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International Horn Society

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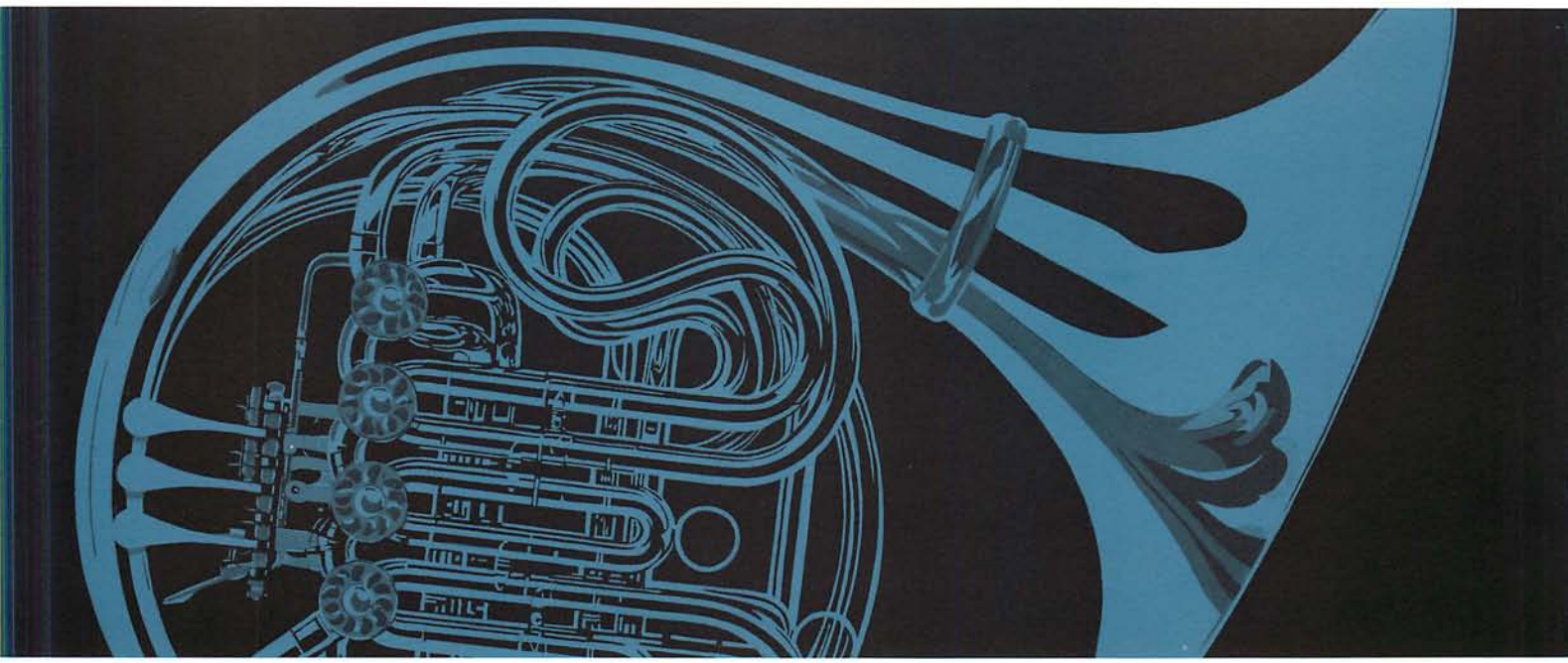

THE HORN CALL

ANNUAL

No. 9, 1997

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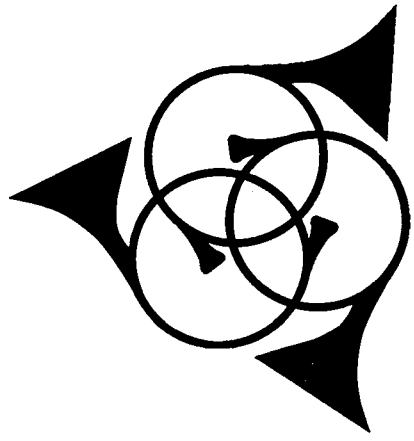

Edited by Johnny L. Pherigo

ISSN 0046-7928

Kalamazoo, Michigan, USA

Printed by JB Printing

Cover art by Joel Barg, an IHS member and artist/designer from Montreal, Canada

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The International Horn Society recommends that **Horn** be recognized as the correct name for our instrument in the English language. [*From the Minutes of the First General Meeting, June 15, 1971, Tallahassee, Florida, USA.*]

Contents

The Horn Call Annual

Refereed Journal of the International Horn Society

No. 9, August 1997

The *Horn Call Annual* is a refereed journal issued annually as a publication of the International Horn Society. Opinions expressed by the authors are their own and are not necessarily those of the editorial staff or the International Horn Society.

Editor

Johnny L. Pherigo

Board of Referees

Guidelines for Contributors

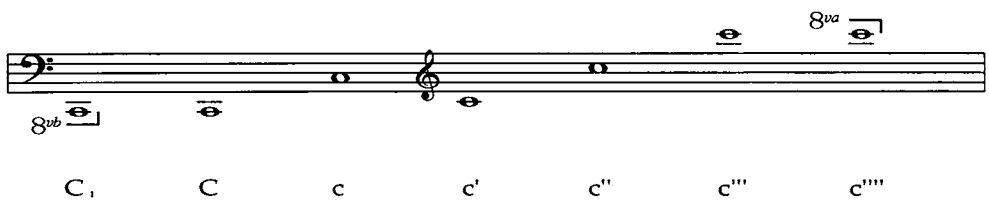
The *Horn Call Annual* solicits the contribution of scholarly articles on the subject of the horn. Possible topics may include, but are not limited to, technical and acoustical research, musicological studies, historical matters, biographical materials, literature, analysis, and pedagogical theory. Articles submitted will be reviewed by a panel of referees before being accepted for publication.

Manuscripts must be prepared in English and in a consistent, scholarly style. The style manuals used by the *Horn Call Annual* are *The Chicago Manual of Style,* thirteenth edition, and *A Manual for Writers of Term Papers, Theses, and Dissertations,* fifth edition, by Kate Turabian. Refer to these texts for guidelines regarding usage, style, and formatting. The author's name, institutional affiliation, address, telephone number, and biography should be on a separate title page. Each page of the text should be numbered and include the title, but the author's name or other identifying information should ***not*** be placed on each page of the text. Manuscripts are accepted at any time but should be received no later than January 15 in the intended year of publication to allow sufficient time for the review and editing process.

Four copies of the manuscript must be submitted to the editor in double-spaced typescript throughout with margins of no less than one inch. Footnotes are to be numbered consecutively and placed at the end of the text. Musical illustrations must be in black ink on white paper. Photographic illustrations should be black and white glossy prints.

Contributors using computer based word-processing systems are encouraged to submit manuscripts on 3.5 inch diskette as well as hard copy. Macintosh and MS-DOS platforms are both acceptable, with Macintosh/Microsoft Word being preferred. Please label the diskette clearly as to platform and application being used. Graphics submitted on disk should be in EPS or TIFF format. *Finale* 3.2 files are preferred for musical examples; MIDI files are also acceptable. Submit graphics and musical examples in hard copy as well as on disk.

The octave designation system used in the *Horn Call Annual* is as follows:



Correspondence

Readers are invited to write in response to articles, with questions, or to make suggestions. Please indicate in all correspondence whether it is intended for publication.—Editor

February 10, 1997

I am writing to ask your assistance in finding a specific brass quintet piece that is now out of print. If you have it in your files and would consider loaning, renting, or selling it, please let me know. If you know where it can be purchased, I would also love to hear from you. The piece I am looking for is:

> Suite for Brass Quintet by Verne Reynolds (MCA pub.) copyright 1972

Thank you for your help!
Sincerely,

Jeanette L. Schlimgen
Box 34514
Bob Jones University
Greenville, SC 29614 USA

♪♪♪♪♪

The following letter was received last fall but was misplaced and only recently found.—Editor

November 1, 1996

The NFB Horn Quartet wishes to thank the IHS for the opportunity to perform at the 28th Horn Convocation last June in Eugene, Oregon. The audience's reaction to the concert was most gratifying!

It is interesting to observe the attempts to guess what the initials NFB mean. There have been many suggestions, some surprisingly severe and sexist in nature. Please be assured that nobody has guessed the meaning of NFB, and no one is likely to, if the ideas submitted contain material which is even remotely offensive to anyone, anywhere, at anytime.

Sincerely,

David Kappy,
for the members of the NFB Horn Quartet:

Ricardo Almeida
William Hoyt
David Kappy
Jay Wadenpfuhl

♪♪♪♪♪

Thanks to Dr. David Sheldon of Western Michigan University for the translation of Peter Damm's letter.—Editor

20 April 1997

With great interest I read the informative article, "The Original Kopprasch Etudes," by J. Q. Ericson, in *The Horn Call*, vol. XXVII, No. 2.

I have two short additions to make to this article (page 18).

1. Albin Frehse, whom I personally got to know during my time with the Gewandhaus orchestra in Leipzig, was born as stated in 1878, but died in early 1973 in Leipzig.
2. Oskar Franz, born in 1843. According to F. Altmann, Tonkünstlerlexikon [composer dictionary], 1927 edition, Oskar Franz died on the 25th of September, 1889. This claim [however] is false. According to my own research "Theodor Oskar Franz, ... royal chamber musician, died on the 24th of September 1886, 7:30 A.M. He was buried on September 27, 1886." In the death register "acute gelbe Leberatrophic" [yellow liver disease?] was given as the cause of death. This could have been caused by [either] poison mushrooms or cancer. Oskar Franz died quite suddenly, for his name appeared in some [newspaper?] sources still in September, 1886, indicating that he participated in a performance at the court theater of Siegfried-Ruf two weeks before his death.

