an aspiration following the consonant; and *papa* then resembled *ph-a-ph-a.*

"As M. Kempelen proceded in ascertaining the possibility of producing the sound of letters, he surmounted these difficulties, though it cost him a great deal of trouble. But the proper combination of them he saw must result from imitating nature in having only one glottis, and one mouth from which all the sounds should issue, and where their union should be formed. His invention therefore terminated in constructing a machine, which, in some measure, imitated the human speech.

"The speaking machine is of simple structure, and consists of only five principal parts:– 1. The reed, representing the human glottis; 2. An air-chest, with internal valves. 3. Bellows, or lungs; 4. A mouth, with its appurtenances; 5. Nostrils, as in the living subject. We shall not attempt to expatiate on each of these parts, which would lead to a long discussion; and in order to avoid this detail, we shall briefly explain, so far as we are able without figures, the general composition of each. The reed, though not cylindrical, is formed in imitation of the reed of a bagpipe drone, which probably, many of those who peruse this article may have seen. The hollow portion, however, is square; and the tongue of the reed, which vibrates, consists of a thin ivory slip, resting upon it horizontally. This hollow portion, or tube, is inserted into the air-chest; and the discharge of air occasioning a vibration of the ivory, the requisite sound is produced. To soften the vibration, the part supporting the slip is covered with leather; and the moveable spring, shifting along the upper side of the slip, brings the sound of the reed to the proper pitch. The sound is more acute as the spring is moved

forward to the outer extremity, because the vibrations then become quicker; and if shifted farther from the anterior extremity; the sound becomes more grave, as the vibrations are then slower. The extremity of the ivory slip should not be applied close to the tube where it rests, but should remain a little open, that the air may penetrate, and occasion the vibration: thus we observe, that a common bagpipe reed may be closed, and produce no sound. A slight curvature of the ivory slip arises from the pressure of the spring, which is enough for the object desired.

"One end of the air-chest, which is of an oblong figure, receives this voice-pipe, as we shall call it, containing the reed; and into the opposite end is inserted the mouth of the bellows. Both the apertures are guarded by leather, to prevent the unnecessary waste of air: two smaller air-chests are then put into it, each having a valve above closed by the pressure of a spring, and each having a round aperture adapted to receive through the side of the large air-chest a tin funnel, and a round wooden tube for producing hissing sounds – as, *s, z, sch, j:* the voice-pipe is placed in the large air-chest, so as to be between the smaller air-chests.

"When all these parts are fitted to the air-chest, the operation of one lever raising the valve of the first smaller chest connected with the tin funnel, sounds *s,* while the operation of another, raising the valve of the second smaller chest connected with the wooden tube, sounds *sch.* But it is proper further to explain that instead of being a simple funnel, it is in fact a tin box, with a square hole in the outer end, nearly covered by a slip of pasteboard; and the wooden tube is merely the mouth-piece of a common flute, closed at the lower extremity, and with the air-hole modified and contracted; the letter R is produced by the rapid vibration of the ivory slip, owing to a strong discharge of air.

"M. Kempelen's bellows which are formed to supply the place of lungs, have no peculiarities. He found that his machine required six times the quantity of air used by a man in speaking: the nozzle, as we have observed, is inserted into the large air-chest, and the air which it discharges is also received by the small air-chest.

"With regard to the mouth, it consists of a funnel, or rather bell-shaped piece of elastic gum, applied to the air chest, and so adapted, that the sound of the reed issues from it. Elastic gum is selected for this purpose, as more nearly approaching to the natural softness and flexibility of the human organs. Independent of its communiaction with the reed producing the sound required, a tin tube connects it with the air-chest, by means of which it may be kept constantly full of air. This M. Kempelen considers a very essential, or even an indispensable part of the machine. Besides these, there are small additional bellows, for the purpose of aiding the production of such sounds as P. K. T. which need a greater emission of air.

"The nose consists of two tin tubes, communicating with the mouth. When the mouth-piece is closed, and both tubes remain open, a perfect M is heard; when one is closed, but the other is open, N is sounded."

It is necessary to add to this brief account of the principal parts of M. Kempelen's speaking machine, that the sound was regulated in a great measure by various modifications and compressions of the mouth. Four letters, D, G, K, T, he never could obtain perfectly, and substituted a P in expressing them, which was so managed as to bear a considerable resemblance, according to the mode of using it, and was sufficient to deceive the auditor. Nevertheless, M. Kempelen could produce not only words, but entire sentences: such as *opera, astronomy, Constantinopolis;* or *vous êtes mon ami; je vous aime de tout mon coeur; Leopoldus secundus; Romanorum imperator semper Augustus;* and the like. We acknowledge ourselves ignorant of the precise figure under which this machine, no less remarkable for its ingenuity than simplicity, which was ultimately adopted. At first it was exhibited only with the union of its essential parts. M. Kempelen next proposed that it should be an automaton like a child; and although we have reason to believe that his intention was fulfilled, we are by no means certain of the precise figure under which he accomplished it.

Among *automata* perhaps ought to be mentioned several musical instruments, or self-moving organs, of ingenious construction: and as the *automatical* principle might readily be

applied to the extraordinary discovery which Mr. Babbage has recently announced, we think ourselves justified in including under this head, a brief mention of that gentleman's calculating machine.

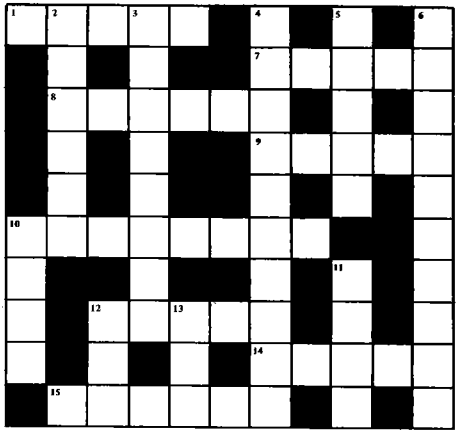
Mr. Babbage has invented an engine capable of computing any table by the method of differences, whether they are positive or negative, or of both kinds. The greater the number of differences, the more will this engine outstrip the most rapid calculator; and by the application of certain parts of no great complexity, the roots of equations, and consequently the roots of numbers may be extracted.

A machine of this kind is absolutely executed. Mr. Babbage has drawings and plans of a second, to multiply any number of figures by any other number; of a third, to make tables of prime numbers from 0 to ten millions; and of a fourth to construct tables which have no order of differences constant. This last engine will calculate tables governed by laws which have not been hitherto shewn to be explicitly determinable; and will solve equations, for which analytical methods of solution have not yet been contrived.

One of the most mortifying difficulties with which calculators are beset, arises from the errors of copyists, and of the press. In Mr. Babbage's engine, means are contrived by which the machine itself takes from several boxes, containing types, the numbers which it calculates: thus becoming at the same time computer and compositor; and preventing all error both in copying and in printing.

Mr. Babbage's machine is worked by the hand. It would be very easy, if any advantage were to be gained by such a method, to apply to it a self-moving power.

«Simple Crossword»



Solution on Page 149

CLUES

Across

1. Addition of doubtful improvement (5)
7. "To decorate by inserting different materials into a ground work" (5)
8. Old Swiss centre of the musical box industry. (6)
9. This will stop the note from playing! (2,3)
10. One of the makers who switched to phongraph production. (8)
12. Changes the tune not so slowly as its name suggests (5)
14. Term used on tempo indicators meaning "slow" (5)
15. God of the winds after whom an organ is named (6)

Down

2. Queen of the music boxes (6)
3. A set up requiring several teeth tuned to the same note. (8)
4. Potential music easier to acquire than spare spare cylinders or discs. (10)
5. A disc is quite often called this by unknowledgable dealers (5).
6. Disc box with a vegetable in its name. (10)
10. These will make the cylinder bristle (4)
11. This varies from make to make (4)
12. A maker would often do this if patents were infringed (3)
13. Tool used in cabinet work. (3)

——— by Frank S. Greenacre

THE Summer meeting and A.G.M. of the Musical Box Society of Great Britain was held on Saturday, May 17th and Sunday, May 18th, at the Great Western Royal Hotel, Paddington, London.

The morning speaker on Saturday was Henry A.J. Lawrence who related some of his colourful experiences with musical clocks in various shapes, sizes and forms.

SOCIETY MEETING

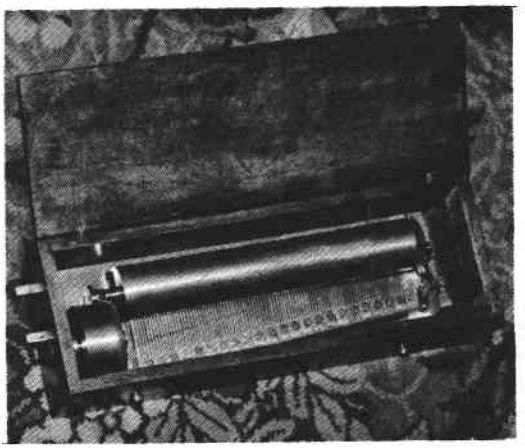
After the luncheon recess, President Bob Burnett opened the business meeting by welcoming Members and guests who included our old friends, Howard and Helen Fitch from New Jersey and Jean-Pierre Rochefort from Paris. He then read a letter of welcome received from the President of the MBSI, Harvey Roehl. Following the reading of the minutes of the last A.G.M. and Autumn meeting, Secretary Cyril de Vere Green reported that there has, in recent months, been a slow down in rate of new members. He then stated that, due to his having accepted a number of professional engagements for the coming year, incurring a certain amount of overseas travel, he believed it would no longer be right for him to continue as secretary. Whilst stating that he would remain in office until a replacement was found, he urged that he must relinquish the office of secretary by the end of this year. All Members voiced their dismay at this decision, but agreed that the Committee should seek a new secretary.

Treasurer David Tallis, in delivering his report and financial statement for the year, expressed his doubts that the Society could continue to afford to publish four Journals a year of the present cost. The present bank balance was £301.1.0. with some further cash to come in. Editor Arthur Ord-Hume agreed that magazine costs were high and, following various suggestions from the hall that a cheaper means of production be sought, he went into some detail to explain that there was no cheaper way of attaining like comparable quality. He also outlined his duties as Hon. Editor,

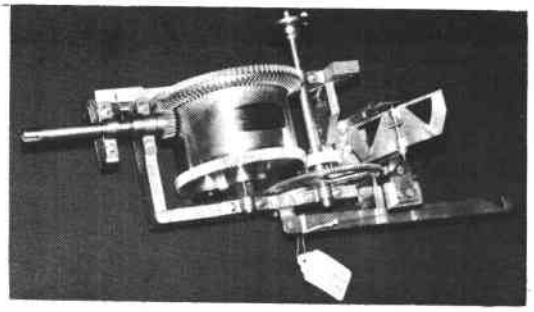
Five nations united by a love of musical boxes - or should it be a hatred of squeaking dampers? Left to right: Howard Fitch (New Jersey, U.S.A.); G. Hoschek (Vienna, Austria); Bob Burnett (Guilsborough, U.K.); Dr. Benoit Roose (Antwerp, Belgium); Jean-Pierre Rochefort (Paris, France)

explaining the valuable working arrangement which he had established with both our IBM setter, Mr. Montagu Watson (present in the hall as a guest) and our printer, Mr. Tony Mack.

He suggested to the membership, through the Chair, that there were three choices open to us aside from raising again the membership fees. These were to reduce the number of pages per issue, to reduce the number of issues to three



An early key-winder (with the instant-stop removed!) amongst the boxes on display.



Complete new power unit for Monopol made in the Harding workshop

per annum; or to publish one very large issue annually. It was agreed that the most acceptable solution would be the first one, and it was decided that, at least for this year, four issues would be published with the Editor to investigate further economies without reducing the quality of the Journal.

Editor Ord-Hume then said that due to pressures from other sources, particularly connected with his job as technical editor of an international aviation magazine, we was finding less and less time in which to work on the Journal. He therefore thought it only right that he should offer his resignation at an early date and was therefore hoping that someone, preferably in the London area, would offer to assume his mantle.

Under Any Other Business, Secretary de Vere Green discussed plans for linking up with Members of the Musical Box Society International for a visit to Holland, Belgium, France and Switzerland in either 1970 or 1971. Some eight members indicated their wish to take part in such a tour.

The business part of the meeting concluded, Bob Burnett delivered an illustrated lecture on singing birds, showing a number of boxes as well as slides and playing tape recordings of others. He particularly demonstrated the differences in songs between birds of different regimes and manufacturers.

This was followed by a practical demonstration of tape-recording techniques given by Arthur Ord-Hume and Cyril de Vere Green during which quality recordings were produced from both large and small boxes.

After the tea interval and demonstrations of various exhibits and much chatting, the annual dinner was held. Guest speaker was the well-known musician and band-leader Eric Robinson who delivered a most amusing speech in response to the welcoming address given by Member Jocelyn Walker.

Jocelyn Walker beams through the flowers on the table at coffee.

Eric Robinson conducting the MBS dinner

The draw for the raffle was made by Mrs. Robinson, and the winning number ticket was held by Mr. Pedersen of New Jersey, a guest of Howard and Helen Fitch. The prize, a snuff-box (with music), was duly handed over

Continued on page 148

The catalogue reproduced between pages 109 and 128 has been loaned by Member Jackson Fritz. It dates from about 1888.

Catalogue and List of Prices

OF

HIGH-CLASS

MUSICAL BOXES,

BY

THE MOST EMINENT MAKERS.

Messrs. WALES & McCULLOCH are, and have been for the last thirty-five years, direct importers of the Choicest Musical Boxes. Those described in the following pages have, for the most part, been specially made and finished for them in Switzerland, great care having been bestowed to attain fidelity in the rendering of the music, with richness of tone, combined with solidity of construction, insuring the utmost durability in any climate. Several of the instruments have the advantage of improvements recently introduced, which add much in brilliancy and effect to the performance of the music.

TERMS.

Cash on delivery. Orders from the Country must be accompanied by a remittance.
Post-Office Orders to be made payable at the General Post Office.
Cheques to be crossed "London Joint Stock Bank."

WALES AND McCULLOCH,

IMPORTERS OF MUSICAL BOXES,

Nos. 22 & 20, LUDGATE HILL,

AND

No. 56, CHEAPSIDE,

LONDON.

SMALL MUSICAL BOXES.

One Tune, 2s. 6d.

An Assortment in Japanned Cases, the music produced by turning a handle; for the amusement of Children.

Two Tunes, 9s.

(In former Catalogue, 14s.)

Composition Cases.

Bonnie Dundee
Sea is England's glory

Libiamo—*Traviata*
Ah! che la morte

Three Tunes, 15s.

(In former Catalogue, 21s.)

Composition Cases.

Robert! toi que j'aime
Ah! bello a me—*Norma*
Comè gentil

Robert! toi que j'aime
Non piu mesta
Ah! bello a me—*Norma*

Japanned case.

18s.

Home, sweet home
Madame Angot March
Tyrolean Song

Three Tunes, 20s.

(In former Catalogue, 28s.)

Beautifully inlaid Wood Cases, 5 by 3 by 2 inches.

Robert! toi que j'aime
Non piu mesta
Ah! bello a me—*Norma*

Bay of Biscay
Gipsies' chorus—Bohemian Girl
Those evening bells

There is a Flower
Ain't I sweet?—*Bishop*
Mary, O come back to me

Oft in the stilly night
Write me a letter from home
The judge's song—*Sullivan*

Spring, gentle spring
My grandfather's clock
Coming through the rye

Four Tunes, 22s.

(In former Catalogue, 30s.)

Composition cases.

When Johnny comes marching home
Kafoozelum
O would I were a bird
Mabel Valse—*Godfrey*

There is a Flower
Ain't I sweet?
When I went home with Belle
Mary, O come back to me

Galop—*Princess Trebesonde*
Le Doctor Rose Melody
Le Corsaire Noir
Le Trane d'Ecosse

Four Airs, 26s.

(In former Catalogue, 38s.)

Beautifully Inlaid Wood Cases, 5 by 3 by 2 inches

Come, birdie, come
Charlie Stuart
Spring, gentle spring
Air—*Giroflé Giroflа*

Me protegge—*Norma*
Tramp, tramp
Il Bacio Waltz—*Arditi*
Coming thro' the rye

Sweet hour of prayer
Almost persuaded
The home over there
Stand up for Jesus

Six Airs, 35s.

Beautifully Inlaid Wood Cases 6 by 3 by 2 inches.

