GEORGES JENNY

Inventor of the Ondioline

BEGINNER'S HANDBOOK FOR ONDIOLINISTS

INTRODUCTION

You now find yourself the happy owner of an Ondioline.

As such, you are now not only our customer, but also our friend and partner.

You are a friend because, amid the large and ever growing crowd of Ondioline admirers, you were confident enough to place your trust in us and become the owner of such an instrument. As a result, you are helping us with this most difficult task: Establishing a place for a new invention in the realm of everyday life.

It is for this reason that we greet you as a friend and partner.

The Ondioline will be appreciated and judged by you and the way you use it.

We know what you are thinking: "This is quite a responsibility!"

Indeed, dear customer and friend, you have a great responsibility...

You were attracted to the Ondioline because, whether professional musician or amateur, the Ondioline made your dreams come true. We introduced it to you as the least difficult of all musical instruments, and naturally this is true. But the Ondioline is also an instrument offering near endless possibilities. When using the most basic techniques, the player can, from the start, correctly imitate the sound of a flute, or theater organ, for example. But it offers so much more if only the player takes the trouble to spend thirty minutes to an hour practicing every day.

For example, playing the timbre of the violin or cello will require many more hours of passionate study to satisfy the ear.

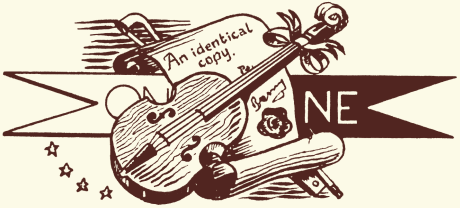
If you make the effort to spend two or three months practicing your new instrument in this way, we promise you will achieve results that will rank you among capable Ondiolinists.

The Ondioline is a complete musical instrument. You could practice for several months (or even years), and still not exhaust its possibilities.

But, unlike the saxophone or the violin for example, on the Ondioline "the note is made." Consequently, accurate and relatively pleasant sounds can be produced **immediately**. Studying is thereby made more appealing, though no less necessary if you hope to extract from the Ondioline all the joy it holds for you.

LA FONTAINE's old adage still rings true: "No good in this life one e'er gains, without some labor, care, and pains."

Now, dear customer and friend, to work!…



DESCRIPTION OF THE ONDIOLINE

The Ondioline has a keyboard with 37 keys (3 octaves). The keyboard is set inside a small box which sits on a cabinet containing the amplifier and speaker. Together (keyboard and cabinet) they have the appearance of an elegant piece of furniture, veneered or varnished as requested.

Figure 1 — shows the Ondioline from the front.

Figure 2 — shows the Ondioline from the back.

On these diagrams you can see the keyboard. Immediately beneath it and to the left is the 4–position register knob (for changing octaves) and the 4 knurled knobs for tuning these registers.

As a rule, the registers are numbered from left to right. Register 1, located on the left, corresponds with the lowest register; register 4, located on the right, corresponds with the highest register. Similarly, the knurled knobs used for tuning the registers are also numbered from left to right (for aesthetic reasons, no numbers were put on the instrument's cabinetwork).

Under the left-hand side of the keyboard, you will see the knee lever, which is used to adjust the overall sound level at any time.

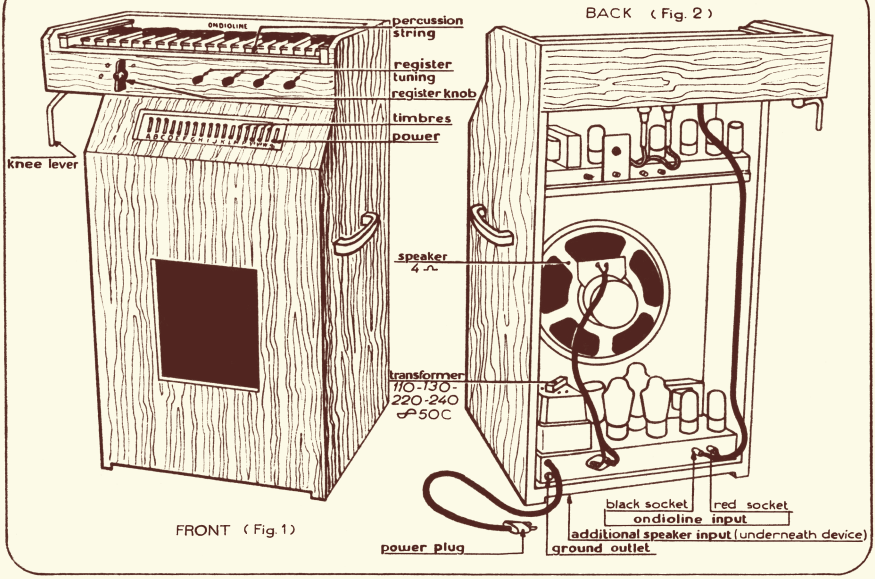
It is maneuvered using either your **right** knee, or your left hand if you are not accompanying yourself on the piano while playing the Ondioline.

Finally, under the keyboard, there are 18 switches for changing the timbre, marked A, B, C, D, E, F, and so on…

The switch furthest to the right is used to turn the Ondioline on and off.

The spring-mounted keyboard can move side-to-side, which allows manual vibratos to be produced by simply rocking your hand.

DESCRIPTION



PLUGGING IN AND STARTING UP

Upon receiving the instrument, remove the two Bakelite sticks used to keep the keyboard immobilized during transport. These sticks are wedged into each side of the instrument's keyboard.

This model is delivered for use with 50 cycle 110-130 volt **alternating-current** power. If your mains voltage is 220 volts, put the fuse clip found on the instrument's transformer in the position labeled 220 volts.

The transformer in which this fuse clip is set is found on the lower left-hand side of the bottom part of the cabinet (as seen from the back). The back of the cabinet is installed on runners, and can be removed by sliding it down.

It is therefore necessary to first lay the instrument down on the carpet or on a table to remove the back. Once the back is removed, you will see the inside of the instrument; the amplifier on the bottom is equipped with the transformer in question (on the left) and the tubes. In the upper part, you will see a few of the Ondioline's inner mechanisms (see Fig. 2, page 7).