With best wishes and friendly greetings.

Peter Damm
Anzengruberweg 4
D-01526 Dresden
Germany

From the Editor

First, I must rectify an oversight in the May 1997 issue of *The Horn Call.* (No, not ***that*** one—it's too late to do anything about that!) Two photographs, one on page 51, captioned *Barry and his students,* and the other on page 79, captioned *Barry's final bow,* were by Joe Giordano of Gallo & Giordano. I am grateful to Mr. Giordano for providing these excellent photographs and regret the inadvertent omission of the photographer credit.

At the risk of appearing to be establishing a habit of reversing things, it now seems that I will be staying on as editor of *The Horn Call* for the near future. I have no intention of challenging Paul Mansur's longevity record of seventeen years as editor, however, and I hope we identify someone before too long who will be willing and able to assume the duties and responsibilities of the position. In the meantime, there is yet much to be done with the publications of the International Horn Society, and I wish to share with you some of the plans for the future.

First, this issue of *The Horn Call Annual* will in all likelihood be the last issue of this publication as a regular part of IHS publications. Although I have been generally quite pleased with the ***quality*** level of our refereed journal's articles, it has become increasingly difficult to find sufficient ***quantity*** of articles to maintain the critical mass that sustains this publication. So, upon my recommendation, the IHS Advisory Council voted at its meetings in Rochester, NY this June to discontinue *The Horn Call Annual* as a regular publication. I will be working to develop a procedure whereby scholarly articles will continue to have a prominent place in the IHS publications. For now, however, these articles will be published in *The Horn Call.* I encourage people writing such articles to continue to submit them.

Taking the place of *The Horn Call Annual* will be a fourth issue, beginning in August 1998, of *The Horn Call.* This will continue the IHS's policy of providing publications on a quarterly basis and will provide an additional advertising opportunity for advertisers as well as a way to reduce the growing backlog of articles accepted for publication in *The Horn Call.*

In addition, you will see over the next year a number of changes in appearance and formatting in *The Horn Call.* The most important change is that, beginning in November 1997, we will integrate the *IHS Newsletter* into *The Horn Call.* While the newsletter will retain a distinctive look and its own mission, it will be bound into *The Horn Call* rather than inserted loose. This change will ensure that newsletter items stay with *The Horn Call* as a permanent record. Some changes in submission deadlines for newsletter items may be required, so be alert for announcements from Virginia Thompson, IHS Newsletter Editor, in this regard. We will also be phasing in over the next year changes in the cover art and the interior layout of *The Horn Call.* So, we have big plans for IHS publications over the next year. It promises to be exciting, and I welcome your feedback and beg your patience and forbearance.

The most exciting development in IHS publications is undoubtedly the development of the IHS's site on the World Wide Web. Western Michigan University has generously agreed to host the site at no charge to the IHS, and Bruce Hembd is designing and building the site. If you don't know Bruce, he built Tom Bacon's WWW homepage, generally acknowledged to be the best site on the internet on the subject of the horn. Bruce is building a site for the IHS that promises to be one of the best anywhere. By the time you read this we hope to have the IHS Online up and running. We will post announcements on the Hornlist and other sites where hornists tend to lurk. We are a little behind the other organizations in establishing a presence on the internet, but I promise you it will be worth the wait when you see the product.

As you can see, there are exciting things to come with the IHS's publications, and with our other services as well. If you like what you are seeing, then spread the word and get your colleagues to join if they have not already. If you have suggestions for improvement, then we want to hear those as well. We will try to minimize any "bumps in the road" and continue to offer members of the International Horn Society the best value possible for your membership dues. Thank you for your continuing interest and support.

Johnny Pherigo, Editor
The Horn Call

"Horn": *Encyclopædia Britannica*, 11th Edition, (1910–11)

Kathleen Schlesinger

Editor's Introduction: the eleventh edition of Encyclopædia Britannica, *published in 1910–11, has often been called the "scholar's" or "classic" edition of this English-language general reference work. Perhaps more so than any other edition, it represented the latest, most scholarly knowledge at the time. The article on the horn, by Kathleen Schlesinger, who was editor of* The Portfolio of Musical Archæology *and author of* The Instruments of the Orchestra, *has been frequently cited as one of the most authoritative articles about the horn at the time of its writing. Because this edition of* Encyclopædia Britannica *is not readily available for most people, it is reprinted here in* The Horn Call Annual *for its historical insights. Thanks go to Gary Greene, Thomas Hiebert, and Paul Anderson for their advice in the presentation of this reprint.*

The body of this article is presented without editorial comment except for this introduction and in the insertion of English translations for the German and Latin reference quotes by Schlesinger. Thanks to Dr. Robert Griffin of Western Michigan University for his translations of the Latin quotations. Figures have been scanned into this reprint, and the musical examples have been reproduced in Finale. Cross references to other articles in Britannica are noted as quod vide (q.v.) *or in all caps, but no attempt has been made to incorporate these articles into the present reprint.*

Although the Schlesinger article represents the state of research and knowledge about the horn in pre-WWI England, it must be approached with some caution by the 1990s reader. Subsequent research and writings by such authors as Blandford, Brüchle, Coar, Fitzpatrick, Gregory, Janetzky, Morley-Pegge, and Rasmussen, to name but a few, has added much knowledge and perspective about the history of the horn. In addition, a new generation of historians, including Ericson, Jeurissen, Hiebert, Humphries, Rogan, Seraphinoff, and Snedeker, continues to expand our knowledge and understanding of the historical horn.

A number of curiosities in the Schlesinger article warrant mention, the most notable of which is the obvious bias against what was then and now believed to be a strong French role in the development of the horn as a musical instrument, as well as the support of Italy as the birthplace of the horn. Although much work remains to be done, the role of France in the development of the horn has seemed to be strengthened in the intervening years, while I am unaware of substantial research supporting an Italian origin for the horn. Similarly, Schlesinger is either unaware of or ignores the historical presence of the French hornists and teachers of the nineteenth century—Duvernoy, Dauprat, and Gallay, while acknowledging the contributions of Hampel, Punto, and Domnich, all of whom were from German speaking areas of Europe. Schlesinger's reference to crooks as being an integral part of the horn at the time is an interesting insight into early twentieth century horn playing in England that deserves a closer examination. Also, in spite of much subsequent research and publication, the acoustical effect of handstopping seems as uncertain now to most hornists as it was at the beginning of the century. Finally, the seemingly thorough—for the time—reference to historical and scholarly sources while apparently feeling no need to consult the practitioners of the day reflects an attitude among musicologists of the time that one hopes is less prevalent today.

The staff of The Horn Call Annual *hopes that the present reprint will encourage readers to explore in greater depth the history of our instrument.*

HORN (Lat. *cornu;* corresponding terms being Fr. *cor, trompe;* Ger. *Horn;* Ital. *corno),* a class of wind instruments primarily derived from natural animal horns (see above), and having the common characteristics of a conical bore and the absence of lateral holes. The word "horn" when used by modern English musicians always refers to the French horn.

Modern horns may be divided into three classes: (1) the short horns with wide bore, such as the bugles *(q.v.)* and the post-horn. (2) The saxhorns *(q.v.),* a family of hybrid instruments designed by Adolphe Sax, and resulting from the adaptation of valves and of a cup-shaped mouthpiece to instruments of the calibre of the bugle. The Flügelhorn family is the German equivalent of the saxhorns. The natural scale of instruments of this class comprises the harmonics from the second to the eighth only. (3) The French horn (Fr. *cor de chasse* or *trompe de chasse, cor à pistons;* Ger. *Waldhorn, Ventilhorn;* Ital. *cornu* or *corno di caccia),* one of the most valuable and difficult wind instruments of the orchestra, having a very slender conical tube wound round in coils upon itself. It consists of four principal parts—the body, the crooks, the slide and the mouthpiece.

(a) The *body* is the main tube, having a bore of the form known as trunco-conical, measuring approximately 7 ft. 4 in. in length, in which the increase in the diameter of the bore is very gradual in proportion to the length, the cone becoming accentuated only near the bell. In the valve horn the bore is only theoretically conical, the extra lengths of tubing attached to the valves being practically cylindrical. The body is coiled spirally, and has at one end a wide-mouthed bell from 11 to 12 in. in diameter having a parabolic curve, and at the other a conical ferrule into which fit the crooks.

(b) The *crooks* (Fr. *corps* or *tons de rechange;* Ger. *Krummbogen, Stimmbogen, Einsetzbogen)* are interchangeable, spiral tubes, tapering to a diameter of a quarter of an inch at the mouthpiece end and varying in length from 16 in. for the B♭ alto crook to 125 in. for the B♭ basso. Each crook is named according to the fundamental tone which it produces on being added to the body. By lengthening the tube at will the crook lowers the pitch of the instrument, and consequently changes the key in which it stands. Although the harmonic series remains the same for all the crooks, the actual sounds produced by overblowing are lower, the tube being longer, and they now belong to the key of the crook. The principle of the crook was known early in the 17th century; it had been applied to the trumpet, trombone and Jägertrummet[1] before being adapted to the horn. Crooks are merely transposing agents; they are powerless to fill up

the gaps in the scale of the horn in order to make it a chromatic or even a diatonic instrument, for they require time for adjustment. The principle of the crook doubtless suggested to Stölzel the system of valves, which is but an instantaneous application of the general principle to the individual notes of the harmonic series, each of which is thereby lowered a semitone, a tone or a tone and a half, as long as the valve remains in operation. The body of the horn without crooks is of the length to produce 8 ft. C., and forms the standard, being known as the alto horn in C, which is the highest key in which the horn is pitched. The notes are sounded as written.

