# TOP-TONES for the SAXOPHONE

Four-Octave Range (Third Edition)

# Sigurd M. Rascher

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## CARL FISCHER®

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# Biography

SIGURD M. RASCHÈR was born in Germany in 1907. He received a diploma from Stuttgart Musikhochschule in 1930 and intended to enter upon the career of a professional clarinettist, but changed to the saxophone, on which he became one of the world's greatest performers.

Raschèr's musical background, in addition to the rigorous training received at the Academy of Music, from which he graduated, includes experience as a band musician and as a teacher in primary schools. In 1934 he was appointed teacher of saxophone at the Royal Danish Conservatory, Copenhagen, and later acted in a similar capacity at the conservatory in Malmö, Sweden. He became so identified with the musical life of Denmark and Sweden that he has been called a Scandinavian musician. In the USA he has taught at the Manhattan School of Music, the University of Michigan and the Eastman School of Music; and he has given courses at many other universities and colleges.

Concert tours have occupied much of his time and attention since 1932 — he has been heard in all the important musical centers of Europe, and even in remote Australia and Tasmania (1938 and 1959). His American debut took place in 1939 with the Boston Symphony Orchestra; he has appeared several times with the New York Philharmonic Orchestra, as well as with the Philadelphia Orchestra, the Cleveland Orchestra, the National Symphony Orchestra, and many other orchestras in this country, in Europe, etc.

Raschèr's success in extending the range of the saxophone, coupled with his phenomenal control of tonal gradations, his amazing technique and supreme musicianship, have attracted the attention of serious composers. The list of those who have written music for him includes Bentzon, Borck, Brant, Coates, Cowell, Dahl, Gläser, Glazunov, Hába, Hartley, Hindemith, Hlobil, Husa, Ibert, von Koch, Lamb, Larsson, Martin, Milhaud, Osterc, Wirth, Worley, and many others.

Concerning the aritistic possibilities of the saxophone, Raschèr points out that Adolphe Sax, its inventor, had in mind an instrument that should be as flexible as a string instrument and as powerful as one of the brasses. It was to possess great technical agility and an expressive power equal to that of the cello. In developing his own facility, Rascher has endeavored to approach as nearly as possible the high ideals of the saxophone's inventor; that his success has been considerable we shall discover subsequently.

Since its invention in 1841 the saxophone has become a valuable addition to the tonal palette of the orchestra. The first composers to use it were George Kastner in his opera *Le Dernier Roi de Juda* (1844), Halévy in his opera *Le Juif errant* (1852), and William Henry Fry of Philadelphia in his *Santa Claus Symphony* (1853), again in his symphonic poem *Hagar in The Wilderness* (1854) and in several other works. George Bizet gave it an important part in his *Arlésienne*, premiered in Paris in 1872. Since then it has been used in the orchestra hundreds of times; singly, in pairs and in groups. We hear it in operas, symphonies, overtures, etc. Thomas, D'Indy, D'Albert, Strauss, Debussy, Kodaly, and more recently Ravel, Hindemith, Honegger, W. Walton, R.V. Williams, Villa-Lobos, B. Britten, Prokofiev, and many others have asked for it in their scores. It is recognized for the expressive and distinct color it adds to the orchestra.

Raschèr, whose expressive power over a gamut of colors includes that of the flute, oboe, clarinet, horn, and bassoon has shown that the seeming upper limit of the saxophone's range is due to lack of ability on the performer's part, and is the fault of neither the instrument nor its inventor.

That Rascher has achieved phenomenal success in approaching the ideals of Adolphe Sax, with regard for the tonal and technical capabilities of the saxophone, is attested to by the fact that in 1938 he received a photograph of Sax from the inventor's daughter, then more than eighty years old, with comment to the effect that, at a concert in Strasbourg, she had heard Rascher play the saxophone as she believed her father had imagined it should sound.

### FOREWORD TO THE FIRST EDITION

Until recently the range of the sax ophone has been considered to be two and a half octaves, from low B-flat to F above the staff. There have been some attempts to extend the range, but up to the present time these have been more or less experimental. No comprehensive method of training the embouchure to master the higher register has previously been published. This work is, therefore, as far as we know, the first of its kind.

The production of tones higher than top F is based on the principle of "harmonics," so called because the first six tones in any overtone gamut form a major chord. Although it has often been assumed that "false fingerings" are used to produce these high tones, the method outlined here has been arrived at by experiment and experience, and has not, in any sense, been achieved by mere accident. The fingerings indicated on page 19 have been tried on at least twenty different makes of E-flat saxophones, and are not restricted to any one make. The chief aim has been to find fingerings, not too complicated, adjoin-

ing each other in a reasonable way and producing perfect intonation. They have been used for over ten years and are still satisfactory. Many compositions played by the author on the concert platform require a range extending above top F, in some cases only a few tones, in others more than an octave. The fingerings given are the ones actually employed. A number of students in Europe have been very successful with these high tones, but mastery of them requires some years, even for an apt pupil.

Before beginning to study high tones, every saxophonist should be able to command and control completely the attack, quality and vibrato of every tone within the normal range. Therefore, this treatise begins with a few tone-control exercises, which it is hoped will not be unfamiliar to the majority of saxophone players. Nevertheless, it is very important that these preliminary exercises be practiced with the utmost exactness and that they be used daily for a long time.

### FOREWORD TO THE SECOND EDITION

Twenty years have passed since the first edition of this volume was published. It was the first method for the production of the extended register. \* It is still the only scientific method of its kind. The existence of several fingering charts, published recently, proves the validity of the idea, but without a logical foundation for understanding and development, these charts have done more to discredit the idea of a feasible fouroctave range than to further it.

Since the publication of this method, I have spoken to many an enthusiastic saxophone player who aimed for a high register. Without exception, the student who fails to comprehend the prime importance of the development of the "inner ear" - "tone imagination," "concept of tone" - also fails to produce, let alone master, the high register. On the other hand, the student who realizes that mind (concept) and body (embouchure, fingering) must work together, will in due course succeed. We too often underestimate the power of the active mind.