The instrument plugs in the same way as does a radio set. Insert the provided cord, approximately two meters long and ending in a plug, into your apartment's power outlet.

STARTING UP. — Lower the 18th switch located on the far right of the keyboard, which is marked with this symbol:  .

The other 17 switches are solely used for timbre combinations.

Fully depress any key on the keyboard. As the knee lever is pushed from left to right, a sound will be heard.

The sound produced must be pure, without interference; if the sound is impure, you must simply reverse the direction in which the power plug was inserted (the plug you previously inserted into your apartment's power outlet). In other words, unplug it and plug it back in to the power outlet in the opposite direction.

If the static interference continues, this means your town's mains power is not grounded (a rare case). You will therefore need to attach a ground connection to the Ondioline (on the spot marked T, at the very bottom left of the Ondioline, as seen from the back). The ground connection can be made using a metal wire (insulated or not) plugged into the T outlet and running to a pipe for water, gas, central heating, etc. (in the same way that a ground connection for a radio receiver is established). (Fig. 2, page 7).

TUNING YOUR ONDIOLINE [1]

Each octave of the register knob is tuned by means of the corresponding knurled knob. This layout allows the instrument to be tuned to the regular tuning fork (the 3rd A note = 432 vibrations per second) and also to shift, if needed, up to a semitone lower or higher than this standard tuning. Ensuring you are in harmony with the orchestra or the piano is thereby made easy.

It is not necessary to tune each note (musical notes A, B, C, etc.) individually, because for each register, adjusting the corresponding knurled knob allows you to raise or lower all of the notes at once. All you need to do is press down on a note (key); the **A** note in the center of the keyboard for example. With the other hand, turn the knurled tuning knob in one direction or the other, as necessary (turning the knob **clockwise** causes the **tone to drop**; turning it **counter-clockwise** causes the **tone to rise**).

However, be sure to follow this next step correctly: Tune the registers by starting with register 4 first (position 4 on the register knob). The knurled knob n° 4 (the furthest to the right) corresponds with this position 4. Once register 4 is tuned, move to position 3 and tune it using knurled knob n° 3; and so on until you reach the lowest register, n° 1. If you change the tuning of a higher register,

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(1) Editor's note: A number of different Ondioline models were produced between the early 1940s and mid 1960s. Tuning procedures vary significantly between these models. The tuning procedure outlined above pertains to instruments from the late 1940s only; models that have four small knurled knobs to the right of the register knob. Tuning instructions for other Ondioline models are covered in the Appendix.

you must readjust the registers **below**, because tuning a higher register slightly changes the tuning of the lower registers. This is not serious, but it is important to pay attention to this if playing in tune is desired, particularly during a concert!

It is a very simple process. If the instrument does not seem to be in tune in relation to another instrument that is accompanying you, ask for an **A** note to be played and retune yourself carefully, starting with the highest register. At first this will take a few minutes, but once the habit is formed it will take only a few seconds. Once tuned, the instrument will remain in tune, unlike a violin or cello, and only significant variations in electricity can cause slight tuning to be required. Similarly, vibrations occurring during transport may cause the instrument to go marginally out of tune; but this will be noticeable before you begin playing and you will simply need to follow the procedure explained above.

ONDIOLINE TECHNIQUE AND LIST OF TIMBRES [1]

Can you teach yourself to play the Ondioline? Yes, certainly at the beginning, at least, and it is the goal of the following pages to introduce you to the art of playing the Ondioline as a beginner.

However, a teacher will one day be essential, helping you with the choice and, above all, the **interpretation** of pieces. Secondly, concepts of music theory are obviously necessary if you want to play correctly, keep time, and also if you want to gain access to ensemble playing; we strongly recommend that you take all the advice you can get from an experienced teacher as soon as possible. Generally speaking, a teacher who knows both piano and violin will be an excellent Ondioline teacher.

However, few teachers are acquainted with the Ondioline as yet, or even with its name… Consequently, you may need to rely on yourself to get started.

We have tried to create this handbook relying on logic alone, the logic of a new instrument, a new method…

We are not wasting time when we rationally examine, with you, the artistic possibilities available to a violinist on a real violin, to a cellist on a real cello, etc… We are delving together into the mystery of performance music, shedding necessary light on it

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(1) Editor's note: The functionality of timbre switches varies between different models of Ondioline; the M and P switches for example. These differences are outlined in the Appendix of The Ondioline: The Design and Development of an Electronic Musical Instrument (Publisher: Forgotten Futures). The beginner is advised to experiment.

as we go. It will then be easier to understand what the Ondioline does (or does not) allow, what the precise means of action are and, ultimately, the expression available to the Ondiolinist on this instrument.

A certain number of movements (vibrato, attack, dynamics) must first become conscious before moving into the realm of the subconscious and reflexes. As always, technique must come before art.

But we must work quickly in this book and, consequently, start first with analysis, logic, criticism, and, in short, all that is rational.

Instinctive musical expression will come later; all the more quickly once we have analyzed the necessary reflexes and they are **perfectly** understood.

Let's examine the chart labeled Figure 3.

It is a comparison chart showing the means of expression available to the Ondiolinist on the Ondioline. This chart simultaneously gives a (very simplified) idea of the order of phenomena that follow one another within a monophonic musical instrument (saxophone on the left, Ondioline on the right) from the moment sound is generated until it leaves the instrument.

Firstly, this chart is interesting in the sense that it "shows" that the Ondioline is not an automatic instrument, but rather a true musical instrument.

Additionally, this same chart has the advantage of highlighting the options available to the player. Finally, it shows the player why, and in what way, he or she must practice the instrument. Indeed, in the center column, from top to bottom, we have, starting with the **player's intervention**, the list of means of action (otherwise known as expression) available to the player. These methods have an effect on: the pitch of the sound; the attack or the percussion; the dynamics; the timbre.

Pitch of the Sound. — The Ondioline is not a fixed-sound instrument, like the piano or organ. With its laterally mobile keyboard, it allows the pitch of the sound to fluctuate on a given note

by one or two commas up or down, depending on whether the keyboard is pushed to the right or the left.