(In former Catalogue, £2 10s.)

Ye banks and braes
Oft in the stilly night
Those evening bells
Last rose of summer
Bluebells of Scotland
Home, sweet home

Augusta Mazurka
Le pauvre seul ami fidèle
Ach sofrom—*Martha*
Rosin Valse—*Labitsky*
Weekin Polka—*Neumann*
Les deux hommes d'armes — *Geneviève de Brabant*

Stride la Vampa
Faust Waltz—*Gounod*
Le fruit d'amour
Ah ! che la morte
Sempre libera—*Traviata*
Coro per Correto—*Lucia*

Conspirators' Chorus—*Madame Angot*
March—*La Muette*
Wirwinden—*Freyschütz*
Quadrille—*Madame Angot*
Me protegge—*Norma*
Faust Waltz

Liesel and Gretel
Faust Waltz—*Faust*
Vie Parisienne Tyrolienne
Jodler March
Nostri monti—*Trovatore*
Bells of the Monastery

Cavatine—*Lucrezia*
Serenade—*Don Giovanni*
Galop—*Orphée aux Enfers*

Air—*Norma*
Finale—*Vie Parisienne*
Waltz—*Devamand*

Four Airs, with Mandoline and Zither.

Wood Cases.

£2 5s.

(Former price, £3 10s.)

Home, sweet home
Les Cloches de Corneville Waltz
Last rose of summer
Cornflower Waltz

Wiener Kesken—*Strauss*
Zitti—*Barber of Seville*
Lied ohne Worte—*Zumpe*
Marche—*Madame Angot*

Conspirators' Chorus—*Madame Angot*
Lied ohne Worte
Wiener Kesken Waltz
Largo al factotum

Six Airs, with Zither and Mandoline Accompaniment.

£2 12s.

(Price in former Catalogue, £4.)

Valse—*Madame Angot*
The rose song —*Talisman*
Rose blanche Polka
Brindisi—*Giroflé Girofla*
Amouretten Waltz
Nebuchadnezzar Mazurka

Two Airs.

Wood Cases, 7½ by 5½ by 5 inches.

Turning with handle, for the amusement of Children.

22s. each.

(Former price 35s.)

With 3 bells.

Blue bells of Scotland
Last rose of summer

With drum.

Would I were with thee
My lodging is on the cold ground

LARGE MUSICAL BOXES.

Four Airs, £2 15s.

(Price in former Catalogue, £4.)

Rosewood and Walnut Cases, 14 by 6 by 5 inches.

1759.

Com è gentil—*Don Pasquale—Donizetti*
Perche non posso—*Sonnambula—Bellini*
Robert ! toi que j'aime—*Meyerbeer*
Scenes that are brightest—*Wallace*

2719.

O would I were a boy again
That's the style for me, boys
Awfully clever—*Hunt*
Songs of the wood—Waltz

2592.

Me protegge—*Norma*
March—*Fille du Regiment*
British Grenadiers' March
Coldstream Guards' March

Four Airs, Bell Accompaniment. £5.

Size, 17 by 12 by 9½ inches.

3343.

Air, Fille du Tambour Major—*Offenbach*
Quadrille—*Belle Hélène*
Reveille Matin Polka
Valse des Parisiennes

Six Airs, £4 4s.

Rosewood inlaid cases, 17 by 8 by 5 inches.

12295.

Auld lang syne
Scots wha hae wi' Wallace
Bluebells of Scotland
Ye banks an' braes
The Campbells are coming
Bonnie Dundee

12279.

Air—*Madame Angot*
Miserere—*Trovatore.*
Robert toi que jarine—*Robert le Diable*
La ci darem—*Don Giovanni*
Canzone—*Rigoletto*
Charmante musique—*Zauberflote.*

12294.

The Queen's Waltz—*D'Albert*
My Darling Waltz—*Strauss*
A Night at Venice Waltz—*Strauss*
Nanon Waltz—*Genée*
Dolores Waltz—*Waldteufel*
Mermaid's Waltz ,,

1969.

19 *by* 8½ *by* 5½ *inches.*

Willie, we have missed you—*Foster*
I'm off to Charlestown—*Mackney*
Beautiful star—*Foster*
Wait for the wagon—*Mackney*
Hoop de dooden doo—*Westrop*
Old Aunt Sally—*Sarkazy*

21068.

Myosotis Waltz—*Lowthian*
March of the Peers—*Iolanthe—Sullivan*
Bric-a-Brac Polka—*Coote*
Ehren on the Rhine Waltz—*Hutchinson*
Mignon Gavotte—*Thomas*
Helen's Babies Polka—*Laughlin*

1070.

No. 1. Pantalon
2. Eté
3. Poule
4. Trenise
5. Finale
} *Royal Irish Quadrille—Jullien*

Olga Waltz—*Jullien*

Six Airs, Zither Accompaniment, £5.

4547.

Molly darling
Sweethearts Waltz
Gavotte—*Mignon*
Conspirators' Chorus—*Faust*
Sweet spirit, hear my prayer
Gavotte—*Beatrice*

4542.

Ah ! non guinge—*Sonnambula*
Quartett ,,
Scenes that are brightest ,,
Sweet spirit, hear my prayer
Blue Danube Waltz
Shadow Dance—*Dinorah*

4558.

Be wise in time—*Dorothy*
L'Amour—*Carmen*
Tit Willow—*Mikado*
Dorothy Polka
Toreador's Song—*Carmen*
Were I thy bride—*Yeomen of the Guard* —*Sullivan*

Six Airs, Concerto, £8.

23 *by* 9 *by* 6½ *inches.*

11145.

Autographe Waltz
Volubilis Mazurka
Carnival of Venice
Una voce—*Barber of Seville*
Cacta Diva—*Norma*
La Frigane Galop—*Strauss*

Six Airs, Mandoline, £8.

21 *by* 10 *by* 7 *inches.*

12423.

Soldaten lieder Waltz—*Gung'l*
Waltz—*Belle Hélène—Offenbach*
Blue Danube Waltz—*Strauss*
Morning leaves ,,
Faust Waltz—*Gounod*
Guards Waltz—*Godfrey*

Six Airs, Sublime Harmonie, £8 5s.

23 *by* 10 *by* 7½ *inches.*

12363.

Those evening bells—*Scotch*
Bonnie Dundee ,,
Last rose of summer—*Stevenson*
Blue bells of Scotland
Power of love—*Balfe*
Sweet spirit, hear my prayer—*Wallace*

Six Airs, Mandoline, £7 15s.

Walnut Wood Case, 20½ *by* 10 *by* 7 *inches.*

Soldier songs Waltz—*Gung'l*
Blue Danube ,, —*Strauss*
La Belle Hélène ,, —*Offenbach*
Morning leaves ,, —*Strauss*
Faust ,, —*Gounod*
The Guards ,, —*Godfrey*

Six Airs, Concerto Tremolo, and Zither.

No. 20127. **£8 10s.**

(Former price, £13 13s.)

Size, 23 *by* 9 *by* 6 *inches.*

Fatinitza March—*Suppé*
Mignon Connais-tu—*Thomas*
Carmen—Polka—*Bizet*
Le Prophete—Triumphe—*Meyerbeer*
Telegram Waltz—*Strauss*
Mandolinata—*Paladilhe*

Six Airs. Mandoline and Pianoforte.

Inlaid Wood Case, 30 *by* 12 *by* 9½ *inches.*

No. 18978. **£12 10s.**

Quel jour serein—*William Tell—Rossini*
Viora Contende—*Trovatore—Verdi*
Si Vendetta—*Rigoletto—Verdi*
The last rose of summer.
See the Conquering hero comes—*Handel*
Kronungslieder Waltz—*Strauss*

Six Airs. Sublime Harmony.

Inlaid Wood Case, 25 *by* 10½ *by* 9 *inches.*

£7 10s.

(Former price, £10 10s.)

La Sontag Polka—*Strauss*
La Louisiannaise Schottische—*Wagner*
Cloches des Corneville Valse
Les Alsaciennes Mazurka
Quadrille—*Jolie Parfumense*
Tramway Galop

Eight Airs.

"Harp and Piccolo" Accompaniment.

No. 20168. **£10.**

22 by 8½ by 6 inches.

Little Buttercups Song—*Pinafore*
Je ne sais—*Cloches de Corneville*
Come where my love lies dreaming.
Polka—*Carmen*
Telegramme Valse—*Strauss*
Home, sweet home—*Sir H. Bishop*
Volunteers' Trumpets Polka
Champagne Galop—*Lumbye*

Eight Airs.

Harp Accompaniment.

No. 19456. **£8 8s.**

22 by 8½ by 5½ inches.

March—*Daughter of the Regiment*
Careless Polka—*Faust*
Carnival of Venice
Dinorah—Song—*Meyerbeer*
Legend of the Rhine
Doctrinen Waltz—*Strauss*
Last rose of summer
Mandolinata—*Paladilhe*

Eight Airs.

(Second Quality.)

No. 24636. **£4 4s.**

20 by 8½ by 5½ inches.

Her bright smile
Oft in the stilly night
Romance—*Rip van Winkle*
Knowest thou—*Mascotte*
Here's to the maiden bashful
Tom Bowling
The girl I left behind me
Lustige Krieg Waltz—*Strauss*

Eight Airs.

(Second Quality.)

No. 877. **£2 15s.**

Size, 17 by 7½ by 5 inches.

Mikado Waltz
Ada Polka
Martha—*Romance*
Little Buttercup—*Pinafore*
Gentle Annie—Ballad
Couplet—*Nell Gwynne*
March——*Elpagine*
Mikado Galop

No. 21220.

Valse—*Cloches de Corneville*
Chanson—*Princess Ida*
I dreamt I dwelt in marble halls
Robin Adair
Oft in the stilly night
Wait till the clouds roll by
Chorus—*Mikado*
Englich Reich March

Eight Airs, £6.

Rosewood Cases, 20 by 6½ inches.

4540.

Home, sweet home—*Bishop*
Sweet spirit, hear my prayer—*Wallace*
Last rose of summer—*Stevenson*
Those evening bells
Then you'll remember me—*Balfe*
Ye banks an' braes—*Burns*
Auld lang syne ,,
Gavotte—*Mignon—Thomas*

4559.

Were I thy bride—*Yeomen of the Guard —Sullivan*
Free from his fetters ,, ,,
Chorus in 1st Act ,, ,,
Killaloe, song—*Martin*
They all love Jack—*Adams*
Dashing Militaire—*Old Guard*
Love's old sweet song—*Molloy*
Dorothy—*Minuet—A. Cellier*

4549.

Rose Queen Waltz—*Crowe*
Boulanger March
Minuet—*Dorothy—Cellier*
La Gatina—*Buccalossi*
Waltz—*Mikado—Sullivan*
Gavotte—*Mignon—Thomas*
Excelsior Mazurka
Pepita Valse—*Lecocq*

4546.

Auld lang syne—*Burns*
Bluebells of Scotland
The lass o' Gowrie
The bonnie breast-knots
There's nae luck about the house
Robin Adair
Ye banks an' braes
The Campbells are coming

4543.

Be wise in time—*Dorothy*
L'Amour—*Carmen*
Conspira'ors' Chorus—*Madame Angot*
Robert! toi que j'aime—*Robert le Diable*
La ci darem—*Mozart*
La donna e Mobile—*Verdi*
O dolce contento—*Mozart*
Tit Willow—*Mikado—Sullivan*

2813.

Vive le Roi Fantasia—*Offenbach*
Fra i rami—*Comtesse Amalfi—Petrella*
Quand de la nuit—*L'Eclair—Halévy*
Chœur des Gens—*Vve. Malabar—Hervé*
Suivons dans son chemin „ „
Bras dessus—*Madame Angot—Lecocq*
Pazza d'Amore—*Klein*
Wein, Weib, und Gesang—*Müller*

4219.

Home, sweet home—*Bishop*
Casta diva—*Norma—Bellini*
Suoni la tromba—*Puritani—Bellini*
Last rose of summer
La ci darem—*Dan Giovanni—Mozart*
Ranz des Vaches—*Swiss*
Waltz—*Faust—Gounod*

Ten Airs.

Walnut wood cases, **£7 10s.**

20½ *by* 9 *by* 6 *inches.*

4539.

Home, sweet home—*English*
Sweet spirit, hear my prayer—*English*
Ye banks and braes—*Scotch*
Auld lang syne—*Scotch*
Last rose of summer—*Irish*
March of the Men of Harlech—*Welsh*
Star-spangled banner—*American*
Soldiers' chorus—*Faust—French*
Ah! che la morte—*Italian*
Ranz des Vaches—*Swiss*

4538.

Auld lang syne—*Burns*
Scots wha hae wi' Wallace bled—*Burns*
Campbells are coming—*Jacobite*
Bluebells of Scotland—*Stirling*
The lass o' Gowrie—*Hogg*
Home, sweet home—*Bishop*
Ye banks and braes—*Burns*
The girl I left behind me
Bonnie Dundee
God save the Queen

4220.

Home, sweet home—*Bishop*
Sweet spirit, hear my prayer—*Lurline*
Ye banks and braes
Auld lang syne
Kathleen Mavourneen
Last rose of summer
March of the Men of Harlech
Star-spangled banner
Soldiers' chorus—*Faust*
Ranz des Vaches—*Swiss*

Ten Airs, Concerto Piccolo.

Inlaid wood case, 26½ *by* 10 *by* 7 *inches.*

No. 20740. **£8 10s.**

(Former price, £13.)

Couplet—La Fille du Tambour Major—*Offenbach*
L'Enclume Polka—*Parlow*
Soldiers' Chorus—*Faust—Gounod*
Last rose of summer
Mabel Waltz—*Godfrey*
Je ne sais—*Cloches de Corneville—Planquette*
Spring, gentle Spring—Waltz—*Riviere*
I am a Pirate—*Pirates of Penzance—Sullivan*
Little Buttercup's Song—*Pinafore—Sullivan*
Miserere—*Trovatore—Verdi*

Eight Airs.
Mandoline Expression.

Rosewood inlaid case, 22 *by* 9 *by* 5½ *inches.*

No. 2910. **£7.**

(Former price, £11.)

Mira o Norma—*Bellini*
Ce Matin l'ou—*Giroflé Girofla—Lecocq*
Like fair flower—*Talisman—Balfe*
Chanson a Loire—*Stradella—Flotow*
Chœur des Escilés—*Belle Bourbonnaise—Coedes*
Per me ore fatale—*Trovatore—Verdi*
Die Zauber trompette—Polka—*Hamm*
Wiener Freschen Valse—*Strauss*

Eight Airs,

Tremolo Harmonique.

22½ *by* 9 *by* 6½ *inches.*

No. 11146. **£8 8s.**

Boccaccio Waltz—*Suppé*
Carmen Polka—*Bizet*
Fleurs d'Amour—*Mazurka*
Air—L'Ombre—*Flotow*
Romance—*Alice—Archer*
Duet, Linda Chamounix
Finale—Un Ballo in Maschera
Marche Africaine—*Meyerbeer*

Eight Airs.

Voix Celeste Accompaniment.

26 *by* 14½ *by* 13 *inches.*

£17 10s.

Toreador's song—*Carmen*
Le Tribut da Zamerah
Serenade—Countess d'Hoffman
1001 Nights' Valse
Air—*Guillaume Tell*
Overture—*Poete et Paysan*
„ *Semiramide*

Eight Airs,

With Flute Accompaniment.

Grand Instrument.

26 *by* 14½ *by* 13 *inches.*

No. 22616. **£17 10s.**

Rip van Winkle Waltz
Stephanie—*Gavotte*
Erninie Waltz
Be wise in time—*Dorothy*
Little sailor's Waltz
The lost chord
Sunset Waltz
Ko ke song—*Mikado*

Eight Airs,

Sublime Harmony.

Walnut wood case, 23 *by* 10 *by* 7 *inches.*

No. 4241. **£9 10s.**

Home, sweet home—*Bishop*
Casta diva—*Norma—Bellini*
Suoni la tromba—*Puritani—Bellini*
Last rose of summer
La ci darem—*Don Giovanni—Mozart*
Shadow dance—*Dinorah*
Ranz des Vaches—*Swiss*
Faust Waltz—*Gounod*

Eight Airs, £10.

(Price in former Catalogue, £16.)

Mandoline-Expressive.

Instruments of exceeding brilliancy.