(c) The *mouthpiece* of the horn differs substantially from that of the trumpet.[2] There is, strictly speaking, no cup, the inside of the mouthpiece being, like the bore of the instrument itself, in the form of a truncated cone or funnel. Like the other parts of this difficult and complex instrument, the proportions of the mouthpiece must bear a certain undefined relation to the length and diameter of the column of air. The choice of a suitable mouthpiece is in fact a test of skill; the shape of the lip of the performer and the more special use he may wish to make of either the higher or the lower harmonics have to be taken into consideration. In orchestral music the part for first horns naturally calls for the use of the higher harmonics, which are more easily obtained by means of a somewhat smaller and shallower mouthpiece[3] than that used upon the second horn, which is called upon to dwell more on the lower harmonics.

(d) The *tuning slides* (Fr. *coulisses;* Ger. *Stimmbogen)* consist of a pair of sliding **U**-shaped tubes fitting tightly into each other, by means of which the instrument can be brought strictly into tune, and which also act as compensators with the crooks. On these tuning slides, placed across the ring formed by the coils of the valve-horn, are fixed the pistons with their extra lengths of tubing; as the connexion of the pistons with the body of the horn is made through the slides, the value of the latter as compensators will be readily understood. Those accustomed to deal with instruments having fixed notes, such as the piano and harp, hardly realize the extreme difficulties which confront both maker and performer in intricate wind instruments such as the horn, on which no sounds can be produced without conscious adjustment of lips and breath, and but few without the additional use of some such contrivance as slide, crook, piston or of the hand in the bell, in the case of the natural or hand horn.

Acoustics

The production of sound in wind instruments has a fourfold object: (I) pitch; (2) range or scale of available notes; (3) quality of tone or timbre; (4) dynamic variation, or crescendo and diminuendo. The pitch of the horn, as of other wind instruments, depends almost exclusively on the length of the air-column set in vibration, and remains practically uninfluenced by the diameter of the bore. In the case of conical tubes in which the difference in diameter at the two extremities, mouthpiece and bell, is very great, as in the horn, the pitch of the tube will be slightly higher than its theoretical length would warrant.[4] When, for instance, three tubes of the same length are sounded—No. 1, conical diverging; No. 2, conical converging in the direction from mouthpiece to bell; No. 3, cylindrical—No. 1 gives a fundamental tone somewhat higher, No. 2 somewhat lower, than No. 3. Victor Mahillon[5] adds that the rate of vibration in such conical tubes as the horn is slightly less than the rate of vibration in ambient air; therefore as the rate of vibration *(i.e.* the number of vibrations per second) varies in the inverse ratio with the length of the tube, it follows that the practical length of the horn is slightly less than the theoretical, the difference for the horn in B♭ normal pitch amounting to 13.9 cm. (approximately 5 $^1/_2$ in.).

The tube of the horn behaves as an open pipe. E. F. F. Chladni[6] states that the mouthpiece end is to be considered as open in all wind instruments (excepting reed instruments), even when, as in horns and trumpets, it would seem to be closed by the lips. Victor Mahillon, although apparently holding the opposite view, and considering as closed the tubes of all wind instruments played by means of reeds, whether single or double, or by the lips acting as reeds, gives a new and practical explanation of the phenomenon.[7] The result is the same in both cases, for the closed pipe of trunco-conical bore, whose diameter at the bell is at least four times greater than the diameter at the mouthpiece, behaves in the same manner, when set in vibration by a reed, as an open pipe, and gives the consecutive scale of harmonics.[8]

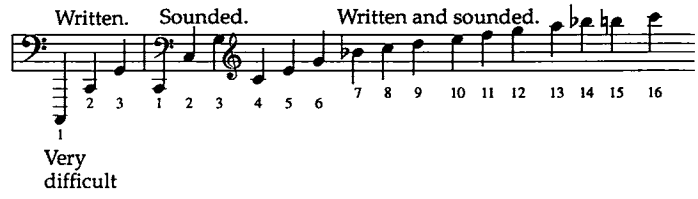
In order to produce sound from the horn, the performer, stretching his lips across the funnel-shaped mouthpiece from rim to rim, blows into the cavity. The lips, vibrating as the breath passes through the aperture between them, communicate pulsations or series of intermittent shocks to the thin stream of air, known as the exciting current, which, issuing from them, strikes the column of air in the tube, already in a state of stationary vibration.[9] The effect of this series of shocks, without which there can be no sound, upon the column of air confined within the walls of the tube is to produce sound-waves, travelling longitudinally through the tube. Each sound-wave consists of two half-lengths, one in which the air has been compressed or condensed by the impulse or push, the second in which, the push being spent, the air again dilates or becomes rarefied. In an open pipe, the wave-length is theoretically equal to the length of the tube. The pitch of the note depends on the frequency per second with which each vibration or complete sound-wave reaches the drum of the ear. The longer the wave the lower the frequency. The velocity of the wave is independent of its length, being solely conditioned by the rate of vibration of the particles composing the conveying medium: while one individual particle performs one complete vibration, the wave advances one wavelength.[10] The rate of particle vibration or frequency is therefore inversely proportional to the corresponding wave-length.[11] Soundwaves generated by the same exciting current travel with the same velocity whatever their length, the difference being the frequency number and therefore the pitch of the note. As long as the performer blows with normal force, the same length of tube produces the same wave-length and therefore the same frequency and pitch. By "blowing with normal force" is understood the proper relative proportions to

be maintained between the wind-pressure and the lip-tension—a ratio which is found instinctively by the performer but was only suspected by the older writers.[12] If the shocks or vibrations initiated by the lips through the medium of the exciting current be sharper owing to the increased tension of the lips, and at the same time succeed each other with greater velocity, the wavelength breaks up, and two, three or more proportionally shorter complete waves form instead of one, and traverse the pipe within the same space of time, producing sounds proportionally higher by an octave, a twelfth, &c., according to the character of the initiatory disturbance. We may therefore add this proposition: the rate of vibration of a tube varies as the number of segments into which the vibrating column of air within it is divided. In order to obtain the fundamental, the performer's lips must be loose and the wind pressure gentle but steady, so that the exciting current may issue forth in a broad, slow stream. To set in vibration a column of air some 16 or 17 ft. long is a feat of extreme difficulty; that is why it is quite exceptional to find a horn-player who can sound the fundamental on the low C or B♭ *basso* horns. In the organ, where even a 32 ft. tone is obtained, the wind-pressure and the lip-opening controlling the exciting current are mechanically regulated for each length of pipe—only one note being required from each. In order, therefore, to induce the column of air within the tube to break up and vibrate in aliquot parts, the exciting current must be compressed into an ever finer, tenser and more incisive stream. There is in fact a certain minimum pressure for each degree of tension of the lips below which no harmonic can be produced.

It is often stated that the harmonics are obtained by increasing the tension of the lips and a crescendo by increasing the pressure of the breath.[13] Victor Mahillon[14] accounts for the harmonics by increased wind-pressure only. It is evident that the greater the tension of the lips, the greater the force of wind required to set them vibrating: therefore the force and velocity of the air must vary with the tension of the lips in order to produce a steady or musical sound. D. J. Blaikley considers that the ratio of increase in lips and breath follows that of the harmonic series. The tension of the lips has the effect of reducing the width of the slit or aperture between them and the width of the exciting current. While increasing its density the energy of the wind must, therefore, either expend itself in increasing the rate of vibration, or frequency of the pulses, which influences the pitch of the note; or else in increasing the extent of excursion or amplitude of the vibrations, which influences the dynamic force of the sound or loudness.[15] If the aperture be narrowed without providing a proportional increase of wind-pressure, the harmonic overtone may be heard, but either the intonation will suffer or the intensity of the tone will be reduced, because the force required to set the tenser membrane in vibration is insufficient to give the vibrations the requisite amplitude as well as the frequency. If the force expended be excessive, *i.e.* more than the maximum required to ensure the increased frequency proportional to the increased tension, the superfluous energy must expend itself in increasing the amplitude of the vibrations so that a note of a greater degree of loudness as well as of higher pitch will be produced. The converse is equally true; the lower the pitch of the note the slower the pulses or vibrations and therefore the looser the lip and the gentler the force of current required to set them vibrating. To draw a parallel from organ-pipes: as long as even wind-pressure is maintained, the mouthpiece being fixed proportional to the length of tube, the pipe gives out one note of unvarying dynamic intensity; increase the pressure of the wind and harmonics are heard, but it is impossible to obtain a crescendo unless the mouthpiece be dispensed with and a free reed *(q.v.)* adapted.

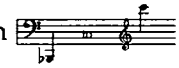
Reference has already been made above to the difficulty of obtaining the fundamental on tubes of great length and narrow bore like the horn. The useful compass of the horn, therefore, begins with the note that an open pipe half its length would give; the Germans term instruments of such small calibre *half instruments,* and those of wide calibre, such as bugles and tubas, *whole instruments,*[16] since in them the whole of the length of the tube is available in practice.

The harmonic series of the horn, or the open notes obtainable without using valves or crooks, is written as for the alto horn in C of 8 ft. tone, which forms the standard of notation. Notes written in the bass clef are generally, for some unexplained reason, placed an octave lower than the real sounds.



All the crooks, a list of the principal of which is appended, therefore necessarily give real sounds lower than the above series according to their individual length.