For example, when playing, it enables the difference between a sharp C note and a flat D note to be heard (this quickly becomes unconscious). Besides the personal touch given to the vibrato by the player, it allows the next note down or the next note up to be played, in the same way as a violinist or saxophonist would do. This contributes to making the Ondioline a lively instrument, making the melody warmer, more "melodious."

However, through its keyboard, the Ondioline helps avoid the difficulties associated with sliding sound instruments such as the violin or musical saw (1).

With its register knob, the Ondioline can cover the 6 octaves of the musical scale: The three-octave keyboard + semitones (from G note to G note) enable pieces written for the registers of the violin, flute, cello, sax, and more, to be interpreted easily.

VIBRATO. — Vibrato is either manual or automatic.

MANUAL VIBRATO. — It takes many hours of practice to acquire an excellent vibrato. The beauty, elegance, and finesse of playing are largely dependent on the vibrato. The **speed and amplitude** of the **vibrato** must vary according to the chosen timbre; for example, the vibrato of a violin's timbre must be **wider** than that when using the cello's timbre; the speed of the violin's vibrato is faster than that of the cello.

In later pages, we will provide tips for a few typical instruments: violin, cello, saxophone, and jazz trumpet. Generally speaking, and particularly in the beginning, it is best to rock your hand back and forth **very slightly**. A vibrato that is too **wide** causes a nasal, reedy sound. A vibrato that is too **slow** and too **wide**

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(1) In later pages, however, we will learn how the Ondioline allows you to simulate a "slide."

gives the impression that you are playing off-key. Generally, a vibrato should not be constant, or it will give the impression of being automatic, like that of the "theater organ." Sometimes you must begin the vibrato on one note and stop it on another. Also, as is the case with the violin, the vibrato should begin gradually; in other words, there is no fluctuation in pitch when you attack the note and the vibrato is then introduced gradually using the chosen amplitude. Finally, it is allowed to "die off" before moving to another note (naturally, this is only possible on long notes and not in quick sections).

AUTOMATIC VIBRATO. — In our opinion, this vibrato is no substitute for manual vibrato. However, through its frequency and mechanical regularity, it allows specific special effects to be obtained, as with the theater organ timbres as well as other timbres (B - BCE - BGI - FGH, etc…) or combined with percussion (CGIMPV2).

ATTACK AND DYNAMICS. — To properly understand this important question of attack and the tone's tenuto, let's take a moment to examine what is happening in the case of a real violin; as you know, it is the bow that, by rubbing the string, causes this string to vibrate.

So it is with the bow that the violinist both plays the attack (more or less abruptly or softly, as desired) and controls the tenuto, or dynamics, of the sounds produced. For these two categories of phenomena (attack and sound level), the violinist has several options: sound level depends on the speed at which the bow is moved in relation to the string, as well as on the more or less firm pressure of the bow on this string.

The **attack** effect depends on the speed and the pressure of the bow at the moment when, suspended in the air, it suddenly (or softly) hits or kisses the string. Another attack effect is produced by a **sudden change** in the speed or pressure of the bow on the string, at the instant when the artist switches from one note to the

next, for example. As an aside, the above explains why the violin is truly the master of all monophonic instruments; it is this richness and diversity of attack available to the expert artist!

But now back to the Ondioline: the judicious combined use of both the knee lever and the expressive keyboard enables a wide variety of attacks and dynamics to be achieved.

A significant part of the art of playing the Ondioline lies with this technique. Lacking a perfect understanding and ability to apply these concepts (attack, dynamics), your playing will either be too flat or too "broken," too dull or too abrupt, too weak or too brusque. In other words, artfully playing the Ondioline involves adopting attacks and dynamics in relation to the chosen timbre, and with the character of the instrument you wish to call to mind.

Let's first examine how the expressive keyboard works. Set the timbre of a bassoon (see the list of timbres). Push the knee lever about 1/3 of the way along its track. Slowly press on one of the keys on the keyboard; the middle C for example. The sound is produced once you have depressed the key by about 1 millimeter and its amplitude increases as the key continues to sink down. So, depending on the **speed** with which you press the key down, you have achieved a certain mode of attack. For example, by suddenly hitting the key and pressing it all the way down, your ear is reminded of a wind instrument into which the player has blown abruptly. Or, for a comparison using a bowed instrument, the violin, you have achieved the same angle of attack as though the bow, already moving at a certain speed, abruptly makes contact with the string.

By contrast, if you press the Ondioline's key down more slowly, your attack is softer and more gradual. And that's not all. Imagine that you need to link two notes, moving from the previous C note to the E note above; thanks to the Ondioline's expressive keyboard, there are many options available for joining these notes.

What happens if you keep the C note held down and then press the E note? The E note abruptly sounds, with the same intensity as the C note. In other words, the intensity does not change.

On the other hand, if you gradually release the C note you thereby lower the sound intensity. If, **at that moment precisely**, you press the E note, this latter will "sound" less abruptly than in the previous example. You will therefore be able to attack your E note in any way you like, by pressing it down more or less quickly. You have 4 very different modes of attack available to you; Figure 4's five graphs illustrate this more clearly. The horizontal axis of each graph represents the length of the sounds (in this example, a total of 4 seconds).

On the vertical axis, the possible depth of movement of the keyboard keys is represented (in reality, each key can travel approximately 5 mm downwards).

Graph A represents an abrupt attack and sudden switching from one note to the next, without any amplitude transition.

Graph B represents a series of soft attacks, with each sound being softly linked together (certain violin or saxophone effects fall under this example).

Graph C represents a good strong attack, but at the end of each note, the amplitude "gives way" slightly and the next note is once again attacked directly. The notes are still blended together, which can be seen on the graph by the fact that the upper curves do not extend all the way up to the "silence" zone.

By contrast, in example D, the notes are disconnected; just as they are in example E. An infinite number of examples could be cited, which demonstrates the wide variety of expression in the attack and fade possible on such a keyboard (patented by G. Jenny).