Rosewood Inlaid Cases, 28½ *by* 11 *by* 8 *inches.*

3074

Soldiers' chorus—*Faust—Gounod*
Ah! che la morte—*Trovatore—Verdi.*
Priere—*Zampa—Herold*
Then you'll remember me—*Balfe*
The power of love—*Satanella* „
Last rose of summer
Loreque mes yeux—*Martha—Flotow*
Light of love—*Offenbach*

2790.

Then you'll remember me—*Balfe*
Home, sweet home—*Bishop*
Those evening bells—*Moore*
Bonnie Dundee—*Jacobite*
The last rose of summer—*Stevenson*
The power of love—*Satanella*
Sweet spirit, hear my prayer—*Lurline*

Eight Airs, £12.

(Price in former Catalogue, £21.)

With the brilliant accompaniment of (visible) Drum, Bells, and Castanets. Fine in tone, and extremely effective.

2556.

Jodler March
Chanson de la Cavalerie-*Etoile du Nord —Meyerbeer*
Pas redoublé—*La Favorite—Donizetti*
Mazurka—*Martha—Flotow*
Chœur—*Les Masques—Pedrotti*
Les deux hommes d'armes—*Geneviève de Brabant—Offenbach*
Myrthen Kranze—*Waltzer—Strauss*
Polka del Alpilogno—*Borri*

Eight Airs, *Second Quality, with Bell Accompaniment.*

Wood Case, 15 *by* 10½ *by* 7½ *inches.*

£3.

Rip Van Winkle
La Mascotte Valse
Chanson du Torreador
She wanted to be a fairy
They are mashers
Alladin Lancers, No. 4.
Gavotte—*Mignon.*
Juanita Waltz

Twelve Airs, £8.

(Price in former Catalogue, £12.)

Rosewood Cases, 20½ *by* 8½ *by* 6 *inches.*

3305.

Bonne Bouche Polka—*Waldteufel*
Gavotte—*Mignon—Thomas*
Soldaten Lieder Waltz—*Gung'l*
Royal Bride Schottische—*Marriott*
La Belle Hélène Waltz—*Offenbach*
Blue Danube Waltz—*Strauss*
Morgenblatter Waltz „
Champagne Galop—*Lumbye*
Entre nous Polka—*Waldteufel*
The Fire Fly Polka—*Goodban*
Madeleine Mazurka—*Faust*

Twelve Airs.

Piano and Forte Accompaniment.

No. 2165. **£10.**

(Price in former Catalogue, £15.)

Rosewood Case, 22 *by* 8½ *by* 6½ *inches*

Shadow dance—*Dinorah—Meyerbeer*
Marche du Sacre—*Prophète* „
Casta diva—*Norma—Bellini*
Eh quoi ma main—*Gustavus—Auber*
The power of love—*Satanella—Balfe*
Ah! che la morte—*Trovatore—Verdi*
Faust Valse—*Faust—Gounod*
The Soldiers' Chorus „
Traviata Waltz—*D'Albert* [*Rossini*
Largo al factotum—*Barber of Seville—*
Sweet spirit, hear my prayer—*Lurline*
Fishermen's Chorus—*Masaniello-Carafa*

Twenty Airs.

Rosewood Inlaid Case, 28 *by* 12 *by* 8 *inches.*

No. 21057. **£15.**

(Former price, £20.)

Home, sweet home—*Bishop*
Sweet spirit, hear my prayer—*Wallace*
Buttercup's Song—*Pinafore—Sullivan*
Largo al factotum—*Barber of Seville*
Shadow Dance—*Dinorah*
Some day—Song
Waltz—*Faust—Gounod*
The last rose of summer
Trio—*Iolanthe—Sullivan*
March of the Priests—*Prophete*
Zitti, zitti—*Barber of Seville*
Brandisi—*Traviata—Verdi*
Soldiers' Chorus—*Faust—Gounod*
Bric-a-brac Polka
March of the Peers—*Iolanthe—Sullivan*
Ehren on the Rhine Waltz
Gavotte—*Mignon*
La ci darem—*Don Giovanni*
Sailing—Song
Myosotis Waltz

The 'NOVELTY' MUSICAL BOX,

WITH SIX INTERCHANGEABLE BARRELS.

Rosewood Case, 16 by 10 by 9½ inches, with Drawer to hold Six Cylinders, £10 10s.

SELECTION AS FOLLOWS—

H.M.S. Pinafore.—Valse—*Sullivan*
The Campbells are coming
Believe me

La Mascotte—Quelle tournure—*Audran*
Le Caïd—Le Tambour-Major—*Thomas*
Norma—March—*Bellini*

The Mikado song—*Sullivan*
Take me back to home—*Huntley*
The last rose of summer

Il Trovatore—Ai nostri—*Verdi*
Le Petit-Duc—Mot d'ordre—*Lecocq*
Boccacio—Marsch—*Suppé*

Elsässer—Polka—*Herrmann*
Dorothy—Valse—*Cellier*
Orpheus in der Unterwelt. [*Offenbach* Galop—

Die Zauberflöte. Bei Männern—*Mozart*
Aïda—Marsch—*Verdi*
Haydée—La brise légère—*Auber*

EXTRA GRAND MUSICAL BOX.

ROSEWOOD INLAID CASE.

Size, 26 *by* 13½ *by* 10 *inches*

FOUR GRAND SELECTIONS, WITH

Piano and Forte Accompaniment, £20.

(In former Catalogue, £38.)

1783.

La terre étale ses Attraits	*Creation—Haydn*	
Celebre Grand Chœur	,,	,,
Soudain Cayle imposante	,,	,,
Brilliant de Gloire	,,	,,

FOUR GRAND SELECTIONS.

No. 18179. **£9.**

(In former Catalogue, £16 16s.)

25 *by* 12 *by* 9½ *inches.*

Overture to Nebuchadnezzar—*Verdi*
,, Othello *Rossini*
,, La Gazza Ladra ,,
Kronungslieder Waltz—*Strauss*

OVERTURES,
With Piano Accompaniment.

Rosewood Inlaid Case, 24 *by* 10½ *by* 7½ *inches.*

No. 1712. **£12.**

(Price in former Catalogue, £21.)

L'Italienne a Alger—*Rossini*
Fra Diavolo—*Auber*
Robert le Diable—*Meyerbeer*
Der Freyschütz—*Weber*

EXTRA GRAND MUSICAL BOX.

Size, 30½ by 13½ by 11 inches.

BY NICOLE FRÈRES.

£23.

(Price in former Catalogue, £36.)

2128.

Home, sweet Home, with variations		(1st Part)...	...	...	*Thalberg*
Ditto	ditto	(2nd Part)	...	...	,,
Carnival of Venice, with variations		(1st Part)	...	...	*Schuloff*
Ditto	ditto	(2nd Part)	...	...	,,
The Last Rose of Summer, with variations		(1st Part)	...	...	*Thalberg*
Ditto	ditto	(2nd Part)	...	..	,,
Lily Dale, with variations ...		(1st Part)	...	...	,,
Ditto	ditto	(2nd Part)	...	...	,,

EXTRA GRAND MUSICAL BOXES.

ROSEWOOD INLAID CASES.

MANUFACTURED BY NICOLE FRÈRES.

FOUR OVERTURES. 33 by 16 by 10 inches.

£20.

(Price in former Catalogue, £31 10s.)

2000.

Overture to—
- Semiramis—*Rossini*
- Freyschutz—*Weber*
- Flute Enchantee—*Mozart*
- Guillaume Tell—*Rossini*

3131.

Overture to—
- Puritani—*Bellini*
- Norma „
- Noces de Figaro—*Mozart*
- La Gazza Ladra—*Rossini*

2117.

Overture to	Barber of Seville	*Rossini*
„	Flute Enchantee	*Mozart*
„	Faust	*Gounod*
„	Une Nuit a' Grenade ...	*Kreutzer*

Pianoforte Accompaniment, £24 each.

(Price in former Catalogue, £38.)

Same size as above.

1362.

Overture to—
- Guillaume Tell—*Rossini*
- Don Giovanni—*Mozart*
- Sonnambula—*Bellini*
- Pres aux Clercs—*Herold*

3135.

Overture to—
- Guillaume Tell—*Rossini*
- Gazza Ladra „
- Tancredi „
- Fra Diavalo „

3157.

Overture to—
- Pres aux Clercs—*Herold*
- Cheval de Bronze—*Auber*
- Stradella—*Flotow*
- Fille du Regiment—*Donizetti*

1842.

Overture to—
- Barber of Seville—*Rossini*
- Semiramide „
- Guillaume Tell „
- Flute Enchantee—*Mozart*

GRAND MUSICAL CABINET.

Thirty-six Airs - - - - - - £34.

Mandoline and Zither accompaniment.

(Price in former Catalogue, £55.)

38 inches high, 43 inches long, and 22 inches deep, in the form of a neat table. The cabinet work is of choice walnut, while the mechanism, consisting of Six Moveable Cylinders, each representing Six Airs, of favourite music (36 tunes in all), is provided with suitable fittings, for safe keeping in the drawers underneath, which are capacious enough to receive additional barrels, if required at a future time.

No. 9567.

Cylinder No. 1.

Home, sweet home—*Bishop*
Star-spangled banner
The parting gift
Then you'll remember me—*Balfe*
The power of love „
Eily, mavourneen—*Benedict*

Cylinder No. 2.

Tramp, the prisoner's hope
Scenes that are brightest—*Maritana*
The brook
Over the sea
Come where my love lies dreaming
The mocking bird

Cylinder No. 3.

Robin Adair
My pretty Jane
Ye banks and braes
Early in the morning
Savourneen deelish
The last rose of summer

Cylinder No. 4.

Miserere—*Trovatore*
Brandisi „
Sweet spirit, hear my prayer
Soldiers' Chorus—*Faust*
Stride la Vampa—*Rigaletto*
Shadow dance—*Dinorah*

Cylinder No. 5.

March of the Priests—*Prophète*
Largo al factotum—*Barber of Seville*
Zitti, zitti „
Robert, toi que j'aime—*Robert le Diable*
Carnival of Venice
Serenade—*Don Pasquale*

Cylinder No. 6.

Gloire—*Orpheus aux Enfers*
Chorus—*J. Lombardi*
King of Chorus—*Pirates of Penzance*
Colonel's Song—*Patience*
Paul and Bunthorne „
Song—*Robert le Diable*

EXTRA GRAND MUSICAL CABINET.

TWENTY-EIGHT OVERTURES OR PIECES.

With Variations, £75.

(Price in former Catalogue, £120.)

MANUFACTURED BY NICOLE FRÈRES.

46 inches high, 36 inches long, and 23 inches deep, occupying the space of a Pianoforte, and available as an Escritoire, or Writing Desk, of unique and elegant character. The cabinet work is of beautiful coloured woods, while the mechanism, consisting of Six Movable Cylinders, each representing the exquisitely beautiful pieces of music indicated below, and provided with suitable fittings, for safe keeping, forms one of the *chef d'œuvres* of the eminent firm by whom it was manufactured. The brilliant performance of the instrument must be heard to be appreciated. Additional barrels could be supplied at any time.

The music is arranged as follows:—

Cylinder No. 1.

Robin Adair (1st Part)—*Wallace*
Ditto (2nd Part) ,,
Ye banks and braes (1st Part) ,,
Ditto (2nd Part) ,,

Cylinder No. 2.

Carnival de Venise (1st Part)—*Schuloff*
Ditto (2nd Part) ,,
Lily Dale (1st Part)—*Thalberg*
Ditto (2nd Part) ,,

Cylinder No. 3.

Home, sweet home (1st Part)—*Thalberg*
Ditto (2nd Part) ,,
Last rose of summer (1st Part) ,,
Ditto (2nd Part) ,,

Cylinder No. 4.

We love the place, O God
Great God, what do I see
Brief life is here our portion
Sun of my soul
Abide with me
When I survey the wondrous cross
Holy, holy, Lord God Almighty
Hark! the herald angels sing
} *Mandoline Expression.*

Cylinder No. 5.

Overture de l'op Huguenots—*Meyerbeer*
Ditto Don Juan—*Mozart*
Ditto Freyschütz—*Weber*
Ditto Tancrédi—*Rossini*

Cylinder No. 6.

Overture de l'op. Guillaume Tell—[*Rossini*
Ditto Fra Diavalo—*Auber*
Ditto Flute Enchantée—*Mozart*
Ditto Barbière de Seville—*Rossini*

FORTY-FOUR AIRS OR OVERTURES.

MANUFACTURED BY NICOLE FRÈRES.

ROSEWOOD CASE.

£120.

(Price in former Catalogue, £180.)

No. 3293.

Cylinder No. 1.

Robin Adair (1st Part)—*Wallace*
Ditto (2nd Part) ,,
Ye banks an' braes (1st Part) ,,
Ditto (2nd Part) ,,

Cylinder No. 2.

Carnival de Venise (1st Part)—*Schuloff*
Ditto (2nd Part) ,,
Lily Dale (1st Part)—*Thalberg*
Ditto (2nd Part) ,,

Cylinder No. 3.

Home, sweet home (1st Part)—*Thalberg*
Ditto (2nd Part) ,,
Last rose of summer (1st Part) ,,
Ditto (2nd Part) ,,

Cylinder No. 4.

We love the place, O God
Great God, what do I see
Brief life is here our portion
Sun of my soul
Abide with me
When I survey the wondrous Cross
Holy, holy, Lord God Almighty
Hark! the herald angels sing

Cylinder No. 5.

Overture de Hugueno's—*Meyerbeer*
Ditto Don Juan—*Mozart*
Ditto Freyschü'z—*Weber*
Ditto Tancrédi—*Rossini*

Cylinder No. 6.

Overture de Guillaume Tell—*Rossini*
Ditto Fra Diavolo—*Auber*
Ditto Flute Enchantée—*Mozart*
Ditto Barbière de Seville—*Rossini*

Cylinder No. 7.

Gloria in excelsis—*Pergolese*
Kyrie eleison—*Mozart*
Marche d'Athalie—*Mendelssohn*
Pro picatis—*Stabat Mater*—*Rossini*

Cylinder No. 8.

Overture de l'op. Fille du Regiment—*Donizetti*
Ditto L'Africaine—*Meyerbeer*
Ditto Egmont—*Beethoven*
Symphony—*Haydn*

Cylinder No. 9.

Overture de l'op. Traviata—*Verdi*
Ditto Diamans de la Couronne—*Auber*
Ditto Zampa—*Hérold*
Ditto Gazza Ladra—*Rossini*

Cylinder No. 10.

Overture de l'op. Sémiramis—*Rossini*
Ditto Puritani—*Bellini*
Ditto Oberon—*Weber*
Ditto Norma—*Bellini*

UNIQUE INSTRUMENT.

ELEGANT WALNUT-WOOD CASE.

Cabinet in the Style of Louis XV.

39 inches high, 41½ inches long, and 27½ inches wide, with the novel and most pleasing "**VOIX-CELESTE**" Accompaniment. Six movable Cylinders, p'aying in all the following 36 Choice Airs.

£65.

(Price in former Catalogue, £85).

Cylinder No. 1.

Selection—Overture—*Der Freyschütz*
Ditto, 2nd part "
Casta diva—*Norma*
Ditto, 2nd part "
Blue Danube Waltz, No. 1
Ditto ditto No. 2

Cylinder No. 2.

Tyrolienne—*William Tell*
Scene de Manceuiller—*L'Africaine*
Stride la Vampa—*Trovatore*
Brandisi—*Traviata*
Moi arrêt— *La Favorite*
Prière—*L'Etoile du Nord*

Cylinder No. 3.

Overture—Andante—*Martha*
Rondo eh bica—*Grand Duchess*
The Swallows—Ballad—*Abt*
Sonata (op. 26)—*Beethoven*
Ich wolt mein lieb—*Mendelssohn*
Fishing Song—*Kaludee*

Cylinder No. 4

One Thousand and One Nights' Waltz [No. 2—*Strauss*
Chilperic Waltz "
Palmyra Polka—*Fahrbach*
City and Country Mazurka—*Gung'l*
Tuketta Schottische—*Strauss*
Soldiers' Chorus—*Faust*

Cylinder No. 5.

Mürchen aux Waltz—*Faust*
March— *Géneviève de Brabant*
Chanson politique—*Madame Angot*
Grande Air—*Jerusalem*
Des tambeaux—*Lucia di Lammermoor*
Still so gently—*Somnambula*

Cylinder No. 6.

Home, sweet home—*Bishop*
See the conquering hero comes
The last rose of summer
God save the Queen
Auld Lang Syne
Bluebells of Scotland

SACRED MUSIC.

Four Airs, £3 3s.