The practical aggregate compass of the natural horns from B♭ basso at the service of composers therefore ranges (actual sounds)

from  or with 3 valves from 

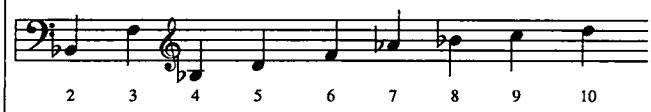
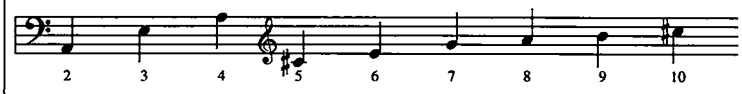
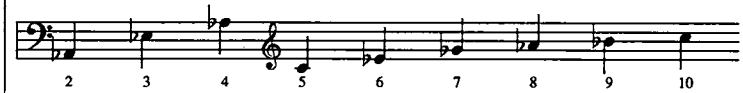
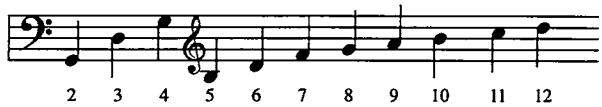
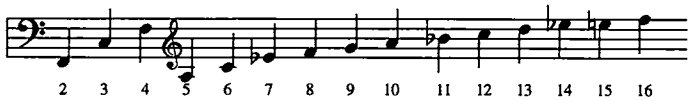
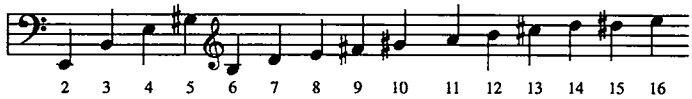
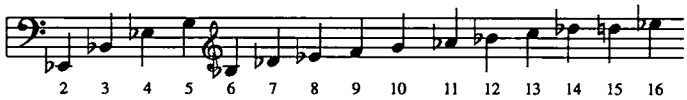
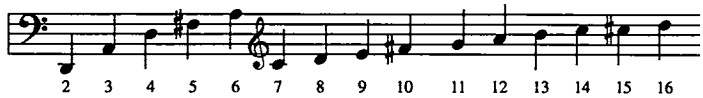
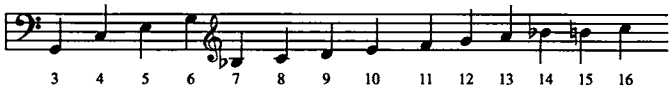
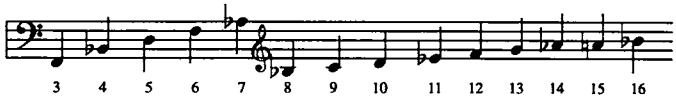
By means of hand-stopping, *i.e.* the practice of thrusting the hand into the bell in order to lower the sound by a tone or a semitone, or by the adaptation of valves to the horn, this compass may be rendered chromatic almost throughout the range.

The principle of the valve as applied to wind instruments differs entirely from that of keys. The latter necessitate lateral holes bored through the tube, and when the keys are raised the vibrating column of air within the tube and the ambient air without are set in communication, with the result that the vibrating column is shortened and the pitch of the note raised. The valve system consists of valves or pistons attached to additional lengths of tubing, the effect of which is invariably to lower the pitch, except in the case of valve systems specified as "ascending" tried by John Shaw and Adolphe Sax. Insuperable practical difficulties led to the abandonment of these systems, which in any case

were the exception and not the rule. The valves, placed upon the **U**-shaped slides in the centre of the horn, are worked by means of pistons or levers, opening or closing the windways at will, so that when they are in operation the vibrating column of air no longer takes its normal course along the main tube and directly through the slides, but makes a detour through the extra length of tubing before completing its course. Thus the valves, unlike the keys, do not open any communication with the ambient air. Even authoritative writers[18] have confused the two principles, believing them to be one and the same.

French horns are made with either two or three valves. To the first valve is attached sufficient length of tubing to lower the pitch of the instrument a tone, so that any note played upon the horn in F while the first valve is depressed takes effect a tone lower, or as though the horn were in E♭. The second valve opens a passage into a shorter length of tubing sufficient to lower the pitch of the instrument a semitone, as though the instrument were for the time being in E. The third valve similarly lowers the pitch a tone and a half. It will thus be seen that the principle applied in the crook and the valve is in the main the same, but the practical value of the valve is immeasurably superior. Thanks to the valve system the performer is able to have the extra lengths of tubing necessary to give the horn a chromatic compass permanently incorporated with the instrument, and at will to connect one or a combination of these lengths with the main tube of the instrument during any interval of time, however short. The three devices, crooks, valves and slides, are in fact all based upon the same principle, that of providing additional length of tubing in order to deepen the pitch of the whole instrument at will and to transpose it into a different key. Valves and slides, being instantaneous in operation, give to the instrument a chromatic compass, whereas crooks merely enable the performer to play in many keys upon one instrument instead of requiring a different instrument for each key. The slide is the oldest of these devices, and probably suggested the crook

Table of Principal Crooks now in Use.[17]

Key of Crook.	Actual Sounds of Range of Useful Harmonics.		Length of Crook in Inches.	Transposes to
B♭ alto		2nd to 10th	16	major 2nd lower
A♮		2nd to 10th	22.5	minor 3rd lower
A♭		2nd to 10th	29.5	major 3rd lower
G		2nd to 12th	36.75	perfect 4th lower
F		2nd to 16th	52.5	perfect 5th lower
E		2nd to 16th	61	minor 6th lower
E♭		2nd to 16th	70.25	major 6th lower
D		2nd to 16th	80	minor 7th lower
C basso		3rd to 16th	101	octave lower
B♭ basso		3rd to 16th	125	major 9th lower

as a substitute on instruments of conical bore such as the horn.

The invention of the valve, although a substantial improvement, was found to fall short of perfection in its operation on the tubes of wind instruments so soon as the possibility of using the three valves in combination to produce six different positions or series of harmonics was realized, and for the following reason. In order to deepen the pitch one tone by means of valve 1, a length of tubing exactly proportional to the length of the main tube must be thrown into communication with the latter. If, in addition to valve 1, valve 3 be depressed, a further drop in pitch of 1 $^1/_2$ tone should be effected; but as the length of tubing added by depressing valve 3 is calculated in proportion to the main tube, and the latter has already been lengthened by depressing valve 1, therefore the additional length supplied by opening valve 3 is now too short to produce a drop of a minor third strictly in tune, and all notes played while valves 1 and 3 are depressed will be too sharp. Means of compensating slight errors in intonation are provided in the **U**-shaped slides mentioned above.

The *timbre* of the natural horn is mellow, sonorous and rich in harmonics; it is quite distinctive and bears but little resemblance to that of the other members of the brass wind. In listening to its sustained notes one receives the impression of the tone being breathed out as by a voice, whereas the trumpet and trombone produce the effect of a rapid series of concussions, and in the tuba and cornet the concussions, although still striking, are softened as by padding. The timbre of the hand-stopped notes is veiled and suggestive of mystery; so characteristic is the timbre that passages in the *Rheingold* heard when the magic power of the Tarnhelm reveals itself sound meaningless if the weird chords are played by means of the valves instead of by hand-stopping. The timbre of the piston notes is more resonant than that of the open notes, partaking a little of the character of the trombone, which is probably due to the fact that the strictly conical bore of the natural horn has been replaced by a mixed cylindrical and conical as in trumpet and trombone.

The form of the mouthpiece (*q.v.*) at the point where it joins the main bore of the tube must also exercise a certain influence on the form of vibration, which it helps to modify in conjunction with the conformation of each individual horn-player's lip. In the horn the cup of the mouthpiece is shaped like a funnel, the bore converging insensibly into the narrow end of the main conical bore without break or sharp edges as in the mouthpieces, more properly known as cup-shaped, of trumpet and bombardon.

The brilliant sonorousness and roundness of the timbre of the horn are due to the strength and predominance of the partial tones up to the 7th or 8th. The prevalence of the higher harmonics from the 10th to the 16th, in which the partial tones lie very close together, determines the harsh quality of the trumpet timbre, which may be easily imitated on the horn by forcing the sound production and using a trumpet mouthpiece, and by raising the bell, an effect which is indicated by composers by the words "Raise the Bells."[19]

History

The origin of the horn must be sought in remote prehistoric times, when, by breaking off the tip of a short animal horn, one or at best two notes, powerful, rough, unsteady, only barely approximating to definite musical sounds, were obtained. This was undoubtedly the archetype of the modern families of brass wind instruments, and from it evolved the trumpet, the bugle and the tuba no less than the horn. The common characteristics which link together these widely different modern families of instruments are: (1) the more or less pronounced conical bore, and (2) the property possessed in a greater or lesser degree of producing the natural sounds by what has been termed overblowing the harmonic overtones. If we follow the evolution of the animal horn throughout the centuries, the ultimate development leads us not to the French horn but to the bugle and tuba.