The production of any overtone and/or tone higher than "top" F depends on various factors: a clear aim (emanating from the player's mind) for the exact pitch, a flexible, well-developed embouchure and a controlled air flow. This process is much like the act of singing; the mind's aim for a certain tone (pitch, loudness, quality, color, character) directs the vocal chords to function in cooperation with a certain air flow. Because the aim originates in the mind, it must be wholly conscious. From here on, however, the process becomes a bodily one and continues beyond the clear grasp of the mind.

In like manner, the mind must direct the production of tone on a wind instrument. Provided the player's embouchure is well developed, it will respond below the level of conscious action — to the mind's command. The next step - selecting the desired tone out of a multitude of possibilities — calls for recognition and decision. These again are activities of the mind. Thus we have returned to our starting point, the mind, and our goal is reached, i.e., the predetermined tone sounds.

Because we recognize the necessity to develop the inner ear, a flexible embouchure and a controlled air flow, the exercises on the next few pages are designed to develop them.

April 28th, 1961 Sigurd M. Kascher.

<sup>\*</sup>I had published several years earlier in Europe a fingering chart for the high register, together with a few suggestions for its study. The resulting excitement in professional circles was most encouraging, but very soon, quantities of letters were received, wherein players complained. These players could, after memorizing the fingerings, still not produce any high register. I answered with an article in the London Sunday Times, in which I explained that this could not be achieved within a few weeks, but would take years to develop. Obviously, though the fingerings were correct (I use the same today), more than a chart was needed.

### FOREWORD TO THE THIRD EDITION

A few more years have gone by since the publication of the second edition of these Top Tones. Today it is the prerogative of the amateur to reduce the saxophone's range to the limit of the keys. And it is understood that the methodical study of the high register brings to the student's playing great benefits also in the lower 2½ octaves, because a vivid tone imagination here is as important as in the higher register. Intonation, tone quality, musicianship and artistry — all are part of the act of projection of an inner reality into the outer reality of acoustics. Without that I cannot share my inner experience with the listener. The projection must be concise and clear. That can be learned.

By now it is also clear that a limitation to a range of 2½ octaves applies to a Soprano, Tenor, Baritone and Basso saxophone no more than it does to the Alto. Many original works attest to this fact. Example: Concerto Piccolo by Erland von Koch, in which the Soprano saxophone carries a melodic line to high D. And over a century earlier, in the score to his opera Le Dernier Roi de Juda, George Kastner

wrote an F sharp for the Basso saxophone, although the instrument had no key for it. And he got it because the first saxophonist played the part himself. Nor was that astonishing — Adolphe Sax had played three full octaves on the same instrument for Hector Berlioz more than two years earlier.

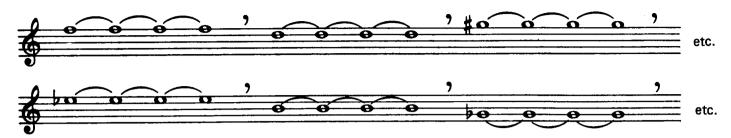
That it is neither necessary nor practical to use the same fingerings for the high register on all saxophones is by now also clear. Not only that: there are many alternate fingerings for the Alto saxophone as well. You will find some of those I use on page 19.

Feasibility and fingerings, however, are no longer basic questions in this field. The central issue today, as it was 40 years ago, is the methodical approach given in this volume.

August 17th, 1977



Sustain the following notes without vibrato. The tone should be absolutely steady, without any *crescendo* or *decrescendo* at the beginning or the end. Play all tones with the same degree of strength. All shades from *ppp* to *fff* must be practiced throughout the range, including low Bb and top F. (This is, of course, relative because low Bb cannot be played as softly as, for example, middle F).

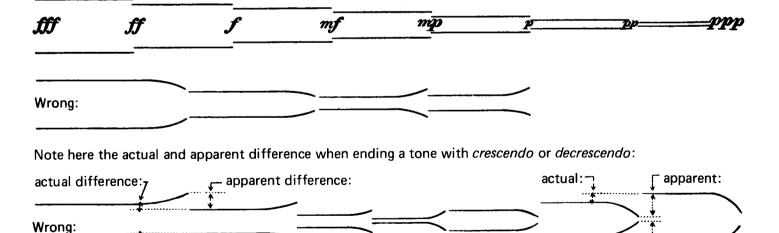


"Terrace" Dynamics

In this exercise there should be no connecting *crescendo* or *decrescendo* between the tones. Each tone should be started according to the dynamic markings, kept "in level," and cut off sharply at its end. Nevertheless, a start in **ff** should never sound like a blast. It is important to practice all tones in all degrees, from **ppp** to **fff**.