Rosewood Case, 14 *by* 6 *by* 5 *inches.*

1794.

The heavens are telling — *Creation — Haydn*
Let the bright seraphim—*Carnaby*
Gloria in excelsis—*Pergolise*
Motetto, splendente te Deus—*Mozart*

Grand Formation.

Four airs elaborately rendered.

With Piano Accompaniment.

Rosewood Cases, beautifully inlaid with metal, 24 *by* 11 *by* 7½ *inches.*

£11.

(Price in former Catalogue, £18 18s.)

3172.

Cujus animam—*Stabat Mater—Rossini*
Dead march in Saul—*Handel*
Evening hymn
Before Jehovah's awful throne—*Madan*

1691.

Hailstone Chorus—*Israel in Egypt—Handel*
Hallelujah Chorus—*Messiah—Handel*
The heavens are telling, Chorus—*Creation—Haydn*
Thanks be to God—*Elijah—Mendelssohn*

Six Airs, £4 4s.

Rosewood Case, 18 *by* 6 *by* 5 *inches.*

1094.

In native worth—*Creation—Haydn*
Thanks be to God—*Elijah—Mendelssohn*
O rest in the Lord— „ „
If with all your hearts „ „
He shall feed His flock—*Handel*
Rejoice greatly—*Messiah* „

Eight Airs, £5.

(Price in former Catalogue, £8.)

Rosewood Cases, 20½ *by* 6 *by* 5 *inches.*

3028.

Once for all	*Sankey*
Substitution	„
O sing of His mighty love	„
Almost persuaded	„
Tell me the old, old story	„
Ninety and nine	„
Hold the fort	„
Even me	„

2972.

Safe in the arms of Jesus—*Sankey*	
The gate ajar for me	„
Jewels	„
Knocking	„
Bury thy sorrow	„
The Great Physician	„
Clinging to the cross	„
Jesus of Nazareth passeth by	„

Eight Airs, £4 10s.

Polished Case, 20½ *by* 9½ *by* 6 *inches.*

It is well	*Sankey's Collection*
The gospel bells	„
Meet me at the fountain	„
Draw me nearer	„
I am praying for you	„
Oh, Saviour, I am blind	„
Follow on	„
Are you coming home	„

Eight Airs, £7 10s.

(Price in former Catalogue, £15.)

Mandoline Accompaniment.

Instrument of exceeding brilliancy.

Rosewood Inlaid Case, 28 *by* 11 *by* 7½ *inches.*

3105.

Sweet hour of prayer—*Bradbury*
Abide with me
Brief life is here our portion
O paradise—*Lancaster*

Pilgrims of the night—*Bowling*
Lead kindly light
As pants the hart
Even ne—*Sankey*

Twelve Airs, £8.

(Price in former Catalogue, £12.)

Rosewood Inlaid Case, 20½ *by* 8½ *by* 6 *inches.*

1771.

Glory to God—*Messiah—Handel*
Before Jehovah's awful throne
The Evening Hymn
Hallelujah Chorus—*Messiah—Handel*
Old Hundredth Psalm
Unto us a child is born—*Messiah*
Grand Chorus—*Creation—Haydn*
All hail the power of Jesus' name
O rest in the Lord—*Elijah*
The heavens are telling-*Creation-Haydn*
Rousseau's dream—*Rossini*
Lo! He comes

Twelve Airs, £10.

(Price in former Catalogue, £15.)

Piano Accompaniment.

2846.

Old Hundredth Psalm
Jerusalem the golden—*Ewing*
Before Jehovah's awful throne—*Madan*
With verdure clad—*Creation - Haydn*
Hallelujah C horus—*Messiah—Handel*
Unto us a child " "
Dead March in Saul " "
O rest in the Lord—*Elijah-Mendelssohn*
Pilgrims of the night--*Bowling*
Arabia—*Hymn*
Hymn—*Dr. Stainer*
Abide with me—*Reynolds*

1882.

Old Hundredth Psalm
The Evening Hymn
The heavens are telling-*Creation-Haydn*
With verdure clad " "
In native worth " "
Hailstone Chorus—*Handel*
The Morning Hymn
O rest in the Lord—*Elijah-Mendelssohn*
He shall feed His flock-*Messiah-Handel*
Hallelujah Chorus " "
Before Jehovah's awful throne—*Madan*
Dead March in Saul—*Handel*

SECOND-HAND MUSICAL BOXES

That have been taken in Exchange for New Instruments.

FOUR OVERTURES.

Plain polished wood case, 23 *by* 9 *by* 6½ *inches.*

£7. (Cost £20.)

Oberon
Othello
Barber of Seville
Coradino

Eight Airs, £8.

(Cost £16.)

Mandoline-Expressive.

Instrument of exceeding brilliancy.

Rosewood Inlaid Case, 28½ *by* 11 *by* 8 *inches.*

3051.

Royal Irish Quad.—Pantalon—*Jullien*
Eté
Poule
Trénise
Finale
Virginia Varsoviana—*Marriott*
Blue Danube Waltz—*Strauss*
Morgenblatter Waltz "

Twelve Airs, £10.

(Cost £20.)

Voix Celeste Accompaniment

Inlaid wood case, 23½ *by* 12½ *by* 10½ *inches.*

3859.

Gloire à Jupiter—*Orphee aux Enfers*
Soldiers' Chorus—*Faust*
Marionettes Polka
Le Turban Mazurka
Titi la riti Quadrille
Ah! perche non posso—*Somnambula*

Cheer up, Sam
Schone Lady—*Martha*
The old folks at home
Chanson de Fortunio—*Offenbach*
Last rose of summer
Air—*Bohemian Girl—Balfe*

Eight Airs.

With Tremolo Accompaniment.

22 *by* 9 *by* 6 *inches.*

£5 10s.

La Vague Valse—*Metra*
Norma—Mira—*Bellini*
Silver threads among the gold
Paul and Virginia—*Romance*
Last rose of summer
Marie—Mazurka—*Ascher*
Le petit Duc—Chanson—*Lecocq*
Di pescatore—*Lucrezia Borgia*

Ten Airs.

With 9 *Visible Bells.*

£9 10s (cost £18).

Walnut inlaid case, 27½ *by* 12 *by* 10 *inches.*

462.

The Lancers Quadrille		1.—*Pantalon*
,,	,,	2.—*Eté*
,,	,,	3.—*Poule*
,,	,,	4.—*Trénise*
,,	,,	5.—*Finale*

Glockskinder Polka
Zafiro Schottische
Auf der Fluren Mazurka
Miss or Mistress Polka
Robin des Bois Valse

Twelve Airs.

27 *by* 12 *by* 7½ *inches.*

No. 2086. **£7.**

Eily Mavourneen—*Benedict*
Sweet spirit, hear my prayer
Wear this flower—*Macfarren*
Last rose of summer
Home, sweet home
March of the Men of Harlech
La donna E Mobile—*Verdi*
Soldiers' Chorus—*Faust*
Shadow Dance—*Dinorah*
King Pippin Polka—*d'Albert*
The Guards' Waltz—*Godfrey*
Burlesque Galop—*Cassidy*

Eight Airs, £15.

Expressive Harmony and Zither.

31 *by* 12 *by* 9 *inches.*

Chœur des Montagnards—*La Dame Blanche*
Mazurka—*Fleur de Castille—Hoffman*
Polka Militaire—*Ascher*
Anonyme Valse—*Heinrich*
Ronde de nuit—*Les Mousquetaires*
La priere pendant l'orage—*Giroud*
Huntsman's Chorus—*Der Freyschütz*
Duetto—Un ballo in Maschera—*Verdi*

Ten Airs,

Drum, Bells and Castagnettes.

25 *by* 12½ *by* 10 *inches.*

No. 2638. **£6 6s.**

Air—*Martha—Flotow*
Le premier jour de Bonheur
The old English gentleman
Gia mi pasca—*Norma*
Believe me, if all those endearing
Piff paff—*Grand Duchess*
The pretty bird Waltz—*Coote*
The two men at arms—*Geneviève de Brabant*
There's nae luck about the house
Faust Valse

Twelve Airs,

Voix Celeste Accompaniment.

30 *by* 12 *by* 13 *inches.*

No. 7956. **£16.**

Der lustige Krieg Waltz—*Thomas*
The chimes of Normandy—*Planxuette*
Gillette de Narbonne—*Audran*
Ma mere aux vignes—*Madame Favart*
Polka—La Femme a Papa—*Herve*
March—*Daughter of the Regiment*
Song of Toreador—*Carmen*
March—*Der Bettelstudent*
Ach so fromm—*Martha*
Amour sacre—*La Muette*
Chœur des Pelerins—*Jerusalem*
Grand Guides Galop

SECOND-HAND CABINET.

Forty-eight Airs, Mandoline Expression.

Walnut-wood Case.

£50 (cost £90).

30 inches high, 42 inches long, and 28 inches from back to front.

Manufactured by Nicole Frères.

No. 46403.

Cylinder No. 1.

Then you'll remember me—*Balfe*
Home, sweet home—*Sinclair*
Those evening bells
Bonnie Dundee—*Dolby*
The last rose of summer—*Martha—Flotow*
Blue bells of Scotland
Power of love—*Satanella—Balfe*
O thou to whom—*Lurline—Wallace*

Cylinder No. 2.

Ombre legire—*Pardon de Ploermel—Meyerbeer*
Legende—*Madame Angot—Lecocq*
Valse " "
Gloire de nos aieux—*Faust—Gounod*
Bientôt l'herbe—*Lucia di Lammermoor—Donizetti*
Stride la Vampa—*Trovatore—Verdi*
Il segretto—*Lucrezia Borgia—Donizetti*
Soldats d'Augereau—*Madame Angot—Lecocq*

Cylinder No. 3.

Chœur des Conspirateurs—*Madame Angot—Lecocq*
Ah! che la morte—*Trovatore—Verdi*
Robert, toi que j'aime—*Robert le Diable—Meyerbeer*
La ci darem—*Don Juan—Mozart*
Libiamo ne—*Traviata—Verdi*
Allegro d'ouverture—*Guillaume Tell—Rossini*
Donna mobile—*Rigoletto—Verdi*
O dolce contento—*Flute Enchantée—Mozart*

Cylinder No. 4.

Di tale amor—*Trovatore—Verdi*
March—*Fille du Regiment—Donizetti*
Sempre libera—*Traviata—Verdi*
Perché non posso—*Sonnambula—Bellini*
Marche—*Muette de Portice—Auber*
Zitti piano—*Barbière de Seville—Rossini*
Oh! summer night—*Don Pasquale—Donizetti*
Quel plaisir—*Dame Blanche—Boieldieu*

Cylinder No. 5.

We love the place, O God—
Great God, what do I see
Brief life is here our portion
Sun of my soul, Thou Saviour dear
Abide with me
When I survey the wondrous Cross
Holy, holy, holy, Lord God Almighty
Hark! the herald angels sing

Cylinder No. 6.

The Royal Irish Quadrille 1.—*Sullivan*
" " 2. "
" " 3. "
" " 4. "
" " 5. "
Virginie—*Varsovienne—Marriott*
Sur le blue Danube—*Valse—Strauss*
Morgenblatter—*Waltz* "

London ALEXANDER & SHEPHEARD, Printers, 27, Chancery Lane, W.C.

EXHIBITION OF THE PANATHENE,

OR,

Magnificent Musical Temple,

GREAT ROOM, SPRING GARDEN.

The NOBILITY, GENTRY, and the PUBLIC in general, are respectfully informed, that the most beautiful Combination of the FINE ARTS ever submitted to their Inspection, called THE PANATHENE, is now open for Exhibition in the above Room. A TEMPLE of such complicated and magnificent Workmanship, and which affords such Gratification to the Visitors, can be but very imperfectly described through the Medium of a Hand-bill, the Circulation of this brief Account is therefore intended merely to convey to the Reader some Idea of its Beauties. This SPLENDID STRUCTURE stands 23 feet in Height, and is 16 feet square at the Base; its exterior Appearance presents to the Eye a most enchanting Combination of PAINTING, SCULPTURE, ARCHITECTURE, CARVING, &c. &c. The MUSIC in the Interior consists of various self-acting INSTRUMENTS, among which is the much-admired AUTOHARMONICON, or self-acting Piano-Forte, and a MUSICAL CLOCK, all of which are alternately in continual Play, performing the most select Pieces, favorite Airs, and Quadrilles. Independent of its Novelty, it possesses every possible Variety, and is different, in every Respect, to any Thing that has ever been exhibited in this Kingdom. The various Departments of this TEMPLE have been executed by the great Masters, among whom are—T. STOTHARD, Esq. R. A.; H. HOWARD, Esq. R. A.; C. TOWN, Esq.; Signors OUDINOT and VIZA; Messrs. LONGMAN, HERRON, ROGERS, GARBANATI, JACKSON, HESSE, ADAMS, RICKETTS, WHITE, and many Others of the first Talent.

☞ *A Synopsis of this TEMPLE is given to each Person on Admission.*

OPEN FROM TEN TILL DUSK.—ADMITTANCE, ONE SHILLING

Printed by W. ELLINGTON, 51, Regent Street, Haymarket.

TUNE SHEETS

The importance of the tune sheet in identifying a musical box, particularly one of the many which are largely devoid of immediately recognisable distinguishing features, is known to us all. Unfortunately in all too many cases, until a broadening of knowledge may enlighten us, all it may be possible to say is that one box was made by the same maker as another by virtue of their having the same tune sheets.

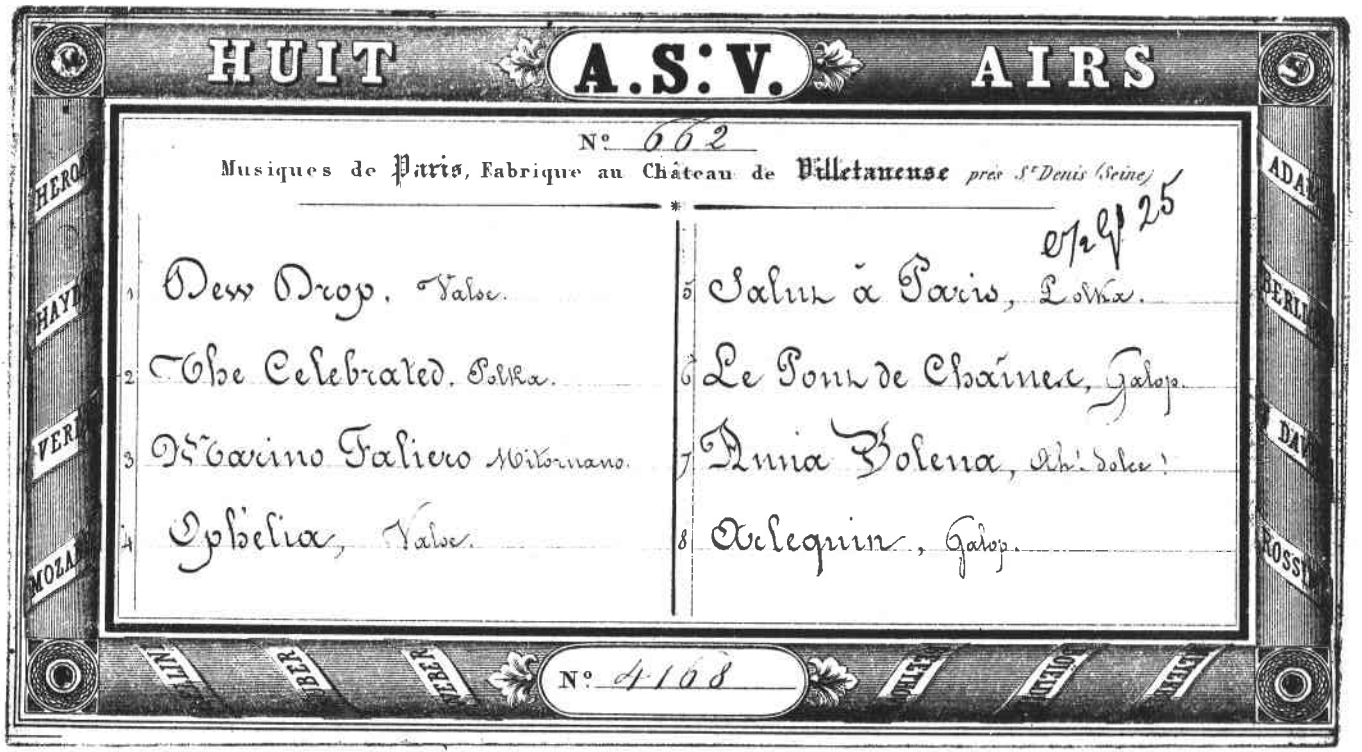
The following short series of tune sheets have been contributed by Members Keith Harding, Graham Webb and others, and features some sheets upon which comment and correspondence is invited.