One more important detail needs to be clarified: the keyboard was not designed to be used for overall expression. This is instead entrusted to the knee lever. This means that the **keyboard keys are always supposed to be pressed all the way down**. The factor that enters into play on the keyboard is the speed at which the keys are pressed down or released - not the depth. This is an **important** distinction.

Indeed, it would be impossible for an artist to play (especially quickly!) by pressing one key down by 3 mm and the next by 2 mm or 4 mm; playing would be imprecise, broken, jerky, etc. So to repeat: the expressive keyboard effect should not be used except for changes in **speed** in the attack and fade. Press each key down **all the way** (1), but press down slowly or quickly depending on the desired attack effect. Likewise, release it slowly or quickly and chain it with other notes (that is to say, release a given key more or less completely before pressing down the next) according to whether you want your playing to be more or less flowing or disconnected. Now that this is well understood **(it is important)**, let's continue on to the knee lever.

THE KNEE LEVER. — The knee lever is used for overall expression. Whether you want to play piano, pianoforte, etc., it must be pushed more or less to the right. It can also be used for the gradual crescendo and decrescendo of tones (see the Fig. 5 graph "Clair de Lune" from Werther).

This typical example shows that each note is coaxed out gradually; it is "strung out." Otherwise the attack is abrupt and the notes are too blended. This phenomenon has been slightly exaggerated in this graphical representation, in order to better highlight the keyboard-knee lever use.

In practice, you should not produce such large variations in the sound level; but here, it does become a question of personal

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(1) However, a little further on, see the exception made for passing tones.

style. It falls within the realm of "artistic expression." The delivery is therefore left in your hands, dear Sir or Madam…

Another example of using the knee lever and expressive keyboard is illustrated by the playing of a bassoon, in Figure 6. In this case, however, the modified, abrupt movement of the knee lever, immediately after the f1 point in time, serves to prepare the resounding tone that will come out in the next fraction of a second when, at f2, the E note is "struck" violently on the keyboard.

The knee lever, as its name implies, is maneuvered using your knee…

But if you are playing the Ondioline as a soloist (that is to say, someone else is accompanying you on the piano and your left hand is free), use your left hand to maneuver the knee lever, since this will allow you greater sensitivity. For more convenience and finesse, you can adopt the following solution: rest your forearm on your knee at wrist height; your knee serving as a **mobile** support for your wrist, which can also move; this is both very practical and very flexible. In certain sections, your knee will take the place of your hand's motions, in case you need your hand temporarily to change the timbre or register… or simply to turn a page…

TIMBRES. — The main timbres on the Ondioline are indicated on the tab titled List of Timbres.

There are two copies of this list available, one of which can be torn out along the perforated line.

This list is by no means exhaustive. The timbre switches, combined with changes in octaves, the manual vibrato, the automatic vibrato, the percussion, etc., offer near limitless combinations (several thousand). This list, therefore, only serves as a general guide.

Still, this next point must be clearly understood: once a given

combination is set, all you have is the raw timbre, the general tone; it is up to you, when playing, to combine the use of vibrato, the knee lever, and the expressive keyboard to make the timbre sound alive, to make it "speak" properly.

Listen to radio shows with this new and truly fascinating goal in mind: grasping the specific way in which different monophonic orchestral instruments express themselves.

Attend concerts regularly if you can. Listen to and observe the orchestra's trumpeter, violinist, and saxophonist. Your discoveries will be highly informative.

For this reason we maintain that, with the Ondioline, we are not diminishing the musical arts, quite the contrary! We are expanding them, making them better understood and loved, and strengthening all the more the appreciation for the expert performance and interpretive genius of the great virtuosos.

For amateurs, the Ondioline is an interesting instrument in the sense that it allows them to more easily access the irreplaceable joy of personal musical performance. For every 100 beginner violinists, how many remain after three or four years of study?

Very few, of course. Why? Because the violin is a wonderful and irreplaceable instrument that is also extremely challenging.

Among all of these aspiring musicians who were unable to pursue the study of such an instrument, some were nevertheless sufficiently talented to not be completely "lost" to the musical cause; it is for them that the Ondioline was invented. With infinitely less trouble, and at any age, they can take up their suspended musical studies where they left off, this time on the Ondioline. Playing music is just like playing a sport: admiring sports as a spectator is fine - practicing a sport or simply exercising every morning is better.

If you have a taste for it, "musical exercise" is equally as vital

for your spiritual health and happiness as daily physical exercise is vital for your physical health and well-being.

While the amateur musician may find it enjoyable to seek out sounds on the Ondioline that resemble a violin, a saxophone, an oboe, etc., the professional musician as well as the composer will primarily use the Ondioline for other purposes: creating new effects within the orchestra. And this brings us back to our subject: the Ondioline's timbres.

Take, for example, the AF violin timbre.

In reality, this timbre is softer and more ethereal than that of a real violin. It "lacks" the bow rubbing the string; the composer will have noticed this, and will use the Ondioline, asking for even more softness, more "fullness" (AFK or K timbres) all while asking the performer to play using the "violin" character; in other words, using the vibrato on certain notes, etc. Here we stand witness to a new character effect; some composers have already given a poetic name to this timbre and way of playing: "Viole d'Ondes" (Wave Viol).

ANOTHER EXAMPLE. — Consider the "jazz trumpet" timbre FGIJ.

In register IV the similarity seems clear, but, without changing anything else, in register I a comical timbre with a ridiculous style is obtained, particularly when alternating the C switch from one note to the next while playing.

Cartoon composers use the Ondioline in this way.

To conclude this far too brief study, we will give some tips on the use of certain timbres.

VIOLIN-CELLO. — Reread the above passages attentively where the manual vibrato, expressive keyboard, and knee lever use were explained.

The vibrato for the violin timbre should occur at a speed of 6 to 7 cycles per second; the cello should be a bit slower (4 to 5).

The amplitude of the violin's vibrato isn't nearly as wide as that of the trumpet or saxophone; for the cello, this amplitude is even narrower.

Stop the vibrato occasionally on a given note.