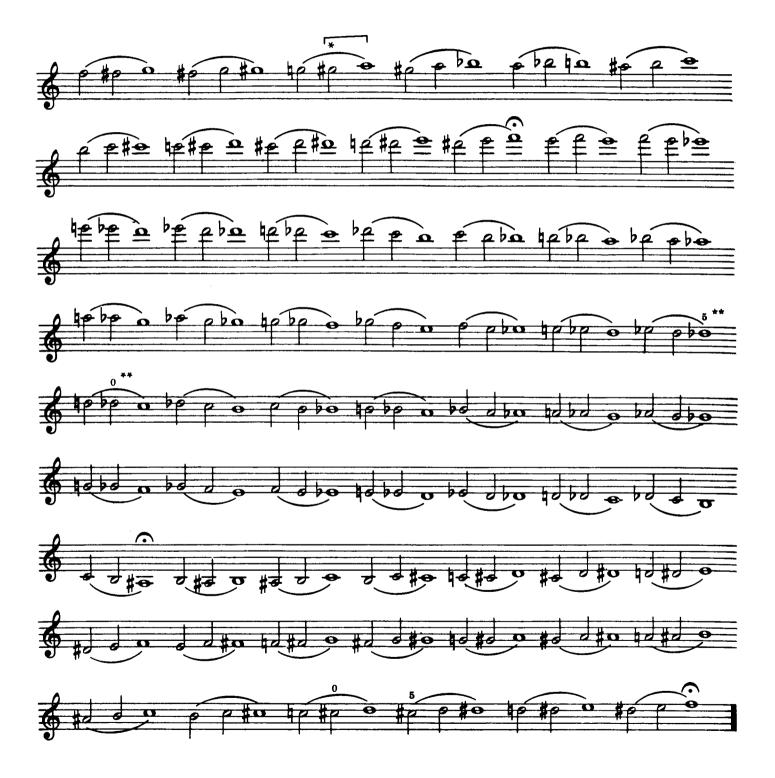
A clear distinction should be drawn between "tongue attack" and "air-stream attack." Both must be exactly on time. In practice, the tongue releases the reed for the production of a ff tone, whereas the air stream alone may be used in pp to set the reed in motion. The student should try to combine both methods for mf. Severe control of the actual strength of each tone is essential in order to avoid even the slightest crescendo or decrescendo at its end. Lack of this control would distort the dynamic proportion of the following tone. Graphically it looks thus:



This does not interfere with the usual study of sustained tones with *crescendo* and *decrescendo*. Also practice *decrescendo* and *crescendo* as follows:



The purpose of this exercise is to achieve uniformity of character and volume on every tone. Adjoining tones can be almost identical in that respect. But it is well understood that a tone above high C never sounds like a tone in the low register. The former will always have more brilliancy and less volume than the latter. But if the student is aware of this fact he will be able to take advantage of it. He should strive to add volume to the higher tones and brilliancy to the lower ones. Play the same tone, first with more, then with less pressure (originating in the muscles of the lower jaw) on the mouthpiece. The rate of airflow must be adjusted to balance the varying degrees — though slight — of embouchure pressure. The degree of loudness should not vary; only the color changes. Apply the same tests in the low and high registers. Proceed with the following exercises after the desired results have been accomplished.



<sup>\*</sup>Be sure to attain uniformity of color and volume for these two tones. The special difficulty here is due to the fact that G sharp is played with the lower octave key, while A is played with the upper.

<sup>\*\*5</sup> indicates closed Db 0 indicates open Db

### Tone Imagination

All musical activity is the outcome of a balance between vivid, colorful and exact tone imagination and skillful tone production. Without a precise concept of the music to be reproduced, we are unable to render it in a convincing manner. Incomplete command of tone production and control makes it impossible to project the experience of our inner ear fully. Therefore, the student must develop his inner ear as much as he practices his instrument.

The deliberate "imagination" of a tone is as concise an activity of the mind as is the imagination of a triangle with clearly defined properties, such as size, shape, color, etc. In regard to a tone, such properties might include pitch, loudness, quality, timbre, stability, duration, etc. To activate the mind to the point of "imagining" a tone in surrounding stillness is relatively easy. However, when another tone is heard at the same time, this is more difficult.

Still greater is the difficulty when I am the one who produces this tone, not only because I am directly engaged in its production, but more so because, in order to produce it on the instrument, I must first have a concept of it from which to issue the command: produce this tone. When this has been done, the tone is for me also an observation — I hear the tone. Now a new mental activity must begin: a fresh tone "imagination." It will be easiest to begin with the pitch identical with the one observed. And now, step by step — while I still play the original tone on the instrument — I ascend from the unison, probably in scale fashion, to the tone I want to reach.

In the case of our exercise, that means I play D on the Saxophone and, after having identified my tone "imagination" with this pitch, gradually (thinking, that is!) ascend to A. It will not be easy and it might take many attempts before I succeed. And because only I know what I think, only I can know whether I succeeded. No teacher can control what I do "inside." But the strength of tone "imagination" gained in this exercise will largely determine my success in the exercises from page 12 onward.

There is yet another aspect to this exercise. To form a concept of a tone within the normal range of my voice is rather easy. A little more inner strength is needed to form a concept for a tone within the key-range of my instrument, but already outside that of my voice. And the formation of a concept for a tone outside either range needs a still greater effort.

In the row of natural overtones, the octave, fifth and fourth are the first three intervals, with the respective proportions of 1:2, 2:3 and 3:4. They are, therefore, especially suitable for hearing exercises. In the following study, the student should consider the fifths and fourths as if they were written separately.



At the start we think and play D. Then, while we continue to play D, we think the A in advance. And we ought to think this A so vividly that we have the experience of realistically hearing a fifth. This accomplished — and not before — we change our fingering to play A. Now tone imagination and acoustical sound must match. We are ready for the next step: to think E while we continue to play A. The completion of this cycle may take a few minutes. And because our power to concentrate is sadly neglected, it might be a long time before we master this seemingly simple exercise. Since the growth of my mind's strength is an organic process, it goes without saying that it needs daily attention; not a long time for the exercises on page 9 and 10, but five or ten minutes every day, i.e., probably one line a day, or even half a line!

### Fourths and Fifths



- \* D and A form the first fifth. Meanwhile, A is not only the ending tone of this fifth, but also the beginning tone of the fourth, A-E. Hence, while playing the A, the student should hear it first in connection with the preceding D, then in connection with the following E. Proceeding to the latter, the fourth, A-E, is completed and the E becomes the starting point for the next fifth, E-B.
- \*\*Here the metamorphosis of the student's concept of the sustained tone becomes, moreover, a theoretical necessity. The enharmonic change from D sharp to E flat is necessary in order to obtain the fourth, E flat—B flat. Otherwise the augmented third, D sharp—B flat, would result. On the other hand, proceeding from G sharp to E flat would create a diminished sixth. All enharmonic changes in this study are given for this reason.