That on Page 130 bears the initials A.S:V and the inscription "Musiques de Paris, Fabrique au Chateau de Villetaneuse pres St. Denis (Seine)"

Page 131 shows the JHS-symbol tune-sheet which we have reproduced before (pages 602 and 603, Vol. 3, No. 8) but is again a different detail design and bears the Langdorff imprint.

Member Jack Tempest sent in a photograph of a tune sheet on one of his boxes (reproduced on page 611, Vol. 3, No. 8) and now we depict another sheet of the same design on page 132. The trees motif, plus the tiny statue of a seated figure amidst them, is very unusual.

Of Teutonic origin is the sheet shown on page 133. Embossed colourlessly into the top of the sheet is the Vienna, 1873, exhibition medallion (see the Heller tune sheet reproduced on page 95 of this issue).


HUIT
A.S.V.
AIRS
N° 662
Musiques de Paris, Fabrique au Château de Villetaneuse près St Denis (Seine)
1 Dew Drop. Valse.
2 The Celebrated. Polka.
3 Da Carino Faliero Mitornano.
4 Ophelia, Valse.
5 Salon à Paris, Polka.
6 Le Pont de Chaînes, Galop.
7 Anna Bolena, Adl Dolce!
8 Arlequin., Galop.
0/2 f 25
N° 4108

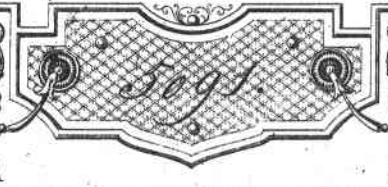

FABRIQUE DE GENÈVE
Six Airs Mandoline Basse Piccolo
Faust March, Soldier's Chorus Gounod
Come where my love lies dreaming. Bishop
Home sweet home. Verdi
Il Trovatore, mira di acerbe. Paladilh
Mandolinata Faust
Le Crépuscule, Valse.
Lith A.Haas. Genève.
LANGDORFF & FILS FABRICANTS.

Ouverture 10" ½ 36‴

BELLINI
MOZART
ROSSINI
WEBER
MEYERBEER
PLOTOW

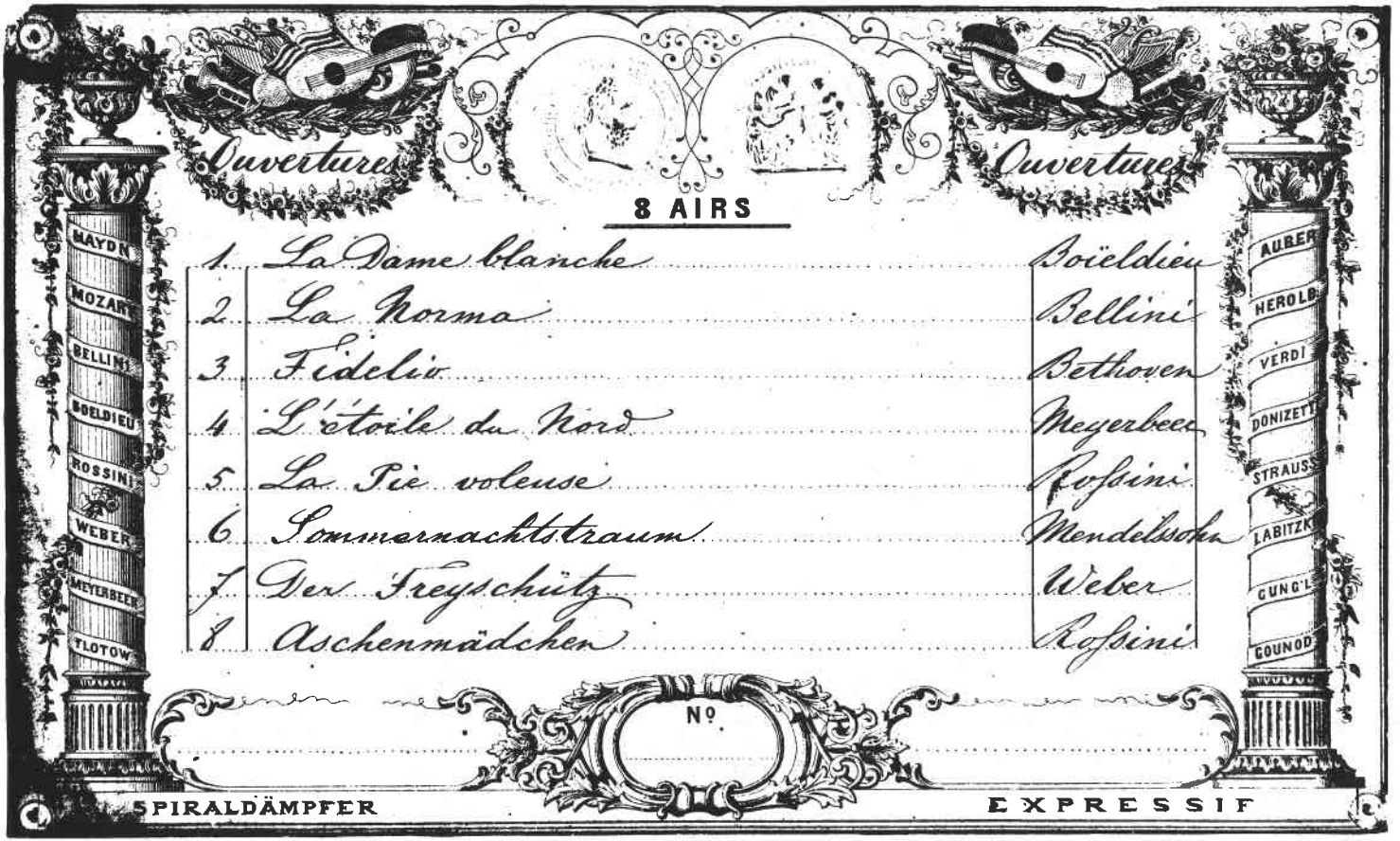
VERDI
DONIZETTI
STRAUSS
LABITZKI
GUNG'L
SCHULOFF

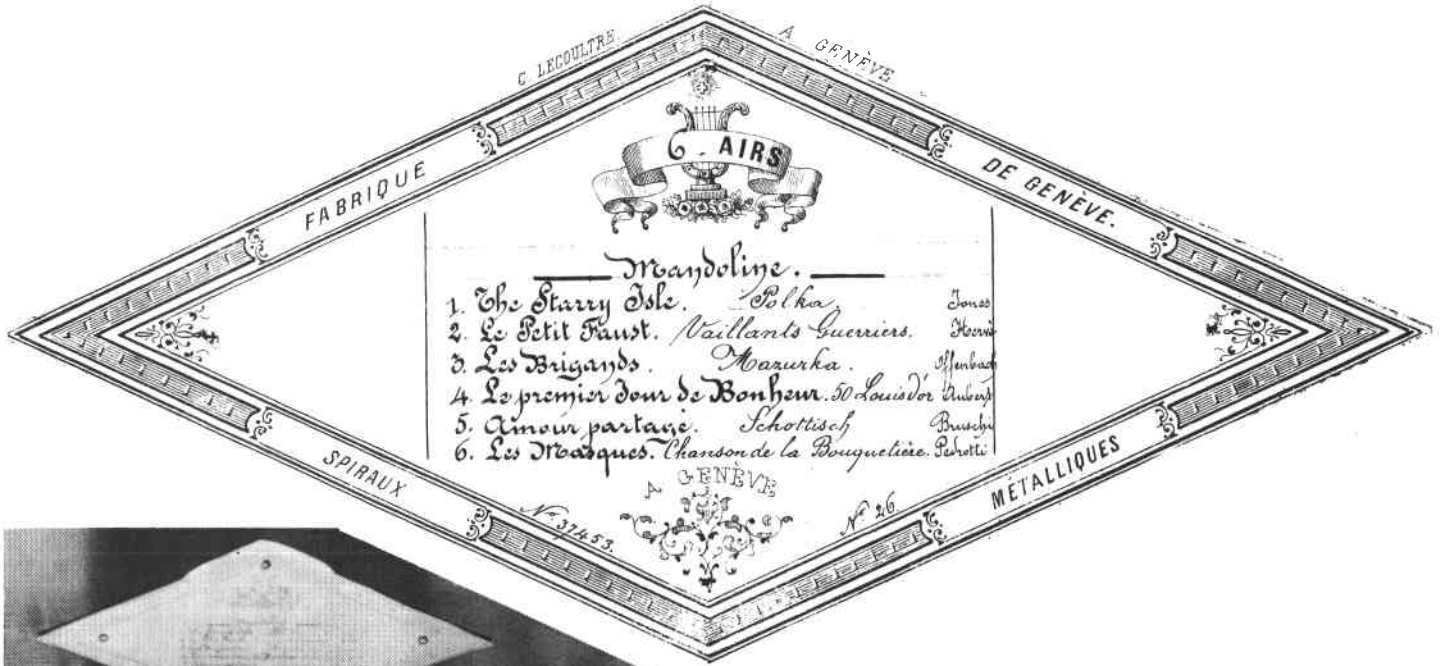
1. Grande valse de Faust — Gounod.
2. Ernani, Introduction — Verdi
3. Guillaume tell, Ouverture — Rossini
4. L'Africaine, Septuor — Meyerbeer

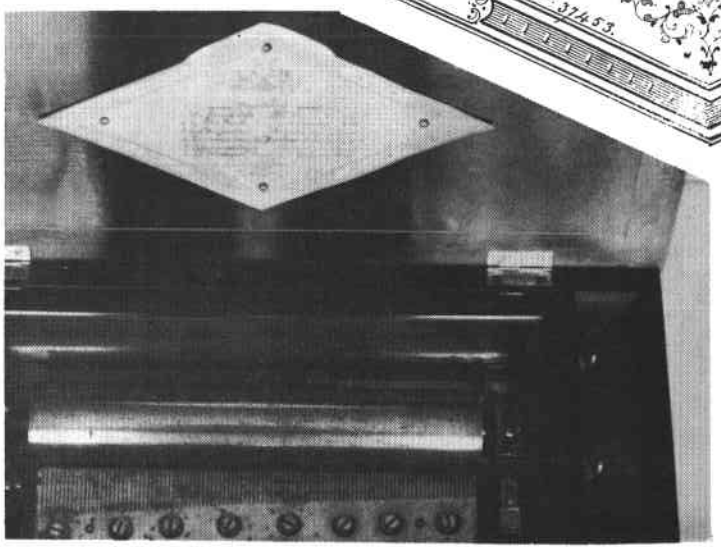


ETOUFFOIRS EN ACIER

SOIT À SPIRAUX


Ouvertures
Ouvertures
8 AIRS
1. La Dame blanche ... Boïeldieu
2. La Norma ... Bellini
3. Fidelio ... Bethoven
4. L'étoile du Nord ... Meyerbeer
5. La Pie voleuse ... Rossini
6. Sommernachtstraum ... Mendelsohn
7. Der Freyschütz ... Weber
8. Aschenmädchen ... Rossini
HAYDN
MOZART
BELLINI
BOELDIEU
ROSSINI
WEBER
MEYERBEER
FLOTOW
AUBER
HEROLD
VERDI
DONIZETTI
STRAUSS
LABITZKY
GUNG'L
GOUNOD
No.
SPIRALDÄMPFER
EXPRESSIF

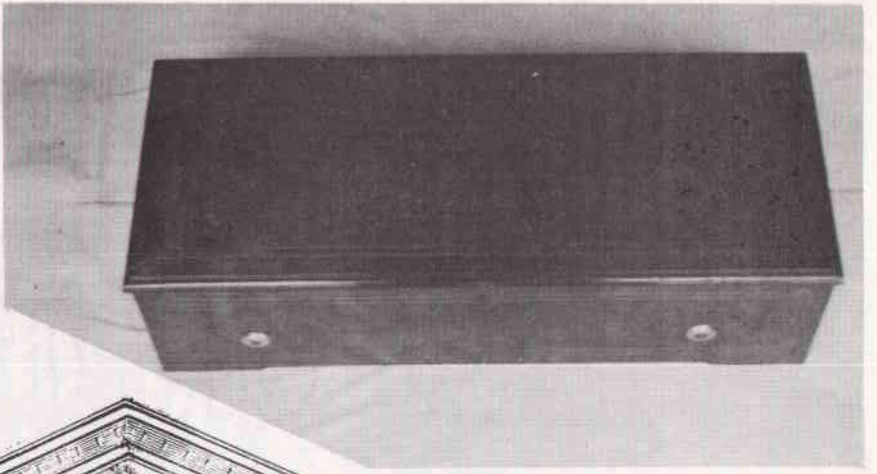


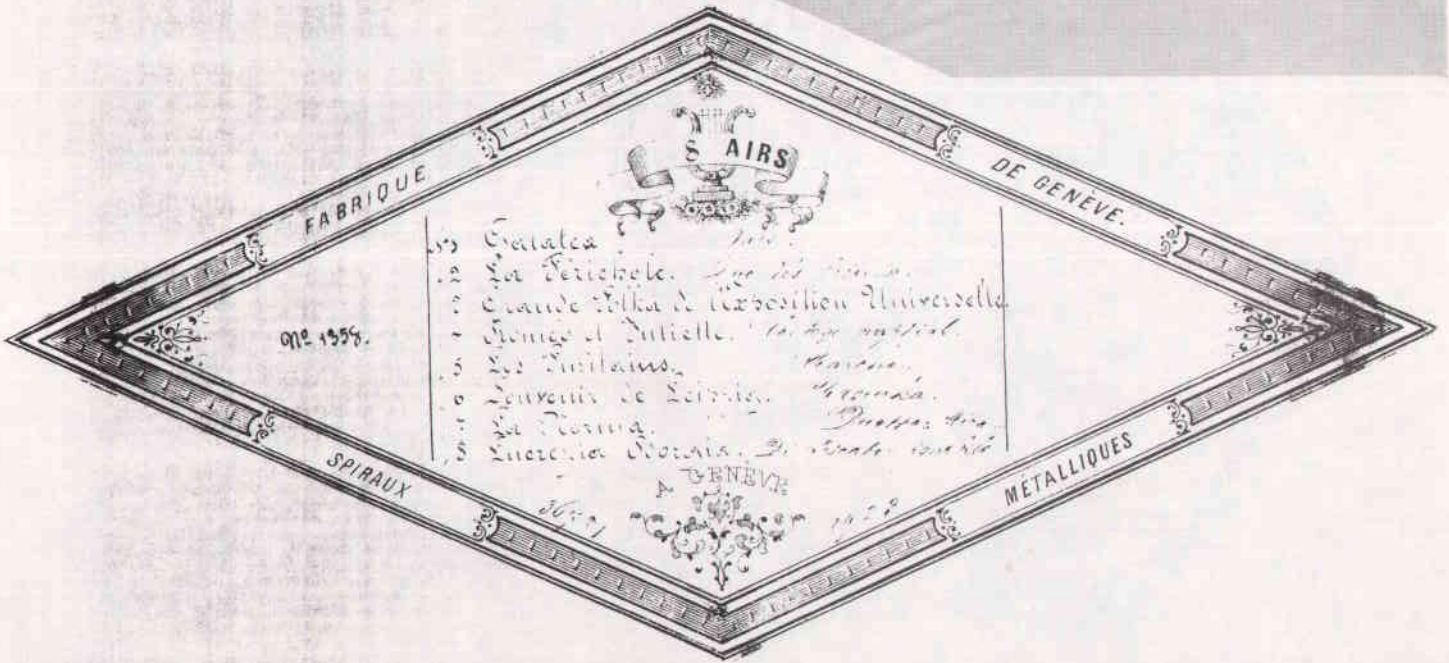


Member Jean-Pierre Rochefort of Paris owns a particularly fine mandolin box made by C. Lecoultre. This features an unusual diamond tune sheet with the name engraved outside the diamond border in the margin. The box is depicted on the left and below.