Before civilization had dawned in classic Greece, Egypt, Assyria and the Semitic races were using wind instruments of wood and metal which had left the primitive ram or bugle horn far behind. Even in northern Europe, during the Bronze age (c. 1000 B.C.), prehistoric man had evolved for himself the prototype of the Roman *cornu*, a bronze horn of wide conical bore, bent in the shape of a **G**. One of these instruments, known among the modern Scandinavian races as *luurs* or *lurs*, found in the peat beds of Denmark and now preserved in the Museum of Northern Antiquities in Copenhagen, has a length of 1.91 m. (about 6 ft. 4 in.). The **U**-shaped mouthpiece joint is neatly joined to the remainder of the crescent-tube by means of a bronze ring; the bell, which must have rested on the shoulder, consists merely of a flat rim set round the end of the tube. There is therefore no graceful curve in the bell as in the French horn. An exact facsimile of this prehistoric horn has been made by Victor Mahillon of Brussels, who finds that it was in the key of E♭ and easily produces the first eight harmonics of that key. It stands, therefore, an octave higher than the modern horn in E♭ (which measures some 13 ft.), but on the *lur* the fundamental E♭ can be reached owing to the wider calibre of the bore.[20]

Among the Romans the wind instruments derived from the horn were well represented, and included well-developed types which do not differ materially from the natural instruments of modern times. The buccina developed directly into the trumpet and trombone during the middle ages, losing no characteristic of importance but the bent form, which was perforce abandoned when the art of bending hollow tubes was lost after the fall of the Roman Empire. The name clung through all the changes in form and locality to the one type, and still remains at the present day in the German Posaune (trombone). There were four instruments known by the name of *cornu* among the Romans; (1) the short animal horn used by shepherds; (2) the longer, semicircular horn, used for signals; and (3) the still longer *cornu*, bent and carried like the buccina, which had the wide bore of the modern tuba. But whereas on the buccina the higher harmonics were easily obtained, on the cornu the natural scale consisted of the first eight harmonics only. The cornu, although shorter than the buccina, had a deeper pitch

and more sonorous tone, for, owing to the wider calibre of the bore the fundamental was easily reached. In the reliefs on Trajan's Column, where the two instruments may be compared, the wider curve of the buccina forms a ready means of identification. In addition to these was (4) the small instrument like the medieval hunting-horn or post-horn, with the single spiral turn similar to one which figures as service badge in many British infantry regiments,[21] such as the first battalion of the King's Own Light Infantry. A terra-cotta model, slightly broken, but with the spiral intact, was excavated at Ventoux in France and is at present preserved in the department of Greek and Roman antiquities at the British Museum, having been acquired from the collection of M. Morel.

The *lituus*, or cavalry trumpet of the Romans, consisted of a cylindrical tube, to which was attached a bent horn or conical bell, the whole in the shape of a **J**. The long, straight Roman tuba was similar to the large, bent cornu so far as bore and capabilities were concerned, but more unwieldy. All these wind instruments seem to have been used during the classic Greek and Roman periods merely to sound fanfares, and therefore, in spite of the high degree of perfection to which they attained as instruments, they scarcely possess any claim to be considered within the domain of music. They were signalling instruments mainly used in war, in hunting and in state or civic ceremonial. Vegetius (A.D. 386) describes these instruments, and gives detailed instructions for the special traditional uses of tuba, buccina and cornu in the military camp: "Semivocalia sunt, quae per tubam, aut cornua, aut buccinam dantur. Tuba quae directa est appellatur buccina, quae in semet ipsam aero circulo flectitur. Cornu quod ex uris agrestibus, argento nexum, temperatum arte, et spiritu, quem canentis flatus emittit auditur."[22] [The "semi-voiced" (tones) are those given by the trumpet, horn, or bugle. The "trumpet" (*tuba*) is the name for the straight instrument. The "bugle" (*buccina*) is that which is bent back on itself in a bronze circle. The "horn" (*cornu*) which is made from wild-oxen bound with silver is played with its sound modulated by the skill and by the breath which the blowing of the performer emits.] It will be seen that Vegetius demands a skilled horn-player. These service instruments may all be identified in the celebrated bas-reliefs of Trajan's Column[23] (fig. 1) and of the Triumphal arch of Augustus at Susa.[24]

Interesting evidence of a collegium cornicinum (guild of horn-players) is furnished by an altar stone in the Roman Catacombs, erected to the memory of one "M. Julius victor ex Collegio Liticinum Cornicinum," on which are carved a lituus, a cornu and a pan's pipe, the cornu being similar to those on Trajan's Column.

All three Roman instruments, the tuba, the buccina and the cornu, had well-formed mouthpieces, differing but little from the modern cup-shaped form in use on the trumpet, the trombone, the tubas, &c.[25] It would seem that even the short horn in the 4th century was provided with a mouthpiece,[26] judging from a carved specimen on an ivory *capsa* or *pyxis* dating from the period immediately preceding the fall of the Roman Empire, preserved among the precious relics of Xanten.

After the fall of the Roman Empire, when instrumental

From Conrad Cichorius, Die Reliefs der Traiansäule, *by permission of Georg Reimer.*
Figure 1.—Roman Cornua and Buccina.

music had fallen into disrepute and had been placed under a ban by the church, the art of playing upon such highly-developed instruments gradually died out in western Europe. With the disappearance of the civilization and culture of the Romans, the skilled crafts also gradually vanished, and the art of making metal pipes of delicate calibre and of bending them was completely forgotten, and had to be re-acquired step by step during the middle ages from the more enlightened East. The names of the instruments and representations of them survived in MSS. and monuments of art, and as long as the West was content to turn to late Roman and Romano-Christian art for its models, no difficulties were created for the future archaeologist. By the time the Western races had begun to express themselves and to develop their own characteristics, in the 11th century, the arts of Persia, Arabia and the Byzantine Empire had laid their mark upon the West, and confusion of models, and more especially of names, ensued. The greatest confusion of all was created by the numerous translations and glosses of the Bible and by the attempts of miniaturists to illustrate the principal scenes. In Revelation, for instance (ch. viii.), the seven angels with their trumpets are diversely represented with long tubas, with curved horns of various lengths, and with the buisine, busaun or posaune, the descendant of the buccina.

We know from the colouring used in illuminated MSS., gold and pale blue, that horns were made of metal early in the middle ages. The metal was not cast in moulds but hammered into shape. Viollet-le-Duc[27] reproduces a miniature from a MS. of the end of the 13th century (Paris, Bibliothèque du corps législatif), in which two metal-workers are shown hammering two large horns.

The early medieval horns had no mouthpieces, the narrow end being merely finished with a rim on which the lips rested. The tone suffered in consequence, being uncertain, rough and tremulous, where fore it was indicated by the neume known as *quilisma:* "Est vox tremula; sicut est sonus flatus tubae vel cornu et designatur per neumam, quae vocatur *quilisma*."[28] [There is a tremulous voice (tone); just like the sound blown with a "trumpet" (*tuba*) or "horn" (*cornu*), and it is designated by a neumes which is called "quilisima."]

Fig. 2.—Medieval Hunting-Horn with the Tablature in use in the 14th Century.

During the middle ages the bugle-horn or bull's horn was extensively used as a signal instrument on land and sea by the night-watchmen in cities, in the watch tower of the feudal castle and by foresters and huntsmen. The hunting-horn was generally represented as small in the hunting scenes which abound in illuminated MSS. and early printed books; it was crescent-shaped and was worn slung by a leather strap over one shoulder and resting on the opposite hip. When played it was held with the wide end curving upwards in front of the huntsman's head. A kind of tablature for the horn was in use in France in the 14th century; an example of it is here reproduced (fig. 2) from a 14th-century French MS. treatise on venery.[29] Only one note is indicated, the various calls and signals being based chiefly on rhythm, and the notes being left to the taste and skill of the huntsman. The interpretation[30] of the *Cornure de chasse de veue* seen in the figure is as follows:

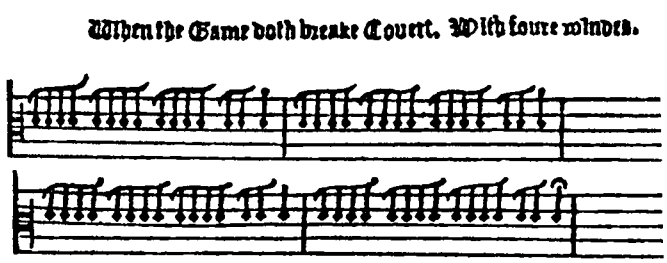
First line = ♩♩ ♩ ♩ ♩ ♩ ♩ ♩ ♩

Second line = ♩ ♩ ♩ ♩ ♩ ♩♩ ♩ ♩♩ ♩ ♩♩

Third line = ♩ ♩♩ ♩ ♩♩ ♩ ♩♩ ♩ ♩♩

In the first poem is given a list of these signs with the names by which they were known in venery.

In the 16th century in England the hunting-horn sometimes had a spiral turn in the centre, half-way between mouthpiece and bell end; the extra length was apparently added solely in order to lower the pitch, the higher harmonics not being used for the hunting calls. In George Turbevile's *Noble Arte of Venerie* (1576, facsimile reprint, Oxford, 1908) the "measures of blowing according to the order which is observed at these dayes in this Realme of Englande" are given for the horn in D. One of these, given in fig. 3, is the English 16th-century hunting call, corresponding to the 14th-century French *Cornure de chasse de veue* given above.



From Turbevile's Noble Arte of Venerie (1576), by permission of the Clarendon Press.
Fig. 3.—Hunting Call.

The hunting-horn, whether in its simplest form or with the one spiral, was held with the bell upwards on a level with the hunts-man's head or just above it.[31]

A horn of the same fine calibre as the French horn, 3 or 4 ft. in length, slightly bent to take the curve of the body, was in use in Italy, it would seem, in the 15th century.[32] It was held slanting across the body with the bell already slightly parabolic, at arm's length to the left side.

The hunting- and post-horns were favourite emblems on medieval coats of arms, more especially in Germany[33] and Bohemia.

It is necessary at this point to draw attention to the fact that the French horn is a hybrid having affinities with both trumpet and primitive animal horn, or with buccina and cornu, and that both types, although frequently misnamed and confused by medieval writers and miniaturists, subsisted side by side, evolving independently until they merged in the so-called French horn. Both buccina and cornu after the fall of the Roman Empire, while Western arts and crafts were in their infancy, were made straight, being then known as the busine or straight trumpet (busaun or posaun in Germany), and the long horn, *Herhorn*, slightly curved.[34]

Fig. 4.—Medieval Circular Horn.