### Octaves, Fourths and Fifths

In every measure on this page we readily see an octave, a fourth and again an octave. But in every measure there is also a "hidden" fifth. In the first measure it is between the first and third tones, whereas in the second measure it is between the second and fourth tones. Because it is not formed by consecutive tones, the fifth is more difficult to hear, and thus necessitates a stronger effort by the mind. To this, precisely, our aim is directed.

In the beginning it is too difficult to think of all these aims simultaneously. Concentrate, therefore, on one at a time for at least a few months.

### Aim for:

perfect intonation balanced dynamics smooth legato uniform tone quality continuous vibrato



### Natural Overtones\*

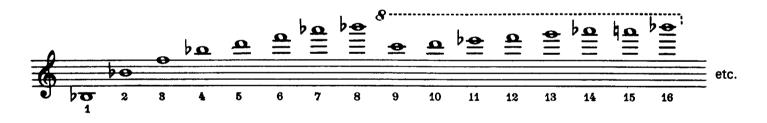
Playing natural overtones on the saxophone is also part of the necessary ear and embouchure training. It corresponds to the development of the "lip slur" on a brass instrument. The fingerings used for high tones in performance are different from those in the following exercises. But the student will find it very difficult to produce any tone above "top F" with the fingerings indicated on page 19 if the natural overtones have not been studied.

The importance of an active mind has been stressed on the previous pages. Thus, these exercises are not only designed for the development of tone quality, etc., but just as much for that of the "ear of the mind."

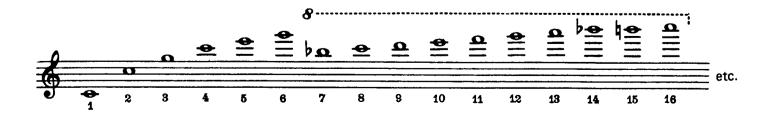
We proceed now to that part of the study where the effort spent on these exercises will bear fruit. The production of an overtone is the result of a delicately adjusted embouchure coupled with a completely controlled flow of air. Variations of these two factors are so nimble that the author hesitates to define them. The attempt to do so would be comparable to the admonition of the voice teacher: "Give 4 and 1/16 ounces of tension on the vocal cords, produce an outgoing airflow of 3278 cc. per minute and check with your ear that the desired number of vibrations of the vocal cords and, hence, of the tone per second is 660 — that is, E." Instead, he tries to give the student an accurate concept of the aimed-for tone (pitch as well as other properties) which, in turn, influences (below the level of consciousness) the action of the lungs, vocal cords, etc., resulting eventually in the production of the tone.

Now if we substitute "embouchure" for "vocal cords," we have exactly described the production of an overtone. We presuppose, of course, that the two major components of the effort, namely, accurate tone concept and controlled embouchure, are well-developed. Otherwise, the end result, tone, will be off pitch and/or of poor quality. As the natural overtones are in natural pitch, not all of them fit into our tempered scale. Therefore, the overtones 7, 11, 13 and 14 will be found to be markedly "off tune."\*\* On the saxophone, overtones of the gamut built on low B flat are quite well in tune (except for 7, 11, 13 and 14) because the instrument's proportions are mainly related to this basic tone. Other overtone gamuts are in tune only a few steps beyond their fundamental tone.

The following rows of overtones are not given here as an exercise, but are intended to serve for reference only.







<sup>\*</sup>These paragraphs are not intended as a scientific discussion of overtones.

<sup>\*\*</sup>The eleventh overtone, for instance, is about one quarter of a tone higher than the fourth tone in the tempered scale. Unless special signs are used, this cannot be indicated with traditional accidentals.

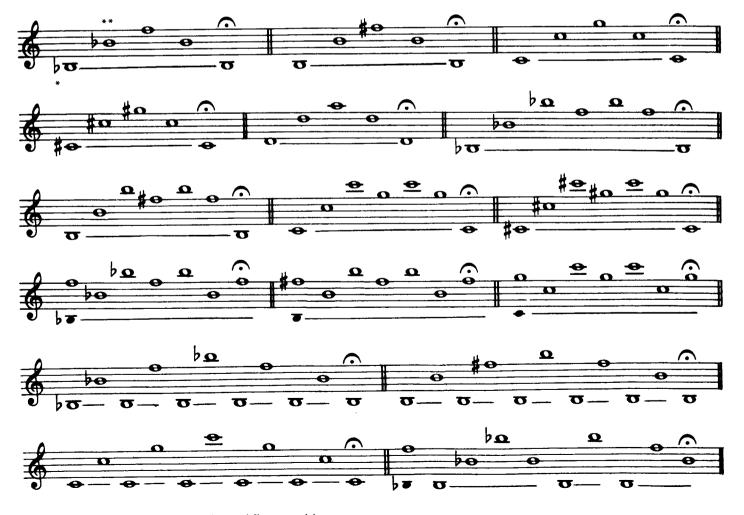
Before the student begins to study the exercises on pages 12-18, he is well advised to try the following:

Play slowly a C scale from middle to high C, up and down. Now sing (DON'T PLAY!) the fourth tone of this scale. If necessary, begin to sing on C and sing step by step to the fourth tone of the scale. Be certain that you sing exactly the fourth tone in THAT octave. (This is not within the normal voice range for men, but it is quite easy to produce this tone with "falsetto" voice.) When this fourth tone of the C scale has been sung, finger (again, DON'T PLAY!) low Bb. Now, without any change of the finger position (no octave key please!) sound on the saxophone the tone you just sang. For best results don't force; the tone will come quite easily. It might be necessary to select our tone from several tones, offering themselves. But this selection will not be difficult if our aim, that is, the tone we sang, was then and still is clear in our mind. Remember: it is the mind, that gives the order; diaphragm, embouchure, etc. will carry it out only when and if it is clearly given. The activity of the mind must precede that of our bodily organs.