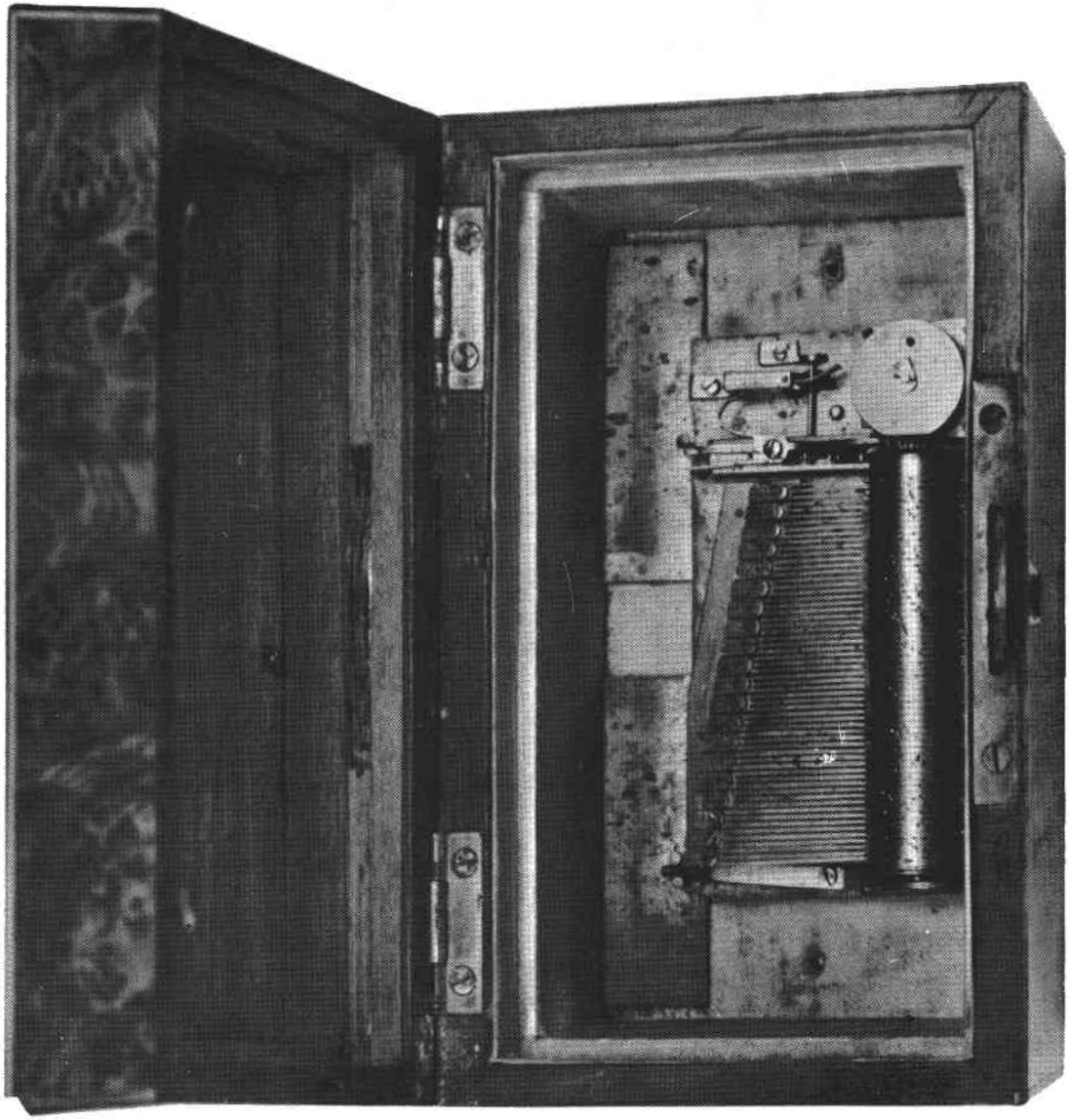
By a fortunate coincidence, Jean-Pierre found the twin of this box.

Although naturally disappointed at finding the plain, distinctive case devoid of mechanism, he was amazed to find the self-same tune sheet (below), only on this one, the margin has been trimmed to remove the name. Close examination of the original, though, shows traces of the bottoms of all the letters.





Sheraton-style musical jewel box, c.1800. Musical movement dates from pre-1810 and comprises a sectional comb with teeth in twenty groups of three. Characteristic of all these early movements is the pronounced angle which the lengths of the comb teeth form with the cylinder. With but nominal resonators - the lead resonator was not generally used until much later - the bass teeth had to be considerably longer to produce a given note than subsequent, leaded ones. Although the movement here is unsigned it remains characteristic with the work of Alibert as found in musical clocks of the same period. Pictures from Member Keith




TOUCH

Automata on parade

ONE of the most fascinating stands at the third Bournemouth Antiques Fair at the Pavilion is the display of automata by Bournemouth hotelier Mr. Jack Donovan.

The display of working models, if not the largest in the world, certainly the most varied, has taken Mr. Donovan many years to collect.

Mr. Donovan still has some of the tin toys he played with as a child, and it was while working with a travelling fair just after the war that he got the chance to add to his collection.

★

Mr. Jack Donovan and some of his fascinating collection of automata at the Antiques Fair at the Pavilion.—Echo picture.

Reproduced from The Bournemouth Echo, with grateful acknowledgement.

DOES OWN REPAIRS

He came to Bournemouth in 1950, and has been at several hotels, for ten years running both the Devon Towers and the Manchester.

His collection is now housed in his flat opposite the Manchester. He does all his own repairs and his wife Kay has re-dressed many of the figures in his collection with authentic materials.

There are so many interesting items in Mr. Donovan's collection, the earliest dating from 1800, that it is impossible to mention more than a few.

Many are extremely valuable, like the reclining figure of Cleopatra, the only other figure like it being in the Guinness collection in New York, says Mr. Donovan. This figure used to travel around the country being exhibited by showmen.

FRIENDS HELP

Mr. Donovan adds to his collection through friends and collectors all over the country and on the Continent who save new examples of automata for him.

One figure re-dressed by his wife is that of a Persian princess, and Mr. Donovan knows of no other like it.

Dominating his stand are models of a fairground organ and traction engine which took a veteran showman four years to make and is authentic in scale.

Mr. Donovan says the automata he collects were very popular in Victorian times following the amalgamation of doll makers with watchmakers to produce animated dolls and animals. But examples of automata have existed for 2,000 years.

Too big for more than a sample to be shown on the stand, Mr. Donovan's remarkable collection is featured on a colour film being shown on the stage which took him 300 hours to make.

Part of the film will be used in a forthcoming University of the Air programme.

From Wide World magazine, 1898. Contributed by Member Jack Tempest.

Dr. Helmut Zeraschi of Leipzig is a regular reader of THE MUSIC BOX and has kindly contributed this page from a directory c.1900.

UNITED STATES PATENT OFFICE.

HENRY B. MORRIS, OF ITHACA, NEW YORK, ASSIGNOR TO THE AUTOPHONE COMPANY, OF SAME PLACE.

MACHINE FOR INSERTING PINS IN MUSIC-BARRELS.

SPECIFICATION forming part of Letters Patent No. 315,052, dated April 7, 1885.

Application filed May 1, 1884. (No model.)

To all whom it may concern:

Be it known that I, HENRY B. MORRIS, a citizen of the United States, residing at Ithaca, in the county of Tompkins and State of New York, have invented certain new and useful Improvements in Machines for Inserting Pins in Barrels for Mechanical Musical Instruments; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention consists of a machine for automatically inserting pins at predetermined points in rollers intended for use in mechanical musical instruments, such as hand-organs, for instance. The leading characteristic of the machine is a stepwise-movable pattern which governs the insertion of the pins.

In order that my invention may be clearly understood, I have illustrated in the annexed drawings and will proceed to describe a practical form of a machine adapted to insert pins in a wooden roller along a spiral line.

Figure 1 is a plan view of the machine. Fig. 2 is a vertical longitudinal section in the plane indicated by broken line X X of Fig. 1. Figs. 3 to 7 illustrate details of the machine, some being drawn on a larger scale than Figs. 1 and 2 and others on the same scale.

The same letters of reference indicate identical parts in all the figures.

The various parts of the machine are mounted on a suitable bed-plate or table, A, provided with shears *a a* across one end for the support and guidance of a carriage consisting of the upright cheek-plates B B' and the parallel connecting-bars B^2 B^3, the latter being fitted to the shears *a a*. A horizontal roller, C, provided at one end with a spur-wheel, D, is arranged between the cheek-plates of the carriage, the entire length of the roller and its spur-wheel being just equal to the distance between the said cheek-plates. The roller C is supported in part upon a hollow shaft, E, and in part upon a screw, F. The hollow shaft E, journaled in the fixed bearing A' on the bed-plate, and also supported in a bearing on cheek-plate B, extends through the spur-wheel D into roller C, suitably bored nearly its whole length to fit the shaft. The spur-wheel D is provided with a spline, *d*, which engages a longitudinal groove, *e*, in shaft E, so that while they are turned by the shaft E the spur-wheel D and roller C may also move longitudinally thereon. At the end opposite that entered by shaft E the roller is tapped or provided with a fixed nut to screw on the screw-threaded portion of screw F, the inner smooth end of which extends into hollow shaft E for support. The screw-threaded portion of screw F projects through the cheek-plate B' of the carriage, and its outer end is rigidly secured to a standard, A^2, on the bed-plate A. The surface of the roller C is filled with equidistant holes *c*, distributed along the convolutions of a spiral line. A live-center, G, is journaled in the upper portion of cheek-plate B. This live-center carries a fixed spur-wheel, H, of the same diameter and having the same number of teeth as spur-wheel D, which drives it through the medium of an intermediate spur-wheel, D'. Spur-wheel H is provided with a drive-pin, *h*. Cheek-plate B' carries in its upper portion a dead center, H', screwed in the cheek-plate, so that it may be adjusted. The wooden roller I, in which the pins are to be inserted, and which I term the "music-roller," is centered on the centers of the carriage, one end of the roller being provided with an eccentric hole to receive the drive pin *h*.

It will be readily perceived that the turning of shaft E has the twofold effect of feeding the carriage together with the rollers C and I and of rotating said rollers synchronously—*i. e.*, in such a manner that they complete a rotation in the same period of time.

A given piece of music to be played by pins on the music-roller is set up on the surface of roller C by inserting projecting pins *c'* in properly-selected holes, *c*, thereof. The roller C thus prepared constitutes the pattern which governs the insertion of the pins in the music-roller.

In order to prevent the pins *c'* from falling out of the pattern-roller at the lower side, I provide the feed-carriage with a segmental trough or concave, B^4, concentric with and surrounding the lower side of the pattern-roller at a distance about equal to the projection of the pins *c'*.

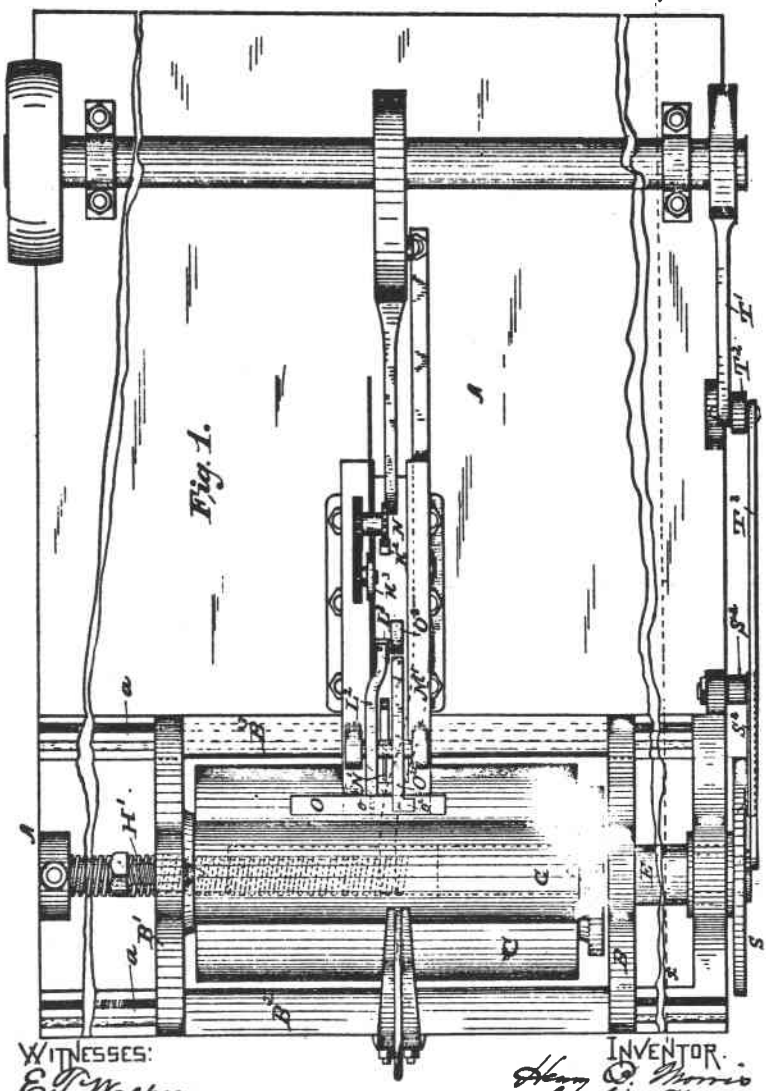
Member Henry A.J. Lawrence has contributed this patent specification which is associated with the "Gem" Roller Organette. Two further and relating patents will be published in subsequent issues.

(No Model.) 4 Sheets—Sheet 1.

H. B. MORRIS.

MACHINE FOR INSERTING PINS IN MUSIC BARRELS.

No. 315,052. Patented Apr. 7, 1885.



WITNESSES:
Ed. T. Walker
W. W. Hannay

INVENTOR.
Henry B. Morris
by his attorney
E. G. Siggers

The devices for cutting the pins and inserting them in the music-roller are mounted on the table M of a stand erected on the bed-plate. The pins are successively cut by shears from a spool of wire, J, the end of which is fed to the shears in about the horizontal plane of the axis of the music-roller by feed-rollers K K'. The shears consist of a stationary blade, L, and a pivoted blade, L', the lever-arm of which is pivoted on a pin, M', supported on standards of table M. The side of the blades facing toward the music-roller is flat; but at the opposite side the blades are beveled from the cutting-edges, as clearly shown in Fig. 2. In consequence of this construction the shears cut the pin severed from the wire with a square end, but bevel or point the end of the wire, so that the point of the pins will be beveled or pointed, to facilitate driving them into the music-roller, while the butt-end will be square. The pivoted blade is held open by a spring, *l*, which throws the arm L' thereof down onto the slide N, mounted in guides on the table M. The pivoted blade is closed by the action of a cam, L^1, on slide N during the forward stroke of said slide.

In feeding the wire the end passes through between the shears into a guide-hole, *o*, in the bar or transfer-block O, which is mounted to slide on the end of table M, transversely with respect to the wire from which the pins are cut. The transfer-block is normally held by a spring, O', in such a position that its guide-hole *o* is directly in line with the end of the wire. Each time and immediately after a pin has been cut from the wire the transfer-block is moved to bring the pin in line with a driver, N', on the slide N. This sliding of the transfer-block is effected by a lever, O^1, pivoted on pin M', and constructed with a cam-head, o^2 adapted to operate on a cam-face, *o'*, of transfer-block O. The tail of lever O^1 rests on slide N (it may be held down by a spring, like lever-arm L^1) and is operated by a cam, O^3, on said slide N during the forward stroke thereof—namely, immediately after a pin has been severed from the wire and before the driver N' reaches the transfer-block. Cam O^3 has a flat extension, o^3, by which the tail of lever O^1 is kept elevated, so that its cam-head will prevent the return of the transfer-block, but hold it stationary long enough to enable the driver to drive the pin onto the music-roller and withdraw from out of the guide-hole of the transfer-block. The feed-rollers K K' are turned to feed the wire during the return-stroke of slide N by a pawl, K^2, thereon, through the intervention of a ratchet-wheel, K, on a counter-shaft, K^1, which carries a spur-wheel, K^3, for driving a spur-wheel, K^4, on roller K. Spur-wheel K^4 transmits motion to roller K' by a spur-wheel, K^5, having a like number of teeth. The cams L^1 and O^3 and pawl K^2 are suitably disposed on the slide N to act at the proper times. The slide N is reciprocated, through the medium of an eccentric-rod, P^2, by the eccentric on the main shaft Q of the machine. The eccentric P acts on the eccentric-rod P^2 through a ring, P', which is constructed with a dog, *p*, and is loose on the eccentric. The eccentric-rod is provided with an elongated yoke surrounding the eccentric-ring P', and so constructed that said ring may be locked therein or unlocked therefrom, according as said ring is turned, so as to engage a shoulder, *p'*, of said yoke, or so as to be disengaged from said shoulder. The eccentric will only reciprocate the eccentric-rod, and through it slide N when the ring P' is locked in the yoke of said rod.