A NOTE ON VIBRATO. — Particularly in the beginning, it is more difficult to use certain fingers (little finger and thumb) than others to produce the vibrato. Therefore, you must practice what is referred to as "substitution." A key is pressed down by any finger then, if this finger is the thumb and the note is a long one on which vibrato is desired, you would replace your thumb (**the key already being down)** with your index or middle finger. As in the case of the violin-cello timbre, the vibrato should not begin instantly and the effect achieved is perfect in every way.

The keyboard's sideways movement is very flexible and provides little inertia; as a result, with some practice (approximately one week of study) you will be able to start or stop the vibrato instantly and at will.

This exercise is very important because if the keyboard is made to vibrate constantly, stringing the notes together, the result is a reedy effect that is not at all like the violin!

The same is true for the combined use of the knee lever and softly depressed keys (example in Fig. 5). Practice patiently. Better yet, obtain a recording of Jacques Thibaud on the violin or Maurice Maréchal on the cello. Work alongside this record.

Our example in Figure 5 ("Clair de Lune" from Werther) focuses on the soft attack.

For abrupt attacks and fast playing, etc., you will have to play differently. Hit the keyboard key suddenly, after having **already** pushed the knee lever to a point where the volume of the attack will be sufficiently loud that the sound will be emitted abruptly, with a sharp attack.

Complete the following exercise with the AF timbre, reg. III: bring the knee lever to between 1/3 and halfway along its track. Indeed, it is important to set the overall sound level to an appropriate volume for the piece with which you are working.

Then, **and only then**, press down the key according to example C on Figure 4. In this way, the sound of the sharp attack evokes the stroke of a bow.

Let the knee lever begin to return to its resting position and release the C note almost all the way - the sound disappears completely. Prepare to press down the E note then, at the same time and **as quickly as possible, abruptly swing** the knee lever back to the 1/3 or halfway point and slam the E note down all the way. This is, in short, the same procedure already shown for the bassoon when attacking the final E note, in f1 and f2 (Fig. 6).

In f1, the previous key has nearly returned to the top and the knee lever is retreating.

Between f1 and f2, the knee lever is abruptly swung from left to right, but because the E note is barely depressed, it can hardly be heard. At f2, the knee lever has arrived at its position, the E note is abruptly struck and the attack effect is achieved. This attack effect is further emphasized by the contrast resulting from the fact that the knee lever once again retreats slightly at f3.

In summary, the curve represented in Figure 6 at f1, f2, f3, and f4 fairly accurately represents the variations in sound amplitude, in the same way the ear perceives them each time a tone is made: the string is struck, followed by a lengthy vibra-

tion; the sudden attack of the bow on the string or the "swing" of a jazz saxophonist or trumpeter. These explanations, while perhaps complicated at first glance, will prove to be quite simple after the aspiring Ondiolinist devotes time to attentive observation and study.

Send us your questions by mail, or come visit us - we are at your disposal. In this way, you will help us perfect and revise this volume of practical advice for beginners.

Glissando. — **Passing Tones.** — As mentioned above, each keyboard key must be fully depressed. There is, however, one exception: when the glissando effect of the violin, saxophone, or trumpet, for example, is desired. To create it, proceed as follows. You would like to move from a C note to the E note above with a sliding effect. Press the C note down all the way. When the time comes to switch to the E note, release the C note almost entirely, press the D-sharp down slightly, and then the E note completely. In this way, the D-sharp is lightly brushed and scarcely heard, in either duration or volume. The ear gets the impression of a sliding, grazed tone.

Moving in the opposite direction, descending from the E note to the C note, for example, you will brush the C-sharp as you make the transition. But be careful: on the Ondioline, when you hit two notes simultaneously, the higher tone will take precedence and will be the only tone heard. As long as the upper note remains depressed, **even partially**, the lower note will not sound. It is important to remember this when "sliding" down the scale.

Practice…

Now interesting and entertaining nights are on the horizon, with your friends or family as critics or partners…

But on the Ondioline you will have this advantage over a real violin: your progress will be stunning and from the beginning your playing will be enjoyable for those around you. You can practice with the volume turned down. Consequently, you

won't damage your ears, nor those of your neighbors, with the squealing and caterwauling produced by a beginner violinist that suggests the soul of a sacrificed cat has returned from the dead to howl within the taut catgut scraped by the bow!

OBOE TIMBRE. — FHIJ — While the violin and cello timbres are the most difficult to play correctly on the Ondioline, the oboe, English horn, clarinet, and flute effects are infinitely easier to achieve. This is because they are characterized by calmer and relatively less expressive playing.

Fairly quick vibrato for the oboe, but also fairly narrow, soft attack or lightly hit as appropriate - notes blend together when playing.

Do the same for the melancholy English horn timbre (FGIJK or FGIJ timbres, reg. II).

FOR THE CLARINET. — BI-BJ or BK, notes blend together when playing, example A on Figure 4.

FLUTE. — Watch out for unpleasant "clicks" produced if a key is completely released before starting to press down another one (example D on Figure 4… what not to do). This is particularly apparent in very high registers and if the knee lever has been pushed too far to the right.

…According to your tastes… and skills. Do not produce vibrato, or only do so very softly, in some cases.

SAXOPHONE. — CGK-CGJ-CGE, register II or III.
Soft (b) or direct (c) attack from Figure 4, depending on the chosen style — classical or jazz. Very **wide** and **fast** vibrato. Very frequent passing tones or slides.

TRUMPET. — FGIJ, register III. — The same advice for the saxophone applies here, but, in some cases, the attack is very sharp. For the effect of a trumpet to be produced, it is impor-

tant to play loudly, very often pushing the knee lever almost completely to the far right. Do not worry about violently hitting the keys. The keyboard, while light and mobile, was carefully designed and tested for this type of use…

The notes played by a trumpet are often disconnected (example from Fig. 4).

If you add LMP to the saxophone or trumpet timbre, pressing the keys down is no longer "expressive"; the attack is abrupt, which can be interesting for certain "jazz" effects.