We have just produced the third partial (the fourth tone in the C scale, i.e., middle F) on the fundamental (finger position) low Bb. The following exercises will serve to develop great facility in this endeavor. Whole notes indicate the tones to be produced. Where they appear above a black note or a horizontal line (below the staff), they are played as overtones. Black notes indicate only finger positions, not pitch. They represent the fundamentals on which the overtones are built.

Accurate intonation is of extreme importance. Always compare a harmonic within the normal range with the same tone, produced with the usual fingering, and control with octaves and fifths. The pitch of harmonics above the normal range should be compared with the pitch of the octave and fifth below the aimed-for tone. Begin each tone smoothly. Tongue release as well as air-stream release should be practiced.

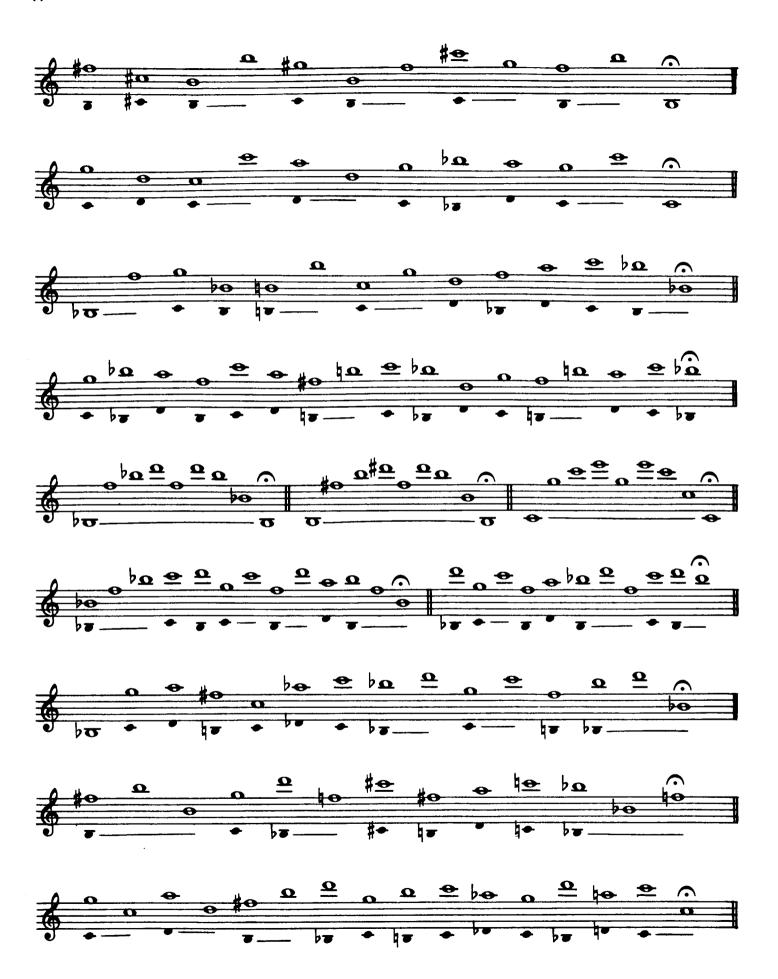
Now I hear someone ask, "Can these exercises be played at all? Are they possible? Why must I waste my time on such childish stuff?" All are well-known bursts of anguish. But even for a student who does not aim to play a single tone above "top" F, there is no better single exercise to develop tone production and intonation than the playing of a few overtones each day. As said above, this corresponds to the lip slur on a brass instrument.