The position of eccentric-ring P' is determined by the pattern-roller through the following means: A lever, R, is fulcrumed on the stand of table M, reaching with one arm, the end of which is provided with a downwardly-projecting pin, *r*, over the pattern-roller. The other arm of the lever engages the lower end of a pitman, R', between a couple of nuts, r' r^2, thereon. The upper end of pitman R' is pivoted to the eccentric-ring P'. A stiff spring, r^3, is arranged between the lever R and the nut r^2, tending to hold the lever up against the nut r'. A little in advance of shoulder *p'* a pin, r^4, projects up through the yoke of the eccentric-rod, being normally projected by a spring, r^5, which is lighter than spring r^3, but still strong enough to ordinarily prevent the engagement of shoulder *p'* by the dog *p* of the eccentric-ring. The lever R is so arranged and proportioned that in its oscillations, imparted to it by the eccentric, its pin *r* will strike down close to the surface of the pattern-roller. So long as pin *r* strikes no pin *e'* of the pattern-roller the eccentric-ring will merely oscillate the eccentric-rod but not move it endwise. But whenever the pin *r* of lever R strikes upon a pin, *e'*, of the pattern-roller, whereby the motion of the lever is arrested, in that case the pitman R' turns the ring P' on the eccentric, so as to cause its dog *p* to depress the pin r^4 and engage the shoulder *p'* of the eccentric-rod. The feed of the pattern-roller is so timed with reference to the eccentric P that it takes place while the arm of the lever R, provided with the feeler-pin *r*, is elevated.

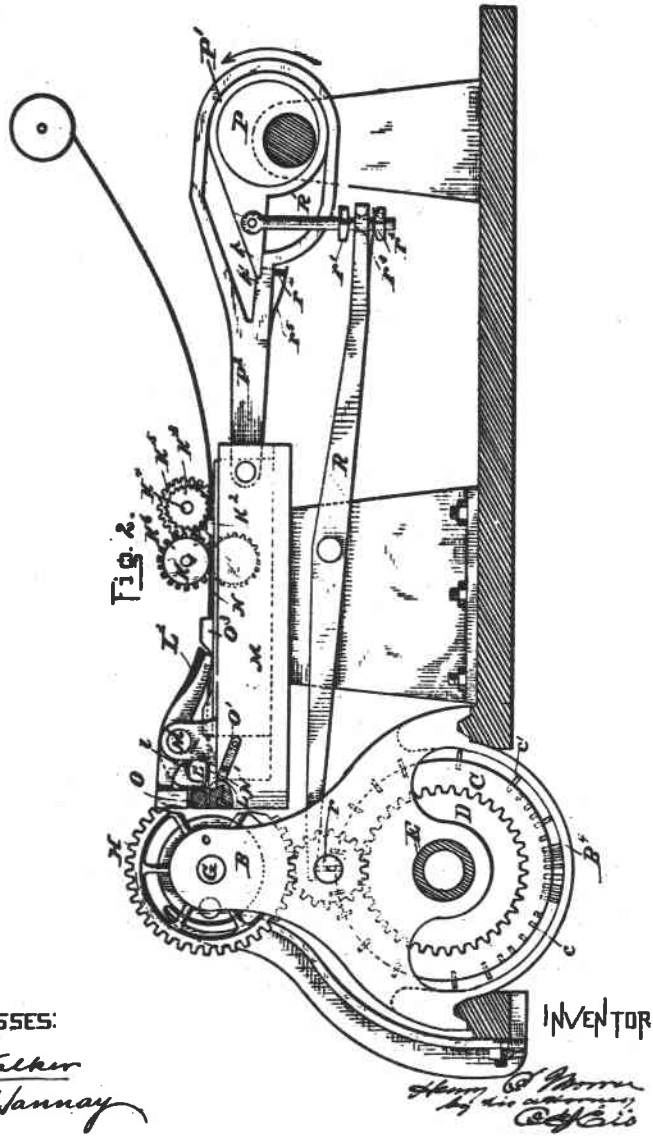
The feed-carriage, together with the pattern-roller and music-roller, is fed step by step by turning shaft E intermittingly. This may be effected by a simple ratchet-and-pawl gearing; but in order to adapt the machine to operate with different sizes and styles of pattern-rollers and upon different styles and sizes of music-rollers, I prefer to use a variable gearing, substantially such as is employed on gear-cutting engines, the so-called "index-plate" S thereof being keyed to shaft E and operated by a variable pin on radius-bar, S', which is oscillated by the eccentric T on shaft Q through the medium of eccentric-rod T', rocking arm T^2, and adjustable connecting-rod T^3. The return motion of the index-plate is prevented by a pin on adjustable arm S^2. This mechanism

(No Model.) 4 Sheets—Sheet 2.

H. B. MORRIS.

MACHINE FOR INSERTING PINS IN MUSIC BARRELS.

No. 315,062. Patented Apr. 7, 1885.



WITNESSES:
Ed. T. Walker
W. M. Hannay

INVENTOR
H. B. Morris
by his attorneys
Edgerton & Co

(No Model.) 4 Sheets—Sheet 3.

H. B. MORRIS.

MACHINE FOR INSERTING PINS IN MUSIC BARRELS.

No. 315,052. Patented Apr. 7, 1885.

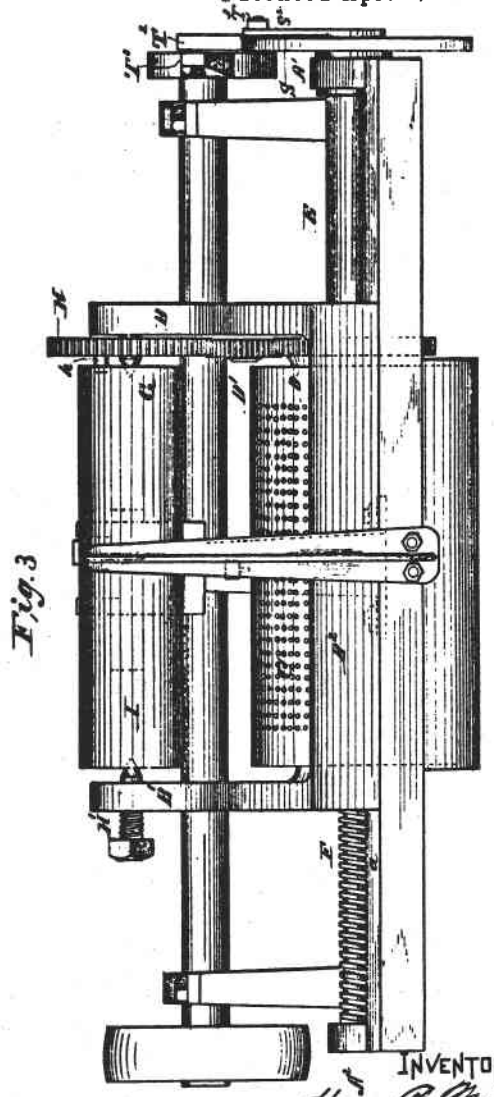


Fig. 3.

WITNESSES:
Ed. F. Walker
W. M. Hannay

INVENTOR.
Henry B. Morris
by his Attorney
E. G. Siggers

(No Model.) 4 Sheets—Sheet 4.

H. B. MORRIS.

MACHINE FOR INSERTING PINS IN MUSIC BARRELS.

No. 315,052. Patented Apr. 7, 1885.

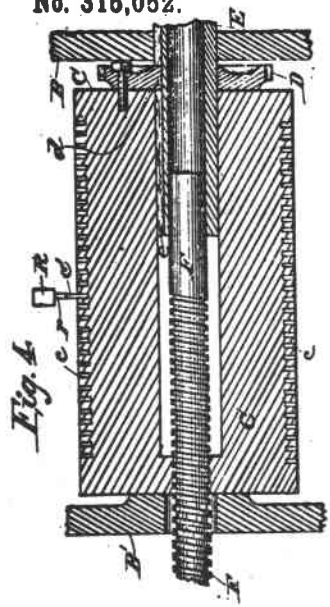


Fig. 4.

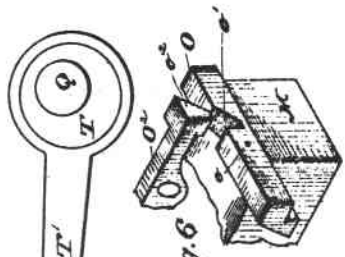


Fig. 6.

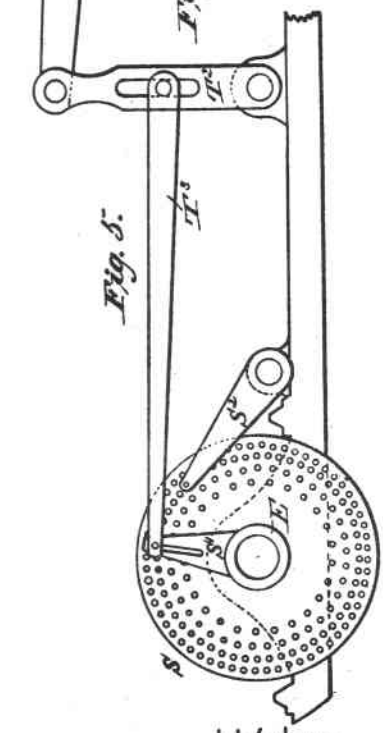


Fig. 5.

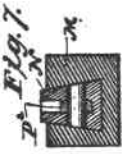


Fig. 7.

WITNESSES:

E. P. Walker

A. W. McHannay

INVENTOR.

Henry B. Morris

by his Attorney

C. E. Foote

admits of great variations in the feed of the carriage and the rollers supported thereon.

In summarizing the operation of the machine let it be assumed that the end of the wire has been fed into the guide-hole of the transfer-block, and that there is no pin c' of the pattern-roller under the feeler-pin of lever R. The machine will run without operating slide N until the pattern-roller has been fed to a point where one of its pins c' stands under the feeler-pin of lever R. On the downstroke of the feeler-pin, the dog of the eccentric-ring is caused to engage the yoke of the eccentric-rod so as to move the rod and slide N toward the music-roller. During this forward stroke of the slide its cam L^3 first closes shear-blade L', cutting a pin from the wire, next its cam O^2 slides the transfer-block so as to carry the pin to a point in line with the pin-driver N', and finally the pin-driver drives the pin into the music-roller. On the return-stroke of the slide N, after the pin-driver has withdrawn from the transfer-block, the latter is returned to its position of rest, shear-blade L' is opened, and the pointed end of the wire fed into the transfer-block. The pattern-roller is also fed forward a step during the return-stroke of the slide N, and the dog of the eccentric-ring is disengaged from the shoulder p' of the yoke of the eccentric-rod by the action of spring r^5 and pin r^4. Each feed-step both turns and advances the pattern-roller to such an extent as to carry its holes c successively under the feeler-pin r, and the diameter of the music-roller bears such relation to that of the pattern-roller that whenever there are pins c' in successive holes of the pattern-roller successive pins will be driven into the music-roller in such close contiguity as to constitute in effect a continuous ridge adapted to sound a prolonged note. This feature of the roller constitutes the subject-matter of an application for United States Letters Patent filed of even date with the application for this patent.

In order to give additional support to the music-roller under the blows of the pin-driver, I provide a back-rest, U, constructed with a rib of proper height to bear against the back of the music-roller.

It is obvious that the pin cutting and driving mechanism may be multiplied, each separate mechanism being governed by a separate feeler-lever, so that the music-roller may be prepared along different sections at one and the same time. Again, music-rollers are usually designed to play a number of pieces. Music-rollers of this description may be prepared by the machine described by first inserting all the pins for one piece, then after properly adjusting the music-roller endwise inserting all the pins for the next piece, and so on; or the machine may be adapted by a suitable multiplication of the pin cutting and driving mechanism to prepare the roller for all the pieces at the same time. All these modifications I regard as mere variations of my invention, and many other variations may be made without departing from the principle of my invention.

I believe that I am the first to provide a machine for automatically inserting pins in music-rollers in accordance with a previously prepared and stepwise-moved pattern, and therefore claim such machine, broadly.

As regards the pattern, its form may be much varied. Thus, instead of using a variable pattern, a separate unchangeable pattern may be provided for each kind of music-roller, either in the shape of a roller or in the form of a perforated belt of the nature of Jacquard's cards, suitable changes being made in the feeler-lever and connections.

Instead of cutting the pins from a spool of wire by the machine, they may be cut by a separate machine and taken, one at a time, by the pin-driver from the bottom of a suitable hopper.

To adapt the machine for preparing rollers having circular rows of pins, the screw-feed may be so modified as to advance the carriage a distance equal to that between two adjacent rows at the completion of each full turn of the pattern-roller.

I claim as my invention—

1. A machine for inserting pins in music-rollers, organized with a stepwise-movable pattern which governs the insertion of the pins, substantially as set forth.

2. A machine for inserting pins in music-rollers, organized with a stepwise-movable pattern which governs the insertion of the pins and with a variable feed-motion, substantially as before set forth.

3. The combination, substantially as before set forth, of the stepwise-movable pattern-roller, the feed-carriage provided with centers for the support of the music-roller, and a driver for turning the music-roller synchronously with the pattern-roller.

4. The combination, substantially as before set forth, of the stepwise-movable pattern, the feeler-lever, the pin-driver, and means controlled by the feeler-lever for reciprocating the pin-driver.

5. The combination, substantially as before set forth, of the reciprocating slide carrying the pin-driver and provided with cams L^3 and O^2 and pawl K^2, the wire-feed rollers, the shears, the pin-transfer block, and lever O^2.

6. The combination, substantially as before set forth, of the feed-carriage for supporting the music-roller and the back-rest.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY B. MORRIS.

Witnesses:
FRANK M. LEARY,
EDWIN H. WOODRUFF.

Continued from page 108.

as one Member was heard,, jokingly, to say "Do we actually have to *give* our boxes to the Americans!"

"Unaccustomed as I am to public speaking.....". Cyril de Vere Green talking after dinner.

Mr. Hoschek obviously appreciating English humour. Gerry Planus (who hasn't talked of the fairies for a long time) at left.

Bill Nevard thinking overture boxes after dinner.

Howard Fitch in earnest conversation with Marjorie McTear, nurse at the de Vere Green practice and guest at dinner.

The Sunday morning session was divided into two parts. Arthur Ord-Hume opened proceedings with an interesting paper on the history and development of paper roll music from the Jacquard cardboard system. After the coffee interval, David Tallis gave a practical demonstration of the techniques of tuning a comb which he preceeded by a description of the form of tooth to produce a given sound.

Thus terminated the 1969 Summer meeting which was generally believed to have been one of the best so far held.

Pictures by Graham Webb and The Editor.

The Committee comprises the following officers:

President:	Robert Burnett
Vice President:	John Entwistle
Secretary:	Cyril de Vere Green
Treasurer:	David A.R. Tallis
Editor:	Arthur W.J.G. Ord-Hume
Members:	Graham Webb
	Jocelyn Walker*

*replacing Bill Nevard who has had to resign from the Committee due to pressure of other business, and to whom, on behalf of the Membership, we all extend our thanks and good wishes.

Record Reviews

by A.O.H.

TWO NEW recent releases both come from Saydisc, the Bristol-based company which is responsible for several other recordings of mechanical musical instruments and which have been reviewed in this column. The aims of this company are best summed up in managing director Gef Lucena's concluding comments on the sleeve of one of these new releases: "This record forms part of a large series of records covering the history and evolution of mechanical music. When completed it will put on record for all time the sounds and ingenuity of a past age and will bring to the listener the opportunity to hear a fabulous treasure of instruments from many countries".

First of the new releases is "Giant German Orchestrions" (SDL 152 mono only). This turns out to be a re-recording of Hathaway & Bowers' disc of the same title, *The Golden Age of Mechanical Music - Number 2.* Saydisc's recording bears this same sub-title, but is described as Volume 4. It is a great pity that this new record was not recorded from the original tapes since a lot of quality has been lost in the re-recording. I was able to compare the discs, track by track, and, even allowing for the fact that this is a mono copy of a stereo original, sound quality and timbre are quite different. The American original is difficult to obtain in this country and there will also be a price incentive in favour of the new one. And for the enthusiast who wants to hear the impressive, if somewhat too overtly mechanical, performances of instruments such as the Weber Maestro and Philipps' Monopol–Xylophon, then he can be expected not to be too critical of tonal balance and will find this record, as, indeed, all the other titles under this label, of interest.