We must limit ourselves here to these few examples. You will find and discover for yourself a wealth of other different combinations. Perhaps you will prefer other combinations for the trumpet, the violin, the oboe, etc…

…To each his own…

…Timbres are to music as colors are to pictorial arts.

THEATER ORGAN. — All of the above timbres produce "theater organ" effects when using the automatic vibrato. Some are, nevertheless, more typical.

CDE. — Reg. I-II-III, vibratos V1-V2

BK. — Reg. I-II-III-IV.

There are endless combinations…

Contrary to what was mentioned above regarding passing tones (sliding tones on the saxophone or violin), when using these passing tones with the "theater organ" effects, rather than brushing the notes, the keys should be pressed all the way down (or most of the way, according to your tastes).

PERCUSSION REMINISCENT OF PLUCKED OR STRUCK STRINGS.

Lower timbres MPD.

Additionally, select a timbre with G or H, for example CGK, register III. Hit a key and keep it held down all the way. Instead

of persisting, the sound slowly fades. If you do not lower D, the attack is more percussive, more plucked sounding.

If you lower MP+L, the sound is percussive but does not fade away (for example, the jazz trumpet timbre).

Add either slow or fast automatic vibratos to this, if you so desire, and you will achieve strange new effects in the middle as well as in the lowest lows, the highest highs, etc.

IMPORTANT NOTE. — For some timbre combinations (with A), the percussive effect is either not produced, or it produces unpleasant clicks.

Playing using the string stretched in front of the keyboard. — Lower M. Set a mandolin timbre (e.g. FH or H). Play the keyboard with your right hand and tap the string with the fingers of your left hand. Press the keys all the way down and hold them down throughout the time it takes for the sound to fade.

You can produce the effect of castanets by lowering FGHMP and using the fingers of your right hand to tap the string, without playing the keys. By replacing FGH with CGK, CGE, etc., while leaving MP lowered, similar timbres are achieved that are nonetheless different from the castanets.

No wrong move made when setting timbres (including V1 and V2) will damage the instrument, even if it produces unpleasant clicks.

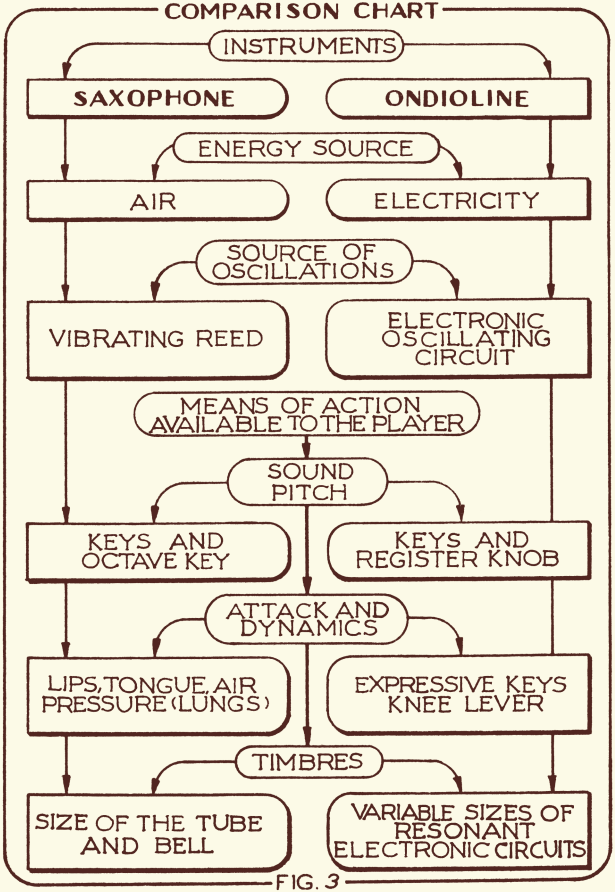

COMPARISON CHART
INSTRUMENTS
SAXOPHONE
ONDIOLINE
ENERGY SOURCE
AIR
ELECTRICITY
SOURCE OF OSCILLATIONS
VIBRATING REED
ELECTRONIC OSCILLATING CIRCUIT
MEANS OF ACTION AVAILABLE TO THE PLAYER
SOUND PITCH
KEYS AND OCTAVE KEY
KEYS AND REGISTER KNOB
ATTACK AND DYNAMICS
LIPS, TONGUE, AIR PRESSURE (LUNGS)
EXPRESSIVE KEYS KNEE LEVER
TIMBRES
SIZE OF THE TUBE AND BELL
VARIABLE SIZES OF RESONANT ELECTRONIC CIRCUITS
FIG. 3

FIG. 4

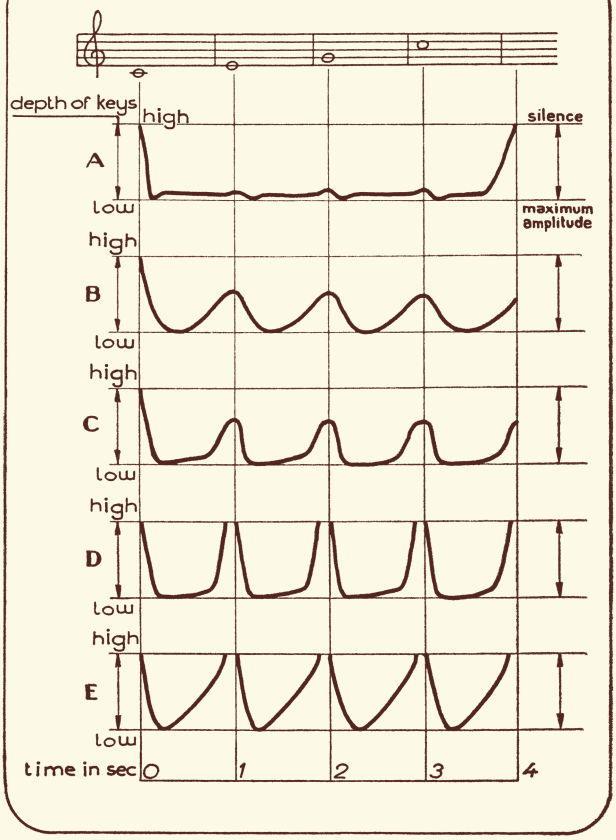

depth of keys
high
silence
A
low
maximum amplitude
high
B
low
high
C
low
high
D
low
high
E
low
time in sec
0
1
2
3
4