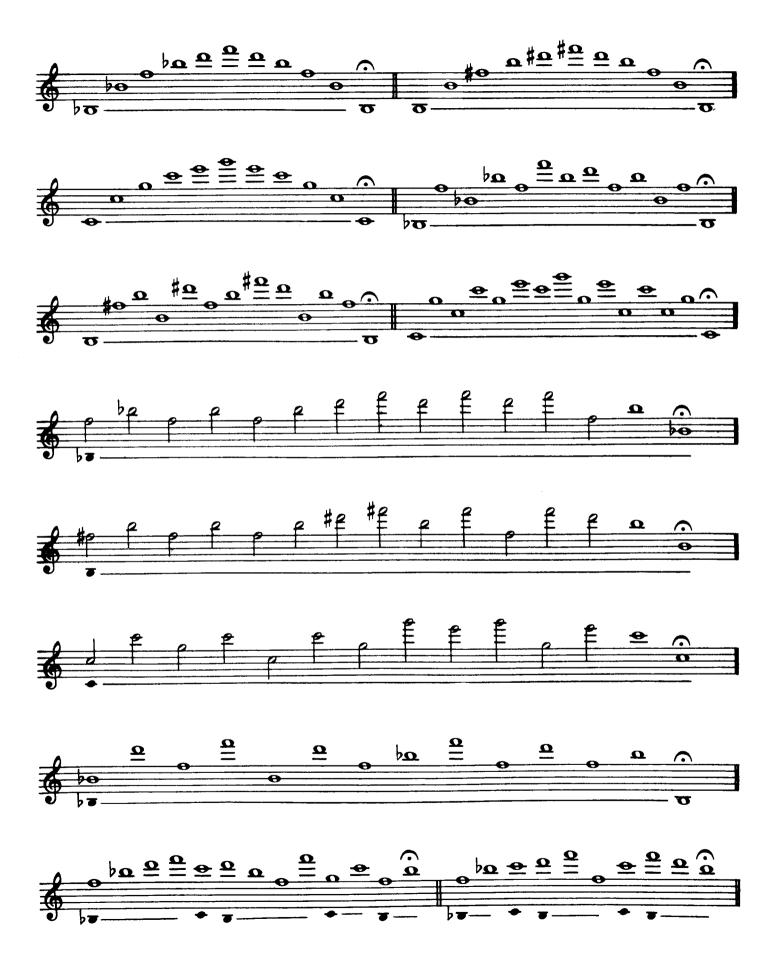


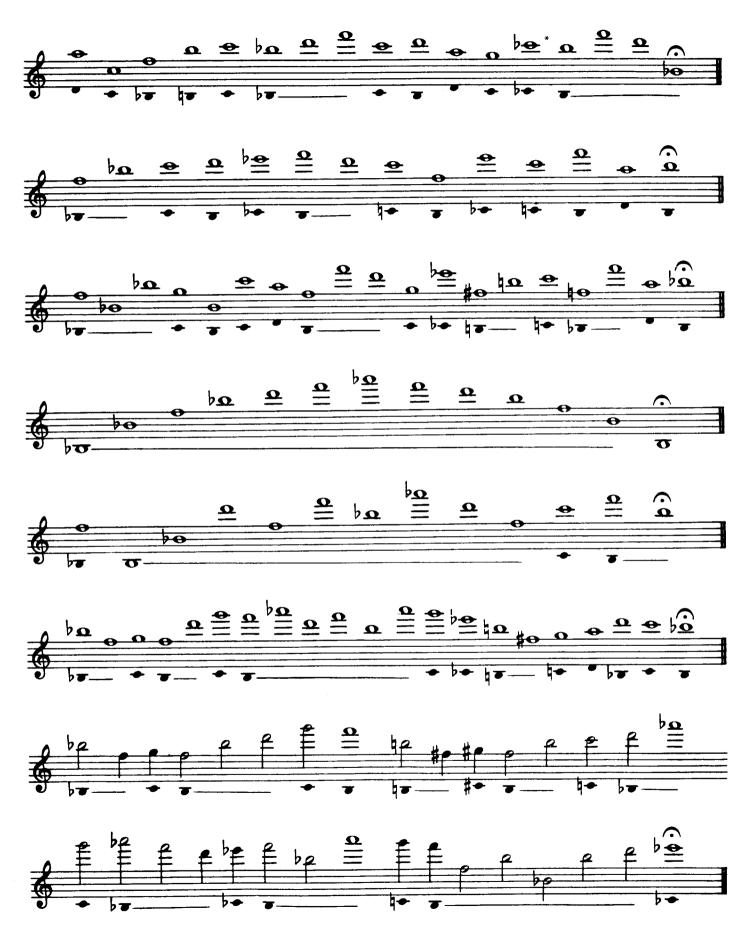
<sup>\*</sup>The horizontal line indicates unchanged finger position.

<sup>\*\*</sup>Any flat, sharp or natural sign is valid for the tone to which it is given for the remainder of the exercise, unless changed; indicates end of exercise.