In a different category is "The Street Piano" (SD 158), a 7-inch E.P. sub-titles "A New Selection of Popular Songs". The word "old" should be inserted before the word 'popular' since *At Trinity Church I met my Doom* and *Won't You Come Home Bill Bailey* are no longer in the "Top Twenty". Six tunes are played and sleeve notes tell us that the instrument is a 48-note piano made by Chiappa and belonging to Member E.R. Mickleburgh who also wound the handle. Recording quality is good, the piano is good and the tunes, pinned by Tomasso, are also good. The disc is not an abbreviation of the earlier Saydisc title "Music of the Streets" (SDL 121 and reviewed on p.228, Vol. 3, No. 4) but offers some bright "new" tunes.

Whilst in Canada earlier this year, I came across an interesting record which I do not think is obtainable in the U.K. except to special order from the record stores. "The Swiss Band Organ" (2081 Stereo) is pressed by Everest Records of Los Angeles, California and is sub-titled "Folk Songs of the Alps". I was amused at the title of this 12 inch LP since the sleeve shows an enormous picture of the organ along with the maker's name - H. Voigt. Now Heinrich Voigt had his factory at Hochst which is within a few kilometres of Frankfurt which, unless there have been some pretty drastic frontier alterations in the past sixty-five years or so, has never been part of any canton of Switzerland.

However, it is best to forget this detail, and also to ignore the pseudo-intellectual sleeve notes on Swiss folk music, the invention of the musical box and the thing described as "... the Orchestreon or Swiss Band Organ". For all that, this disc is good. All the tunes - there are five Alpine songs on each side - are well arranged. Although non-mechanical, I found especial enjoyment on the final track of each side which is devoted to tunes played by the Swiss bell ringers from an undisclosed place and in an equally undisclosed manner.

CHRISTMAS CARDS

Member Hugh M. Miles of 32, Torridon Croft, Russell Road, Moseley, Birmingham 13, is now taking orders for Christmas cards featuring musical box motifs. Samples were on display at the Annual General Meeting. The cards, which have a colour photograph on the front, can be printed with your own name and address. Prices are about 1/6d. each and Hugh would be interested to hear from potential customers.

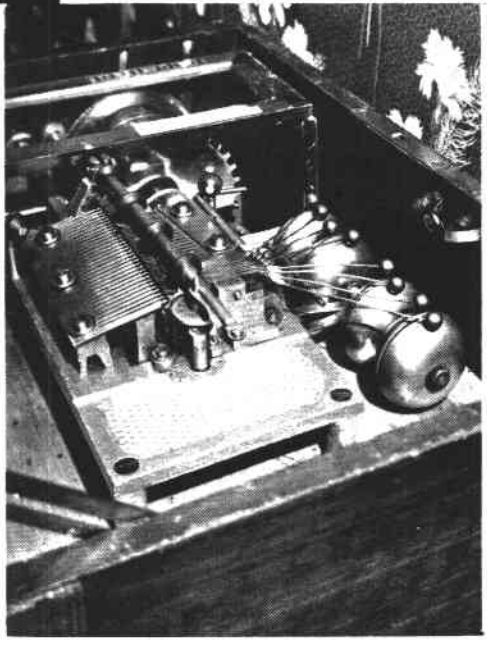
Solution to the SIMPLE CROSSWORD on Page 106

1D	2R	U	3M	S		4P		5P	6S
	E		A			7I	N	L	A	Y
	8G	E	N	E	V	A		A		M
	I		D			9N	O	T	I	P
	N		O			O		E		H
10P	A	I	L	L	A	R	D			O
I			I			O		11T		N
N		12S	N	A	13I	L		O		I
S		U		W		14L	E	N	T	O
	15A	E	O	L	U	S		E		N

THE ORGAN-GRINDING NUISANCE.—No. I.

Old Lady (l). "BOTHER OVER THE WAY! WE LIKE THE HORGINS!"

Although Jules Heinrich Zimmermann's Fortuna disc-playing musical box was technically a success, it entered large-scale production too late in the disc-box era to make much of an impact on a market where the names of the 'big-three'- Polyphon, Symphonion and Regina - were already well established. As



with Zimmermann's other machine, the Adler, the Fortuna is thus a scarce instrument. This one, owned by Member Frank S. Greenacre, is unusual in that it features bells. This is not unconmon on instruments such as the Kalliope, Symphonion and suchlike, but was a late product of Zimmermann.

Member Geoffrey Worrall writes:-

With Metrication on the way, it's time for the Society "to get with it". How about a start with Disc Sizes. Instead of those horrible fractions we should now have:-

50cms for the popular 19.5/8" Polyphon Disc.
21cms for the 8¼" Disc.
28cms for the 11¼" Disc.
40cms for the 15,5/8" Disc.
56cms for the 22" Disc.
81cms for the 32" Disc.
85cms for the 33½" Disc. etc.

Some enthusiastic Metrication Members might even alter the Disc titles such as "Within a mile of Edinboro' town" (Fortuna 6396) to "Within 1.6093 Km. of Edinboro' town"

Incidentally I find that a solution of Machine Oil 25ccs dissolved in approx. 150ccs of Ether Meth. and applied liberally with a 5 cm paint brush, evaporates rapidly leaving a very fine film of oil to preserve those precious Discs. metric or otherwise.

EDITOR'S COMMENT: You've got a point there, actually, since all disc sizes were originally given in the Metric size. However, give some people 25.4mm. and they'll take 1.60934 Km.! For French and Swiss boxes, though, especially the early ones, we should use the pre-Metric system of feet, pouces and lignes. It is a great pity that the Emperor Charlemagne, who devised that system, did not have feet exactly 12 inches long!

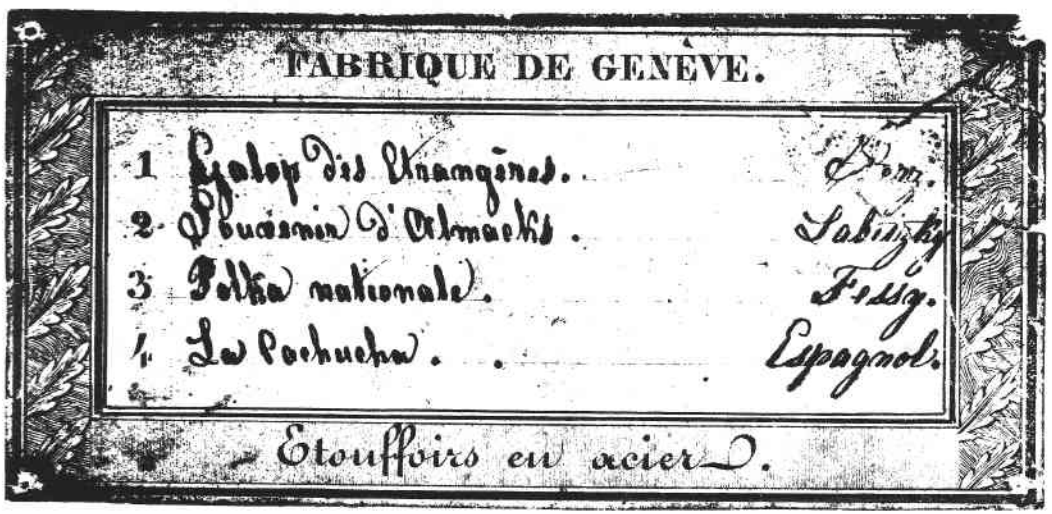
LETTERS TO THE EDITOR

Member Olin Tillotson of British Columbia, Canada, writes:-

Notwithstanding some concern for the fallibility of the mails, I am entrusting to you with this letter two tune sheets and a small printed notice. I feel they are unusual enough to enquire of other collectors concerning their origins.

No. 1 is a blue and white tunesheet listing four tunes froma keywind musical box bearing the serial number 8697 (small punch). It has a well-made movement with an 8" x 1.7/8" cylinder. It has a fine, delicate governor mechism. The case was in dark finished walnut of the usual drop-end variety; no glass over the works. I would estimate it to be of the latter part of the keywind era.

No. 2 is a small embossed tunesheet from a newly acquired overture box bearing the number 11435. The movement is well made and probably dates about 1835, of plain walnut with no trim whatever. Instead of the usual catches on the lid of boxes in this period, this case merely has a box lock with diamond shaped escutcheon. Noteworthy are the case screws

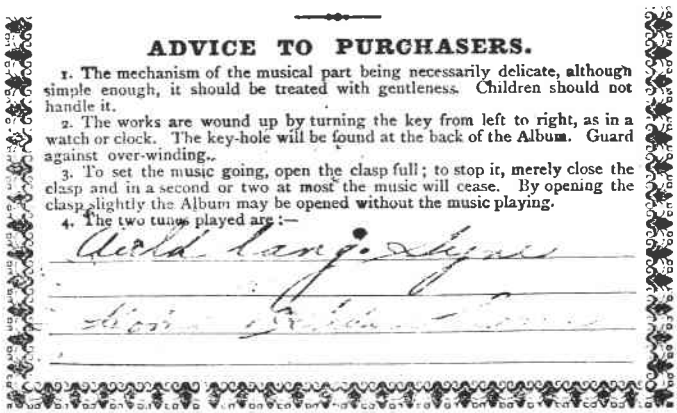


which, instead of being recessed into the case-screw washers, rest on top and are, in fact, identical except in length to the comb screws. The cylinder measures 10¾" a 2.11/16" and there are 166 teeth in the comb. The bedplate of very heavy polished brass bears the punched number 10555. Aside from this the movement has no other identifying marks excepting the punch number 2 on mainspring barrel, cover, bridges, bedplate (left side surface). There are no marks whatever on the comb. The overtures are in slightly, (although recognizably) abridged form, but well set up and the whole seems well made.

No. 3. is a small printed sheet found in the compartment provided for the musical movement of a photographic album. The dates of the pictures in the album are all about 1900-1904. The paper lists the two tunes played and amusingly suggests that children should not be permitted to handle the mechanism owing to its delicacy.

While I have your attention, I should like to inquire if anyone knows of a source of good quality hand forged keys, reproductions of the type used in keywind musical boxes. I would very much appreciate knowing of such a source.

Incidentally, I find it amusing that our English friends publish the *Music Box*, examples of which they normally refer to as 'musical boxes' and the collectors this side of the ditch formed a group known as the Musical Box Society Int'l when they normally refer to such objects as 'music boxes'.



Do not be misled by first impressions! This ornate, panelled sideboard which stands in the Tottenham, North London home of Norman Evans is a musical instrument - and an automatic one at that. It is a Keyless Red Welte Feurich piano and the story goes that its original owner had his music room entirely panelled to match the piano.

LIST OF MEMBERS

394 Adolf Baude, Dendermondse stwg. 161, Destelbergen, Belgium.
395 A.G. Sidebotham c/o 14, Bridge Road, Blackwell, Darlington, Co. Durham.
* 396 E.C. Prior, Jr., Box 383, Chagrin Falls, Ohio 44022, U.S.A.
397 J.V. Knott, 74a, Cholmondeley Road, Salford, M6.8PR, Lancs.
398 A. Charbolot, 2, rue du Docteur Derouan, 86, Chatellerault, France.
399 Major D.H.L. Back, 2, Warrior Square Road, Horseshoe Barracks, Shoeburyness, Essex.
407 P. Winter, York House, Fort George, St. Peter Port, Guernsey, C.I.
408 E. Bayly, 19, Glendale Road, Bournemouth, BH6 4JA, Hampshire.
409 J. Arnaud Bell, Springfield, Pangbourne Hill, Pangbourne, Berkshire.
410 W.J. Dowsett, 33, Amesbury Crescent, Hove, 3 Sussex.
* 411 Walter Bick, 333, Progress Avenue, Scarborough 707, Ontario, Canada.
412 Bob Pelham, Pelham Puppets Ltd., Marlborough, Wiltshire.
* 413 D.K. Tillmanns, P.O. Box 10, Norco, California 91760, U.S.A.
414 R.G. Stuart, New Road, Cambuslang, Scotland.

CHANGES OF ADDRESS

26 A.B. Sherriff, Porthgwidden Field, Restronguet Point, Feock, Truro, Cornwall.
* 44 Dr. Jackson Fritz, 8224, Brittainy Drive, Annandale, Virginia 22003, U.S.A.
* 75 R.J. Vreeland, 73 Burnside Avenue, Cranford, N.J. 07016, U.S.A.
83 Sqdn. Ldr. W.F. Danton, "Roscrea" Village De Putron, Guernsey, Channel Islands.
134 Alan K. Clark, 1, Houselands Road, Tonbridge, Kent.
261 Clive C. Brooks, C/o Mrs. F. Goody, 27, St Mary's Road, Reigate, Surrey.
265 Richard R. Goodwin, 131, Cypress Drive, Prospect Heights, Illinois 60070, U.S.A.
272 Mrs. J. Wadmore, Horseshoe Cottage, 53, Bexley Street, Windsor, Berkshire.
* 284 Michael Woolf, 119, Waipapa Road, Hataitai, Wellington, New Zealand.
* 322 Dr. R.Joseph, "Umtjili", 1, Jeffcoat Avenue, Bergoliet, Cape Province, South Africa.
353 E.A. Spencer, 47, Brompton Square, London, S.W.3.
* 334 W.H. Edgerton, 36 West 88th St., New York, N.Y. 10024, U.S.A.
* 357 R.H. Masure, 5080 SW 96th Ave. Miami, Florida 33165, U.S.A.
* 372 Dr. Peter L. Schwartz, MOQ 3324, Camp Lejeune, North Carolina, 28542, U.S.A.

CORRECTION

188 Mrs. G.G. McClintock,Jr., 731, West Sixteenth Street,
New Cumberland, Pennsylvania 17070, U.S.A.

THE MUSIC BOX is designed by Arthur W.J.G. Ord-Hume and printed by Litho Arts, 32, South Audley Street, Mayfair, London, W.1. and published four times each year by The Musical Box Society of Great Britain at 11, Devonshire Place, Wimpole Street, London, W.1. IBM setting of the text by Montagu Watson, 40, Buckingham Mansions, West End Lane, London, N.W.6.

Are YOU interested in Musical Boxes ?

Small Barrel Organs or
Reed Organettes ?
Fairground Organs ?
Musical Snuff-Boxes ?
Singing Birds (automatic ones !) ?
Musical Automata of every other kind ?

If you are, then you will quite probably derive immense enjoyment leading to a greater fulfilment of your interest by becoming a Member of

THE MUSICAL BOX SOCIETY OF GREAT BRITAIN

The aims and objects of the Society are extremely simple. The Society exists to bring together all those who share a common interest in the collecting, preservation and appreciation of all types of mechanical musical instruments.

What-for ? What good does the Society do ? The Society brings together fellow collectors from all over the British Isles and many foreign countries including Switzerland — the accredited birthplace of the musical box as we know it.

The Society publishes a quarterly Journal called THE MUSIC BOX which is devoted to articles on all aspects of musical automata, repair and overhaul tips, descriptions of fine and unusual musical movements and, of course, it circulates Members addresses. The MUSIC BOX is fully illustrated.

Membership to the MUSICAL BOX SOCIETY OF GREAT BRITAIN opens up a whole new world of musical box appreciation. Wherever you live, up-to-the-minute news of members and collections reaches you through THE MUSIC BOX. Twice a year, a full day meeting is held at which all members and their guests are invited to attend. Ultimately, regional meetings, film shows, lectures and demonstrations will be encouraged.

How much does all this cost ? Just THREE POUNDS (U.S.A. $6) per year! If you are not convinced that Society membership can benefit you, why not send 5/– for a specimen copy of THE MUSIC BOX ? Judge, critically, for yourself.

The Musical Box Society of Great Britain.
11, Devonshire Place, Wimpole Street,
LONDON, W. 1.

Binders

Keep your copies of THE MUSIC BOX neat, clean and immediately available for reference. Strong, durable binders in red rexine with gilt title on spine made to hold two years' issues of magazines, directory and index. Your copies can be inserted or removed in a moment. There is no need to mutilate your magazines by punching as each one is simply retained on a wire.

Post and packing free 14/- each.
($2 U.S.A.)

Available from: **The Secretary, Musical Box Society of Great Britain,**
11, Devonshire Place, Wimpole Street, London, W. 1.