FIG. 5

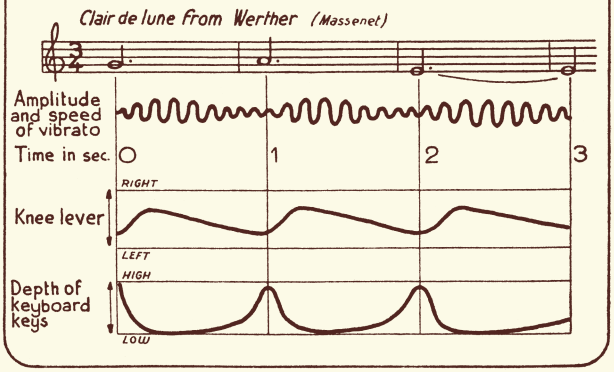
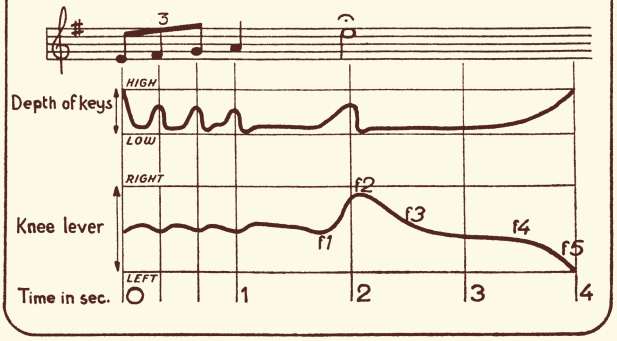

Clair de lune from Werther (Massenet)
Amplitude and speed of vibrato
Time in sec.
0
1
2
3
RIGHT
Knee lever
LEFT
HIGH
Depth of keyboard keys
LOW

FIG. 6


3
HIGH
Depth of keys
LOW
RIGHT
f1
f2
f3
f4
f5
Knee lever
LEFT
Time in sec.
0
1
2
3
4

LIST OF TIMBRES

	TIMBRES	REGISTERS
Power		5
Violin	AF or AFI	3
Soft violin	AFH	4
Soft violin	AFHV2W	4
Cello	AF - AFI	1
Cello	AFVI	1
Alto saxophone	CGJ	3
Tenor saxophone	CGK	2
Jazz trumpet	GIJ	3
Natural trumpet	FGIJ	3
Oboe	FHIJ	3
Hunting horn	EGK - CGKV2	2
French horn	CK	2
Bassoon	CGK - EGK	1
Flute	GJ - BGIJ	3 or 4
Bugle	CGJ	1 or 2
Fife, pipe	GJ - GI	4
Mandolin with string	HM	4
Banjo with string	FGIJM	3
Bagpipes (by holding the note of the octave below)	FG - FGHI	3

(Continued overleaf).

	TIMBRES	REGISTERS
Theater organ	BCEV2W - ABCIV2W	1 or 2
	BCHKV2W - BGEHV2W	3
	BHKV2W - FGHV2W	2 or 3
	BGHIJV2W - GIJV2W	2 or 3
	BV2W - BEHV2W	2 or 3
Clarinet	B - BGI	2 or 3
Bandoneon	A - or M	3
Flamenco guitar	FGHMP	1 or 2
Soft guitar	CGIMP	1 or 2
Hawaiian guitar	GIMPV2W	2 or 3
Harpsichord	FGHMP - HMP	3
Zither	FGIMPVI	3
Castanets (tapping the string without using the keyboard)	FGMP	
Bongos (same process as above, alternating E)	BCEFGIJKMP	
Trombone	CFJ	2
	BGIJK	2
Helicon	BCE	1
Double bass	ABCEF	1

APPENDIX

Tuning procedures for various Ondioline models.

MODELS WITH FIVE KNURLED TUNING KNOBS. — The earliest Ondioline models (Figures 9, 10, and 11) offer a wider pitch range than later instruments. The register knob moves through five positions, where the highest position (Register V) offers an octave above later models' highest octave. It is probable that this highest register was dropped in later instruments to enhance tuning accuracy and stability in the Ondioline's lower range.

For tuning, these early models offer five knurled knobs to the right of the register knob. The tuning procedure is as described earlier in this handbook, always adressing the highest register before moving down to the next lower register. On these earliest models, of course, the highest register is Register V.

Ondiolines with knurled knobs for tuning do not offer easy access to any mechanism for scaling the keyboard. On these models the scaling is determined solely by the string of resistors that sits just behind the keyboard. At the time of this Appendix's writing, these instruments are up to 75 years old, and the values of the resistors in this string will most likely have drifted far from what was calibrated for accurate tuning in the 1940s. A professional technician should be sought out to recalibrate the resistor string to ensure accurate keyboard scaling.

MODELS WITH FOUR KNURLED TUNING KNOBS. — The tuning procedure for these models (Fig. 12) is as described earlier in this handbook. A professional technician should be sought out to recalibrate the resistor string behind the keyboard, to ensure accurate keyboard scaling.

1950s STAGE MODEL, WITH THREE SMALL HOLES TO THE RIGHT OF THE GENERAL TUNING KNOB (FIG 13).

First of all, set the general tuning knob to the center point (12 o'clock). Start with the register knob in position IV. Alternately play the two right-most Gs on the keyboard. Do not check whether they are in tune absolutely; rather, verify whether they are an octave apart. To do so, turn the potentiometer R_{V4} (see figure 7) in either direction, as necessary. Once you are satisfied, switch to register III, and this time using the potentiometer R_{V3} (see figure 8), tune the two right-most Gs on the keyboard until they are an octave apart. Continue in register II, making adjustments using R_{V2}, and then in register I, using R_{V1}.