From two medieval representations of instruments like the Roman cornu one might be led to conclude that the instrument had been revived and was in use from the 14th century. A wooden bas-relief on the under part of the seats of the choir of Worcester cathedral,[35] said to date from the 14th century, shows a musician in a robe with long sleeves of fur playing the horn (fig. 4). The tube winds from the mouth in a circle reaching to his waist, passes under the right arm across the shoulders with the bell stretching out horizontally over his left shoulder. The tube, of strictly conical bore, is made in three pieces, the joints being strengthened by means of two rings. The other example is German, and figures in the arms of the city of Frankfort-on-Main.[36] Here in the two opposite corners are two cherubs playing immense cornua. The bore of the instruments (fig. 5) is of a calibre suggestive of the contrabass tuba; the circle formed is of a diameter sufficiently large to accommodate the youthful performer in a sitting posture; the bell is the fore runner of that of the modern saxophone, shaped like a gloxinea; the mouthpiece is cup-shaped. It is possible, of course, that these two examples are attempts to reproduce the classic instrument, but the figures of the musicians and the feeling of the whole scheme of ornamentation seem to render such an explanation

Fig. 5.—Medieval Circular Horn, 1589.

improbable. Moreover, Sebastian Virdung,[37] writing on musical instruments at the beginning of the 16th century, gives a drawing of a cornu coiled round tightly, the tubing being probably soldered together at certain joints. Virdung calls this instrument a *Jegerhorn*, and the short hunting-horn *Acherhorn* (Ackerhorn—the synonym of the modern Waldhorn). The scale of the former could have consisted only of the first eight harmonics, including the fundamental, which would be easily obtained on an instrument of such a large calibre. Mersenne,[38] a century and a quarter later, gives a drawing of the same kind of horn among his *cors de chasse*, but does not in his description display his customary intimate knowledge of his subject; it may be that he was dealing at second-hand with an instrument of which he had had little practical experience. Praetorius[39] gives as Jägerhorn only the simple forms of crescent-shaped horns with a single spiral; the spirally-wound horn of Virdung is replaced by a new instrument—the *Jägertrummet* (huntsman's trumpet)—of the same form, but less cumbersome, of cylindrical bore excepting at the bell end and having a crook inserted between the mouthpiece and the main coils. The tube, which could not have been less than 8 ft. long, produced the harmonic series of the cavalry trumpet from the 3rd to the 12th. The restrictions placed upon the use of the cavalry trumpet would have rendered it unavailable for use in the hunting-field, but the snake-shaped model, as Praetorius describes it, was a decided improvement on the horn, although inferior in resonance to the cavalry model. Here then are the materials for the fusion of the trumpet and hunting-horn into the natural or hand-horn of the 17th and 18th centuries. There is evidence, however, that a century earlier, *i.e.* at the end of the 15th century, the art of bending a brass tube of the delicate proportions of the French horn, which is still a test of fine workmanship, had been successfully practised. In an illustrated edition of Virgil's works published in Strassburg in 1502 and emanating from Grüninger's office, Brant being responsible for the illustrations, the lines (*Aen.* viii. 1–2) "Ut belli signum Laurenti Turnus ab arce Extulit: et rauco strepuerunt cornua cantu" [As Turnus raised the banner of war from the citadel of Laurentum, and the trumpets blared with a raucus sound] are illustrated by two soldiers, one with the sackbut (posaune, the descendant of the buccina), the other with a horn wound spirally round his body in three coils, which appear to have a conical bore from the funnel-shaped mouthpiece to the bell which extends at the back of the head horizontally over the left shoulder (fig. 6). There is ample room for the performer's head and shoulders to pass through the circle; the length of the tube could not therefore have been much less than 16 ft. long, equivalent to the horn in C or B♭ basso. In the same book (pl. ccci.) is another horn, smaller, differing slightly in the disposition of the coils and held like the modern horn in front.

These horns were not used for hunting but for war in conjunction with the draw-trumpet. Brant could not have imagined these instruments, and must have seen the originals or at least drawings of them; the instruments probably emanated from the famed workshops of Nuremberg, being intended mainly for use in Italy, and had not been generally adopted in Germany. The significance of these drawings of natural horns in a German work of the dawn of the 16th century will not be lost. It disposes once and for all of the oft-repeated fable that the hunting-horn first assumed its present form in France about 1680, a statement accepted without question by authorities of all countries, but without reference to any *pièce justificative* other than the story of the Bohemian Count Spörken first quoted by Gerber,[40] and repeated in most musical works without the context. The account which gave rise to this statement had been published in 1782 in a book by Faustinus Prochaska:[41] "Vix Parisiis inflandi cornua venatoria inventa ars quum delectatus suavitate cantus duos ex hominibus sibi obnoxiis ea instituendos curavit. Id principium apud nos artis, qua hodie Bohemi excellere putantur." [The art of blowing (or "playing") hunting horns had only just been invented in Paris when, charmed by the sweetness of the musical sound, he had two men in his service instructed in the art. That was the beginning among us of the art in which the Bohemians are today reckoned to excel.] In a preceding passage after the count's name, Franz Anton, Graf von Spörken, are the words "anno saeculi superioris octogesimo quum iter in externas provincias suscepisset," &c. [in the eightieth year of the previous century, when he had entered upon a journey into foreign territories.] There is no reference here to the invention of the horn in Paris or to the folding of the tube spirally, but only to the manner of eliciting sound from the instrument. Count Spörken, accustomed to the mediaeval hunting fanfares in which the tone of the horn approximated to the blare of the trumpet, was merely struck by the musical quality of the true horn tone elicited in Paris, and gave France the credit of the so-called invention, which probably more properly belonged to Italy. The account published by Prochaska a hundred years after, without reference to the source from which it was obtained, finds no corroboration from French sources. Had the French really made any substantial improvement in the hunting horn at the end of the 17th century, transforming it from the primitive instrument into an orchestral instrument, it would only be reasonable to expect to find sonic evidence of this, considering the importance attached to the art of music at the court of Louis XIV., whose musical establishments, la Chapelle Musique,[42] la Musique de la Chambre du Roi and la Musique de la Grande Écurie, included the most brilliant French artists. One would expect to find horns of that period by French makers among the relics of musical instruments in the museums of Europe. This does not seem to be the case. Moreover, in Diderot and d'Alembert's *Encyclopédie* (1767) the information given under the heading *trompe ou cor de chasse grand et petit* is very vague, and

Fig. 6.—Spirally Coiled Horn from Virgil's Works (1502), folio cccviii. versa.

contains no hint of any special merit due to France for any improvement in construction. Among the plates (vol. v., pl. vii.) is given an illustration of a horn very similar to the instruments made in England and Germany nearly a century earlier, but with a funnel-shaped mouthpiece. Dr. Julius Rühlmann states that there are two horns by Raoux, bearing the date 1703,[43] in the Bavarian National Museum in Munich,[44] but although fine examples, one in silver, the other in brass (fig. 6) [*sic*—the correct reference is fig. 7] by Raoux, they turn out on inquiry[45] to bear no date whatever. Rühlmann's statement in the same article, that in the arms of the family of Wartenberg-Kolb (now extinct), which goes back to 1169, there is a hunting-horn coiled round in a complete circle is also misleading.

The horn (a post-horn) did not appear in the arms of the family in question until 1699, when the first peer Casimir Johann Friedrich was created hereditary Post-Master. The influence of such erroneous statements in the work of noted writers is far-reaching. Inquiries at the department of National Archives in Paris concerning Raoux, the founder of the afterwards famous firm of horn-makers whose model with pistons is used in the British military bands and at Kneller Hall, proved fruitless. Fétis states that he worked during the second half of the 18th century. Albert Chouquet[46] states that he has seen a trumpet by Raoux, "seul ordinaire du Roy, Place du Louvre" dated 1695. The inscriptions on the horns in question are: For No. 105, a silver horn of the simplest form of construction in D, "Fait à Paris par Raoux"; for No. 106, a brass horn engraved with a crown on an ermine mantle with the initials C. A. (Carl Albert), "Fait à Paris par Raoux, seul ordinaire du Roy, Place du Louvre." Both horns measure across the coils 56 cm. and across the bell 27 $^1/_2$. They are practically the same as the *cors de chasse* now in use in French and Belgian military bands, the large diameter of the coil enabling the performer to carry it over his shoulder. The orchestral horn was given a narrower diameter in order to facilitate its being held in front of the performer in a convenient position for stopping the bell with the right hand. No. 107 in the same collection, a horn of German construction, bears the inscription "Macht Jacob Schmid in Nürnburg" and the trademark J. S. with a bird. A horn in E♭ of French make, having fleur-de-lys stamped on the rim of the bell and measuring only 15 in. across the coils to the exterior edge of the bell—therefore a very small horn—is preserved in the Grand Ducal Museum at Darmstadt.[47] A horn in F♯ (probably F in modern high pitch), having the rim ornamented as above and the inscription "Fait à Paris, Carlin, ordinaire du Roy," readily gives the harmonics from the 3rd to the 12th.[48] The extreme width is 20 in.[49] Carlin, who lived at rue Croix des Petits Champs, died about 1780. The earliest dated horn extant is believed to be the one preserved in the Hohenzollern Museum in Sigmaringen, "Machts Wilhelm Haas, Nürnberg, 1688."[50] Another early German horn engraved "Machts Heinr. Rich. Pfeiffer in Leipzig, 1697,"[51] formerly in Paul de Wit's museum in Leipzig and now transferred with the rest of the collection to Cologne, is of similar construction.