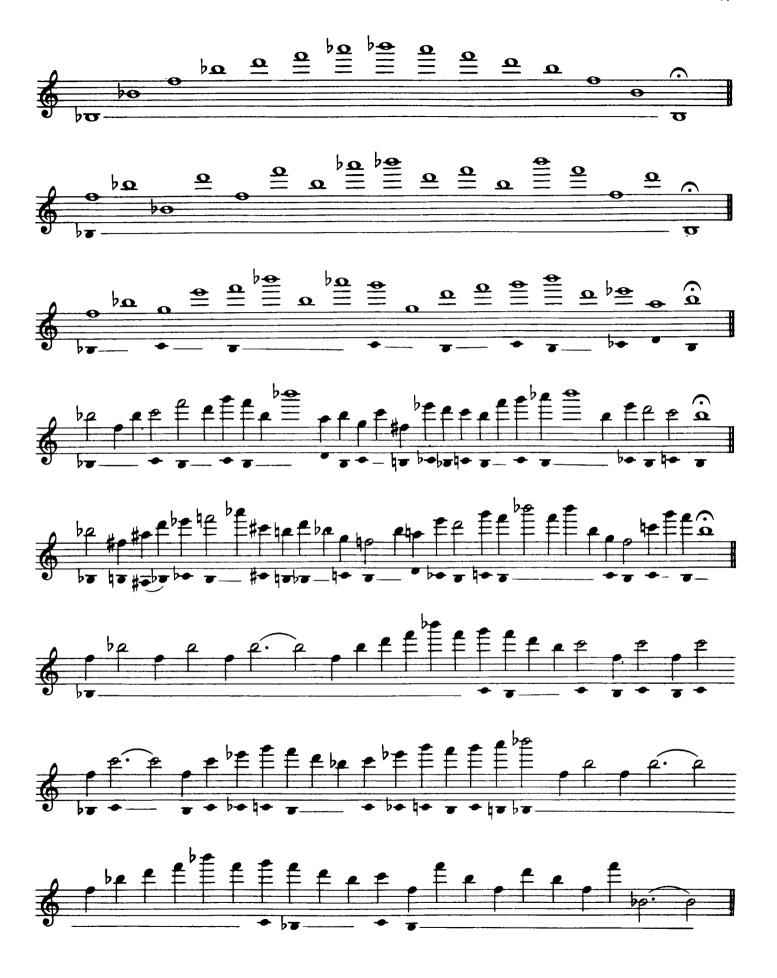


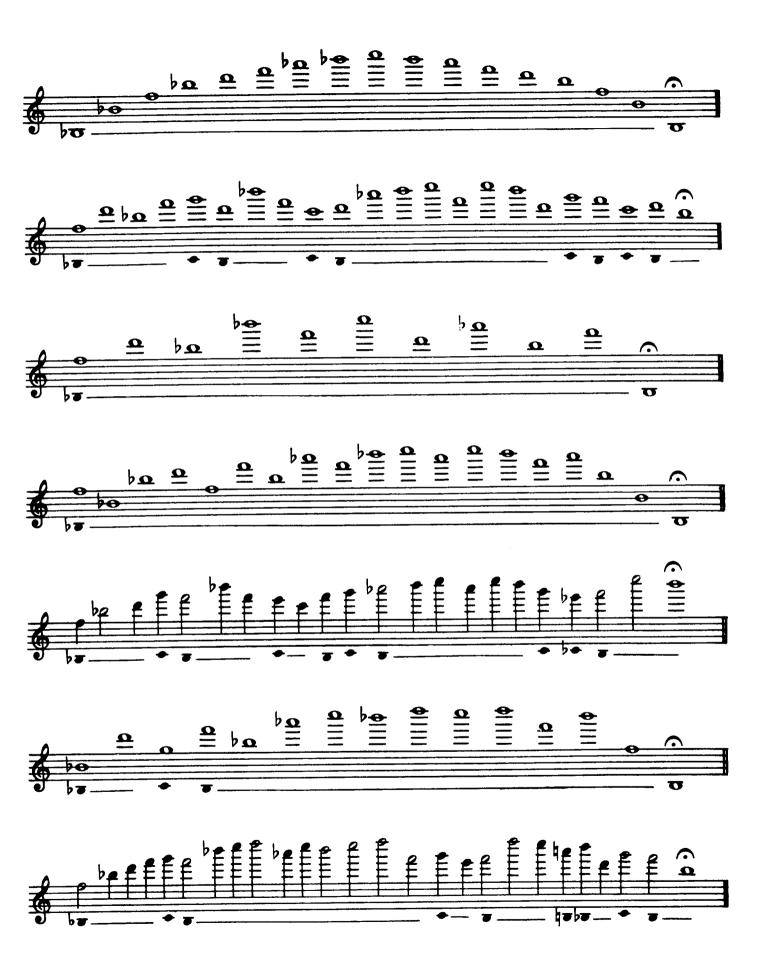






<sup>\*</sup>This and other notes are intentionally not given as B natural; their melodic significance makes them C flat.



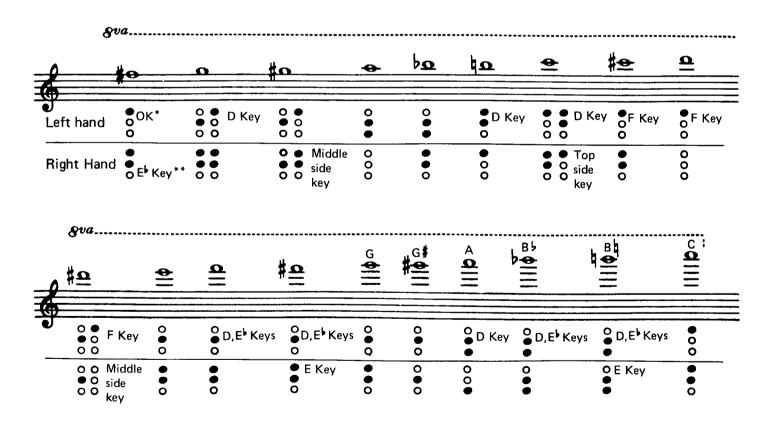


### Fingerings for Tones above Top F

Below are the fingerings for the high tones to be used in performance. Why they were not placed at the beginning of this volume has already been explained. I do not claim that these fingerings are the only possible ones for tones higher than Top F. They are as those given in the first edition of this method in 1941 — the first publication on this subject; by now these fingerings have been tested and used for over a quarter of a century.

One example will suffice: easily the most famous work for saxophone is Jacques Ibert's Concertino da Camera, composed for and dedicated to me in 1935. It was only because of the composer's friendship with me and the resulting special knowledge of the saxophone that he dared ask for a range of almost four octaves. I have used the fingerings indicated below every time I have performed this work. In regard to most other works dedicated to me since 1931, the situation is identical; that is, the composer heard more than two and one-half octaves from my saxophone and, therefore, wrote for more! These fingerings are practical on all sizes and makes of saxophones. My chief aim has been to find fingerings that are not too complicated, adjoin each other in a reasonable manner and produce perfect intonation.

I am reminded of a frequent complaint: "I looked at the fingerings and my results were now and then a squeak, but no reliable tones!" Many a player has doomed himself to failure by neglecting or omitting the exercises on the preceding pages. If so, he deems them either a waste of paper or he believes that he does not need all this preparation.



O Indicates raised fingerpad

Indicates depressed fingerpad

<sup>\*</sup>OK Octave key depressed throughout

<sup>\*\*</sup>E E key (little finger, right hand) depressed throughout

The following exercises should be practiced slowly. Eighth notes are used merely to obtain a more compact. visual impression. Pitch accuracy and uniformity of tone quality are the chief aims with these studies. Speed is not important. Begin each tone distinctly - either with the tongue or the air stream. Both methods should be practiced. Try to play these exercises as smoothly and legato as possible.



<sup>\*</sup>Any flat, sharp or natural sign is valid for the tone to which it is given for the remainder of the exercise, unless changed.