The next stage involves tuning each register to a specific note. This is done by adjusting the capacitors C_{V4} to C_{V1}, whose role is to uniformly raise or lower all the notes on the keyboard at the same time.

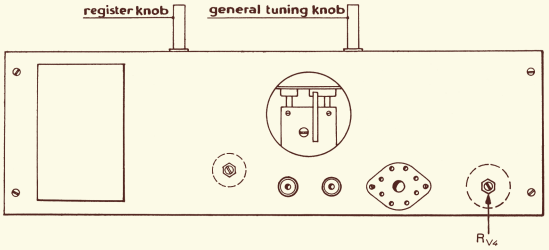
Start in register IV, select a note in the middle of the Ondioline's keyboard (middle C for instance), and tune it to a reference pitch for that note. Repeat in register III, adjusting C_{V3}, then do the same in register II and register I, adjusting C_{V2} and C_{V1} respectively.

Musicians with a discerning ear will be tempted to further refine general tuning by repeating the calibration process once or twice more.

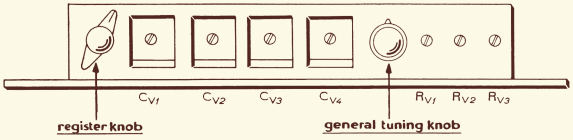
Beyond this, small adjustments between the scaling resistors and tuning capacitors can also be helpful in refining each register. Adjust R_{V4}–C_{V4}, R_{V3}–C_{V3}, etc. Always adjust the highest register before moving to the next lower register.

If, after following these tuning directions, the Ondioline still feels out of tune or incorrectly scaled across the keyboard, a professional service technician should be found to address the resistor string behind the keyboard. Only if this resistor string is properly calibrated can the instrument be reliably tuned using the procedure above.

TUNING CONTROLS



KEYBOARD MODULE VIEWED FROM BELOW (Fig. 7)



KEYBOARD MODULE VIEWED FROM FRONT (Fig. 8)

FIG.9

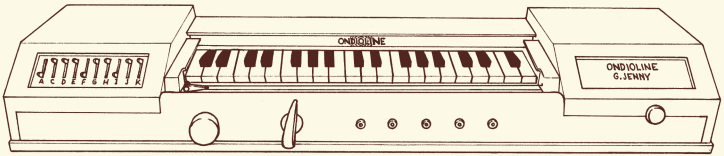


FIG.10

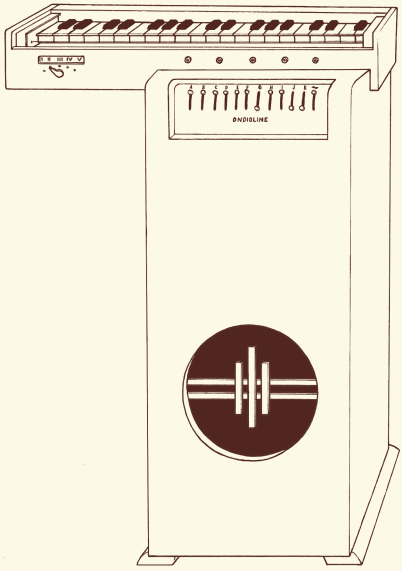


FIG.11

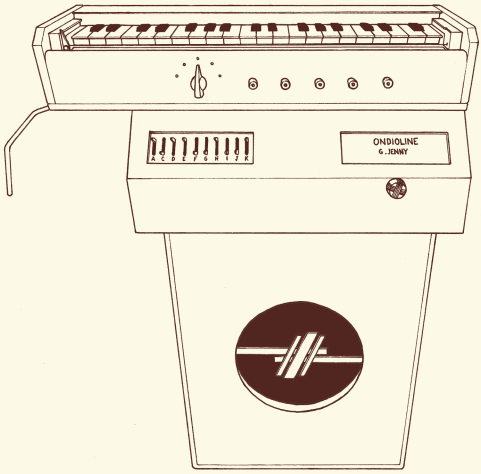


FIG.12

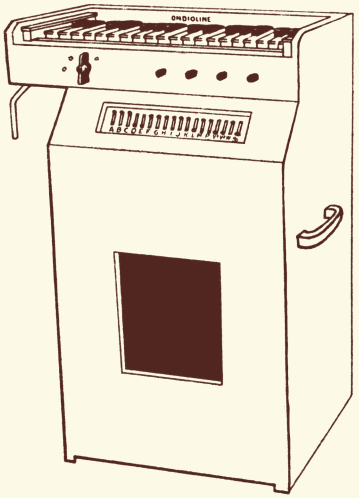
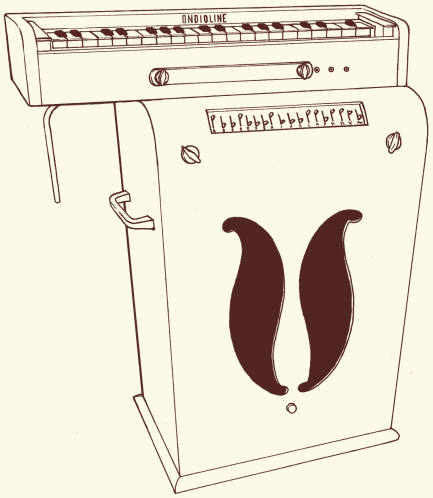
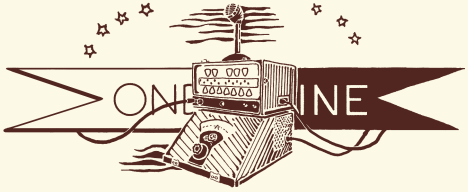


FIG.13




ONE
INE

INSTRUMENT WARRANTY NUMBER

Our warranty is for one (1) year and covers the entire instrument, including the tubes.

The Ondioline is very solidly built and, if well packaged, easily tolerates very long trips, whether by road, rail, sea, or air.

Twelve years of lab research and five years of practical experience in construction and delivery to professionals enable us to offer our clients a warranty that any other company can hardly match.

The instrument may, under no circumstances, be disassembled without our written authorization. Otherwise, the warranty is automatically void.

Date:

Signature: Company Stamp:

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Forgotten Futures, New York