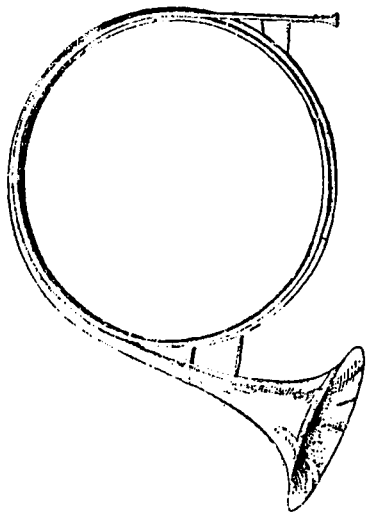
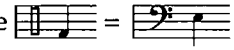
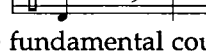
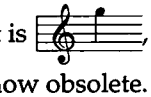


Fig. 7.—Early Raoux Horn (Munich). From a photo by K. Teufel.

The horn must have been well known at this time in England, for there are 17th-century horns of English manufacture still extant, one, for instance, in the collection of the Rev. F. W. Galpin by William Bull, dated 1699.[52] In 1701 Clagget[53] invented a contrivance by means of which two horns in different keys could be coupled and played by means of one mouthpiece, a valve or key opening the passage into the airways of one or the other of these horns at the will of the performer. Another horn of English manufacture about 1700 was exhibited at the South Kensington Museum in 1872, bearing No. 337 in the catalogue, in which unfortunately no details are given. Enough examples have been quoted to show that, judging from the specimens extant, Germany was not behind France, if not actually ahead, in the manufacture of early natural horns. Data are wanting concerning the instruments of Italy; they would probably prove to be the earliest of all, and as brass wind instruments are perishable are perhaps for that very reason unrepresented at the present day.

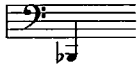
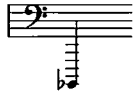
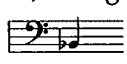
The horn at the present stage in its evolution was also well represented among the illustrations of the musical literature in Germany[54] during the first half of the 18th century, and references to it are frequent.

Music

The earliest orchestral music for the horn occurs in the operas of Cavalli and Cesti, leaders of the Venetian Opera in the 17th century. Already in 1639 Cavalli in his opera *Le Nozze de Tito e Pelei* (act i. sc. 1) introduced a short scena, "Chiamata alla Caccia"[55] in C major for four horns on a basso continuo. An examination of the scoring in C clefs on the first, second, third and fourth lines shows, by the use of the note  in the bass part and in the second tenor of  the 5th harmonic of the series, that the fundamental could have been no other than the 16-ft. C; the highest note in the treble part is  , the 12th harmonic of the 8-ft. alto horn in C, now obsolete. It is clear therefore that horns with tubing respectively 8 ft. and 16 ft. long, which must have been disposed in coils as in the present day, were in use in Italy before the middle of the 17th century, fifty years before the date of their reputed

invention in Paris.

In the same opera, act i. sc. 4, "Coro di Cavalieri" is a stirring call to arms of elemental grandeur, in which occur the words: "all' armi, ò la guerrieri corni e tamburi e trombe, ogni campo ogni canto, armi rimbombe." There are above the voice parts four staves with treble and C clef signatures above the bass, and, although no instruments are indicated, the music written thereon, which alternates with the voices but does not accompany them, can have been intended for no instruments but trumpets and horns, thus carrying out the indications in the text. The horn is here once again put to the same use as the Roman cornu, and associated in like manner with the descendant of the buccina in a call to arms. It may be purely a coincidence that the early illustration of a horn with the tubing wound in coils round the body in the Strassburg Virgil mentioned above was put to the same use and associated with the same instrument.

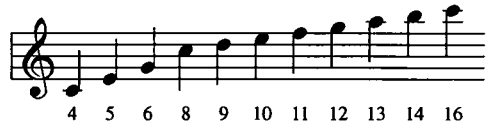
Cesti's operas likewise contain many passages evidently intended for the horn, although the instruments are not specified in the score, which was nothing unusual at the time. Lulli composed the incidental music for a ballet, *La Princesse d'Elide,* which formed part of Molière's divertissement, "Les plaisirs de l'île enchantée," written for a great festival at Versailles on the 7th of May 1664. A copy of the music for this ballet, made about 1680, is preserved in the library of the Fitzwilliam Museum, Cambridge. The music contains a piece entitled "Les violons et les cors de chasse," written in the same style as Cavalli's scena; there are but two staves, and on both the music is characteristic of the horn, with which the violins would play in unison. The piece finishes on B♭  and to play this note as the second of the harmonic series, the fundamental not being obtainable, the tube of the horn must have been over 17 ft. long. Among Philidor's copies of Lulli's ballets preserved in the library of the Paris Conservatoire of Music (vol. xlvii., p. 61) is a more complete copy of the above. The second number is an "Air des valets de chiens et des chasseurs avec les cors de chasse," which is substantially the same as the one in the Fitzwilliam Museum, but set for five horns in B♭. Here again the use of D, the fifth note of the harmonic series, indicates that the fundamental was  a tone lower than the C horn scored for by Cavalli, and known as B♭ basso. Victor Mahillon[56] considers that the music reveals the fact that it was written for horns in B♭, 35 degrees (chromatic semitones) above 32-ft. C, or  having a wave-length of 1.475 m. To this statement it is not possible to subscribe. The quintette required four horns in B♭ over 8 ft. long and one B♭ basso about 17 ft. long. It is obvious that the present custom of placing the bass notes of the horn on the F clef an octave too low, as is now customary, had not yet been adopted, for in that case the bass horn would in several bars be playing above the tenor.

In 1647 Cardinal Mazarin, wishing to create in France a taste for Italian opera, had procured from Italy an orchestra, singers and mise-en-scène. That he was not entirely successful in making Paris appreciate Italian music is beside the mark; he developed instead a demand for French opera, to which Lulli proved equal. The great similarity in the style of the horn *scène* by Cavalli and Lulli may perhaps provide a clue to the mysterious and sudden apparition of the natural horn in France, where nothing was known of the hybrid instrument thirty years before, when Mersenne[57] wrote his careful treatise on musical instruments.

The orchestral horn had been introduced from Italy. It is not difficult to understand how the horn came to be called the *French* horn in England; the term only appears after Gerber and other writers had repeated the story of Count Spörken introducing the musical horn into Bohemia.[58] By this time the firm of Raoux, established in Paris a hundred years, had won for itself full recognition of its high standard of workmanship in the making of horns.

This use of the horn by Lulli in the one ballet seems to be an isolated instance; no other has yet been quoted. The introduction of the natural horn into the orchestra of the French opera did not occur until much later in 1735 in André Campra's *Achille et Deidamie,* and then only in a fanfare. In the meantime the horn had already won a place in most of the rising opera houses and ducal orchestras[59] of Germany, and had been introduced by Handel into the orchestra in London in his *Water-music* composed in honour of George I.

Although the Italians were undoubtedly the first to introduce the horn into the orchestra, it figured at first only as the characteristic instrument of the chase, suggesting and accompanying hunting scenes or calls to arms. For a more independent use of the horn in the orchestra we must turn to Germany. Reinhard Keiser, the founder of German opera, at the end of the 17th century in Hamburg, introduced two horns in C into the chorus of his opera *Octavia* in 1705, where the horns are added to the string quartette and the oboes; they play again in act i. sc. 3, and in act ii. sc. 6 and 9. The compass used by the composer for the horns in C alto is the following:—



Wilhelm Kleefeld draws attention to the characterization, which differed in the three acts. In *Henrico* (1711), in *Diana* (1712) and in *L'Inganno Fedele* (1714) F horns were used. This called forth from Mattheson[60] his much-quoted eulogium, the earliest description of the orchestral horn: "Die lieblich pompeusen Waldhörner sind bei itziger Zeit sehr *en vogue* kommen, weil sie theils nicht so rude von Natur sind als die Trompeten, teils auch weil sie mit mehr *Facilité* können tractiret werden. Die brauchbarsten haben F und mit den Trompeten aus dem C gleichen *Ambitum.* Sie klingen auch dicker und füllen besser aus als die übertäubende und schreyende Clarinen, weil sie um eine ganze quinte tiefer stehen."["The lovely, splendid Waldhorn

have come very much into fashion at the present time, partly because their nature is not so rude as that of the trumpets, and partly because they can be played with more agility. The most practical pitches are F, and C with the trumpets. The horns also sound fuller and fill in better than the deafening and screaming clarini, since they stand a whole fifth lower in pitch." *Translation from* The Horn and Horn-Playing, *Horace Fitzpatrick, 62–63;—Editor*]

Lotti in his *Giove in Argo*, given in Dresden, 1717, scored for two horns in C, writing for them *soli* in the aria for tenor[61] (act iii. sc. 1). Examples of C. H. Graun's[62] scoring for horns in F and G respectively in *Polydorus* (1728–1729) and in *Iphigenia* (1731) show the complete emancipation of the instrument from its original limitations; it serves not only as melody instrument but also to enrich the harmony and emphasize the rhythm. A comparison of the early scores of Cavalli and Lulli with those of Handel's *Wasserfahrtmusik*[63] (1717) and of *Radamisto*, performed in London in 1720, shows the rapid progress made by the horn, even at a time when its technique was still necessarily imperfect.

While Bach was conductor of the prince of Anhalt-Cöthen's orchestra (1717–1723), it is probable that horns in several keys were used. In Dresden two Bohemian horn-players, Johann Adalbert Fischer and Franz Adam Samm, were added to the court orchestra in 1711.[64] In Vienna the addition is stated to have taken place in 1712 at the opera.[65] It is probable that as in Paris so in Vienna there were solitary instances in which the horn was heard in opera without attracting the attention of musicians long before 1712, for instance in Cesti's *Il Pomo d'Oro*, printed in Vienna in 1667 and 1668 and performed for the wedding ceremonies of Kaiser Leopold and Margareta, infanta of Spain. A horn in E (former F pitch) in the museum of the Brussels conservatoire bears the inscription "Machts Michael Leicham Schneider in Wien, 1713."[66] Fürstenau[67] gives a further list of operas in Vienna during the first two decades of the 18th century.