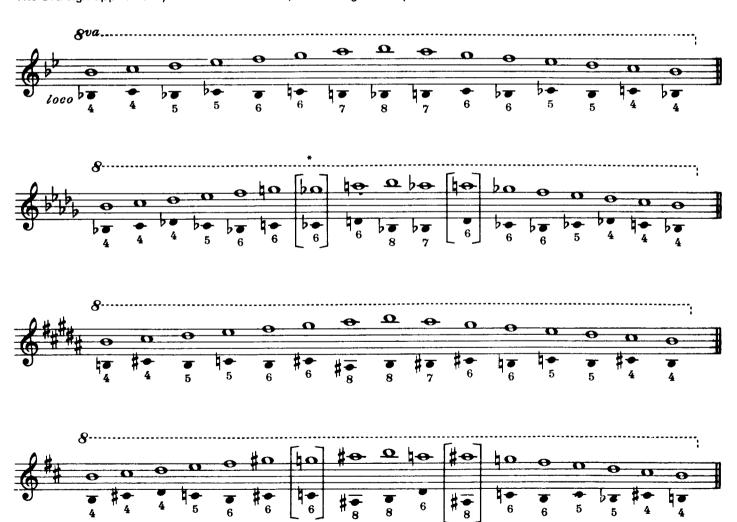


### **Scales in Natural Overtones**

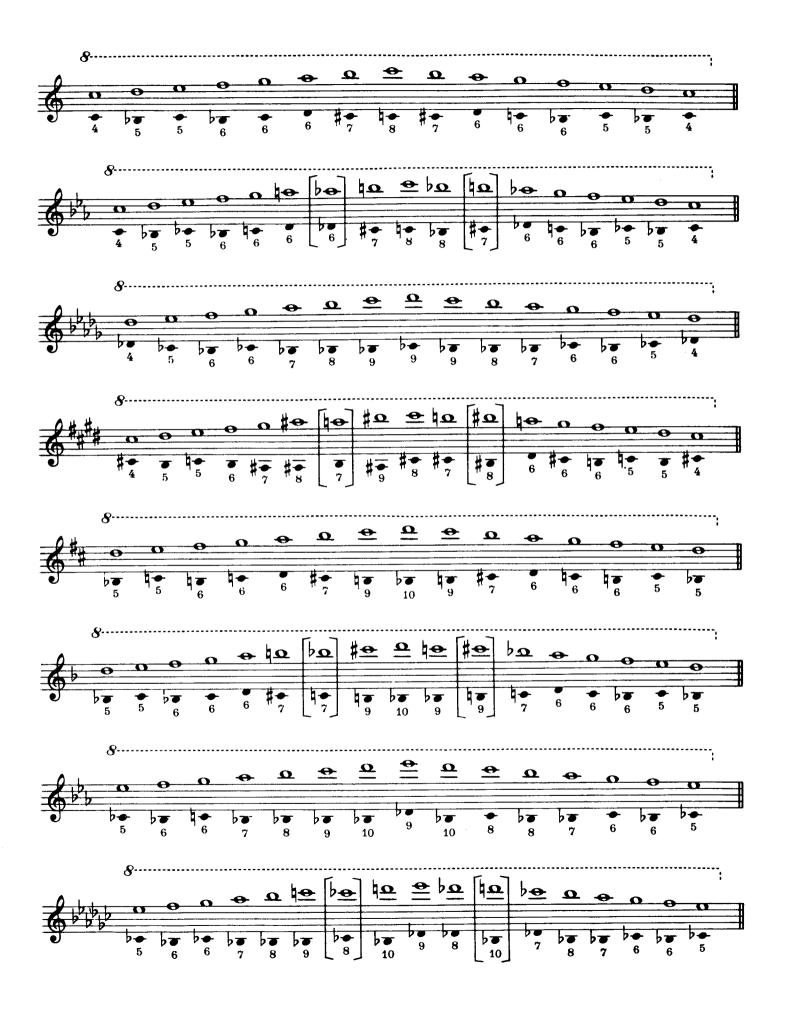
The twenty scales below are to be played as overtones 4 to 12 on the instrument's five lowest tones. They are not intended to take the place of conventional scales, but are given as further studies for the extended range. The upper notes (printed as whole notes) indicate the pitch to be produced, whereas the lower notes (printed as black noteheads) indicate finger positions. The digits under the black noteheads refer to the desired overtones.

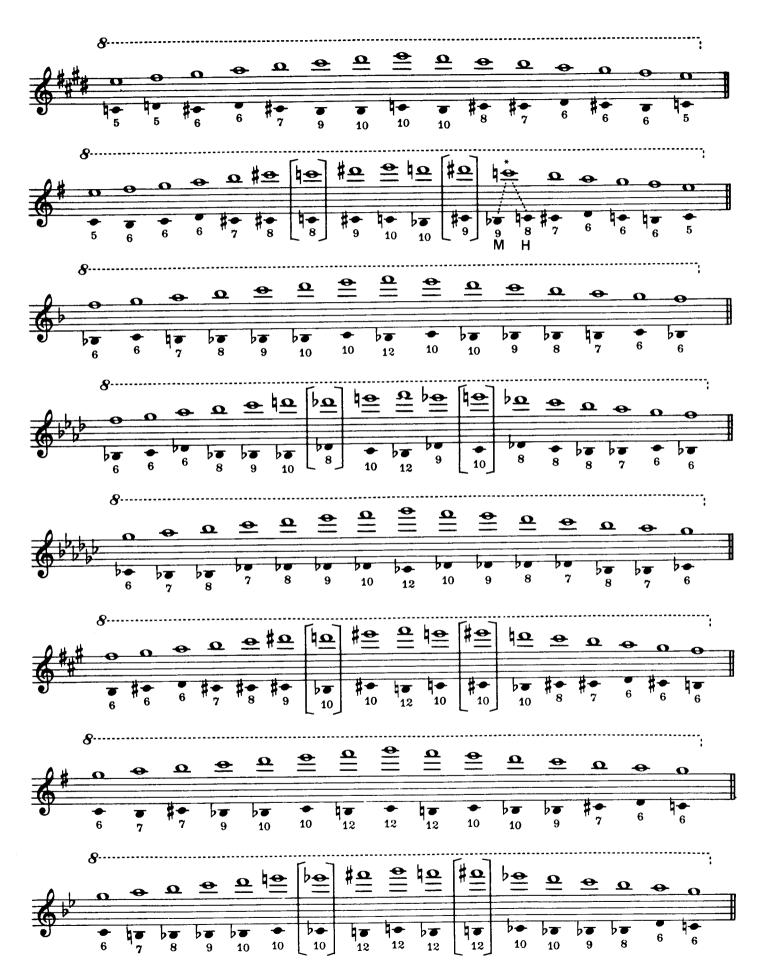


The 8va sign applies only to the whole notes, indicating actual pitch.



<sup>\*</sup>Notes in brackets are for the harmonic minor scale.





<sup>\*</sup> M = Melodic (after D\(\pi\)) H = Harmonic (after D\(\pi\))