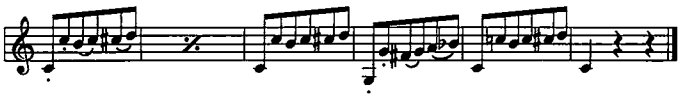
It will be well before the next stage in the evolution is approached to consider the compass of the natural horn. The pedal octave from the fundamental to the 2nd harmonic was altogether wanting; the next octave contained only the 2nd and 3rd harmonics or the octave and its fifth; in the third octave, the 8ve, its major 3rd, 5th and minor 7th; in the fourth octave, a diatonic scale with a few accidentals was possible. It will be seen that the compass was very limited on any individual horn, but by grouping horns in different keys, or by changing the crooks, command was gained by the composer over a larger number of open notes.

An important period in the development of the horn has now been reached. Anton Joseph Hampel is generally credited[68] with the innovation of adapting the crooks to the middle of the body of the horn instead of near the mouthpiece, which greatly improved the quality of the notes obtained by means of the crooks. The crooks fitted into the two branches of U-shaped tubes, thus forming slides which acted as compensators. Hampel's *Inventionhorn*, as it is called in Germany (Fr. *cor harmonique)*, is said to date from 1753,[69] the first instrument having been made for him by Johann Werner, a brass instrument-maker of Dresden. The same invention is also attributed to Haltenhof of Hanau.[70] Others again mention Michael Wöge1[71] of Carlsruhe and Rastadt, probably confusing his adaptation of the *Invention* or *Maschine*, as the slide contrivance was called in Germany, to the trumpet in 1780. The Inventionhorn, although embodying an important principle which has also found its application in all brass wind instruments with valves as a means of correcting defective intonation, did not add to the compass of the horn. At some date before 1762 it would seem that Hampe1[72] also discovered the principle on which handstopping is founded.

By hand-stopping (Fr. *sons bouchés*, Ger. *gestöpfte Töne)* is understood the practice of inserting the hand with palm outstretched and fingers drawn together, forming a long, shallow cup, into the bell of the horn; the effect is similar to that produced in wood wind instruments, termed *d'amore*, by the pear-shaped bell with a narrow opening, *i.e.* a veiled mysterious quality, and, according to the arrangement of the hand and fingers (which cannot be taught theoretically, being inter-dependent on other acoustic conditions), a drop in pitch which enables the performer merely to correct the faulty intonation of difficult harmonics or to lower the pitch exactly a semitone or even a full tone by inserting the hand well up the bore of the bell. J. Fröhlich[73] gives drawings of the two principal positions of the hand in the horn. The same phenomenon may be observed in the flute by closing all the holes, so that the fundamental note of the pipe speaks, and then gradually bringing the palm of the hand nearer the open end of the flute. As a probable explanation may be offered the following suggestion. The partial closing of the opening of the bell removes the boundary of ambient air, which determines the ventral segment of the half wavelength some distance beyond the normal length; this boundary always lies *beyond* the end of the tube, thus accounting for the discrepancy between the theoretical length of the air-column and the practical length actually given to the tube.[74] Hampel is also said to have been the first to apply the *sordini*[75] (Fr. *sourdine)* or mute, already in use in the 17th century for the trumpet,[76] to the horn. The original mute did not affect the pitch of the instrument, but only the tone, and when properly constructed may be used with the valve horn to produce the mysterious veiled quality of the hand-stopped notes. No satisfactory scientific explanation of the modifications in the pitch effected by the partial obstruction of the bell, whether by the hand or by means of certain mechanical devices, has as yet been offered. D. J. Blaikley suggests that in cases when the effect of hand-stopping appears to be to raise the pitch of the notes of the harmonic series, the real result of any contraction of the bell mouth (as by the insertion of the hand) is always a flattening of pitch accompanied by the introduction of a distorted or inharmonic scale, of such a character that for instance, the c, d, e, or 8th, 9th and 10th notes of the original harmonic scale become not the c♯ d♯ e♯ of a fundamental raised a semitone, but D♭, E♭, and f due to the 9th, 10th and 11th notes of a disturbed or distorted scale having a fundamental lower than that of the normal horn.

With regard to the discovery of this method of obtaining a chromatic compass for the horn, which rendered the instrument very popular with composers, instrumentalists

and the public, and procured for it a generally accredited position in the orchestra, the following is the sum of evidence at present available. In the Kgl. öffentliche Biblilothek, Dresden, is preserved, amongst the musical MSS., an auto-



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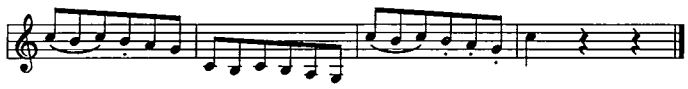


p. 133, No. 22.

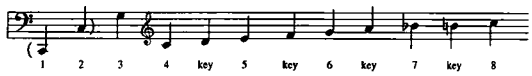
graph volume of 152 pages, entitled *Lection pro Cornui*, bearing the signature A. J. H[ampel], the name being filled in in pencil by a different hand. There is no introduction, no letterpress of any description belonging to the MS. method for the horn, nor is any book or pamphlet explaining the Inventionshorn or the method of hand-stopping by Hampel extant or known to have existed. He has apparently left no record of his accomplishment. A few typical extracts copied and selected from the original MS., courteously communicated by the director of the Royal Library, Hofrath, P. E. Richter (a practical musician and performer on horn and trumpet), do not prove conclusively that they were intended to be played on hand-stopped horns, with the exception, perhaps, of the A, 13th harmonic from C, which could not easily be obtained except by hand-stopping on the hand-horn. On the blank sheet preceding the exercises is an inscription in the hand of Moritz Fürstenau, former custodian of the Royal Private Musical Collection incorporated with the public library in 1896: "Anton Joseph Hampel, by whom these exercises for the horn were written, was a celebrated horn-player, a member of the Orchestra of the Electoral Prince of Saxony. He invented the so-called Inventionshorn. Cf. *Neues biog.-hist. Lexicon der Tonkünstler* by Gerber, pt. I col. 93; also *Zur Gesch. Der Musik u. Des Theaters am Hofe zu Dresden*, by M. Fürstenau, Bd. ii." It will be seen that Fürstenau gives Gerber as his authority for the attribution of the invention to Hampel, although he searched the archives, to which he had free access, for material for his book.

The first possessor of the MS., Franz Schubert (1768–1824), musical director of the Italian opera in Dresden, wrote the following note in pencil on the last page of the cover: "Franz Schubert. The complete school of horn-playing by the Kgl. Polnischen u. Kursächs. Cammermusicus Anton Joseph Hampel, a celebrated virtuoso, invented by himself in 1762." Judging from the standard of modern technique, there are many passages in the "Lection" which could not be played without artificially humouring the production of harmonics with the lips, and it is an open question to what extent this method of correcting intonation and of altering the pitch was practised in the 18th century. When, therefore, Franz Schubert states that the method was *invented* by Hampel, we may take this as indirectly confirming Gerber's statements. Further confirmation is obtained from the text of a work on the horn written by Heinrich Domnich[77] (b. 1760), the son of a celebrated horn-player of Würtzburg contemporary with Hampel. Domnich junior settled eventually in Paris, where he was appointed first professor of the horn at the Conservatoire. According to him the mute (sourdine) of metal, wood or cardboard in the form of a hollow cone, having a hole in the base, was used to soften the tone of the horn without altering the pitch. But Hampel, substituting for this the pad of cotton wool used for a similar purpose with the oboe, found with surprise that its effect in the bell of the horn was to *raise* the pitch a semitone (see D. J. Blaikley's explanation above). By this means, says Domnich, a diatonic and chromatic scale was obtained. Later Hampel substituted the hand for the pad. Domnich duly ascribes to Hampel the credit of the Inventionshorn, but erroneously states that it was Haltenhoff of Hanau who made the first instrument. Domnich further explains that Hampel, who had not practised the *bouché* notes in his youth, only made use of them in slow music, and that the credit of making practical use of the discovery was due to his pupil Giovanni Punto (Joh. Stich) the celebrated horn virtuoso, who was a friend of Domnich's.

It may be well to draw attention to the fact that hand-stopping was not possible so long as the tube of horn was folded in a circle wide enough to be worn round the body. The reduction of the diameter of the orchestral horn in order to allow the performer to hold the instrument in front of him, thus bringing the bell in front of the right arm in a convenient position for hand-stopping, must have preceded the discovery of hand-stopping. In the absence of contrary evidence we may suppose that the change was effected for the more convenient arrangement and manipulation of the slides or *Inventions*. So radical a change in the compass of the horn could not occur and be adopted generally without leaving its mark on the horn music of the period; this change does not occur, as far as we know, before the last decades of the 18th century. The rapid acceptance in other countries of Hampel's discovery of hand-stopping is evidenced by a passage from a little English work on music, published in London in 1772 but bearing at the end of the preface the date June 1766:[78] "Some eminent Proficients have been so dexterous as very nearly to perform all the defective notes of the scale on the Horn by management of Breath and by a little stopping the bell with their hands."

Hampel's success gave a general impetus to the inventive faculty of musical instrument makers in Europe. At first the result was negative. Kölbel's attempt must, however, be mentioned, if only to correct a misconception. Kölbel, a Bohemian horn virtuoso at the imperial Russian court from 1754, spent many years in vain endeavours to improve his instrument. At last, in 1760, he applied keys to the horn or the bugle, calling it Klappenhorn (the bugle is known in Germany as *Signal* or *Bugelhorn*). Kölbel's experiment did not become widely known or adopted during his lifetime, but Anton Weidinger, court trumpeter at Vienna, made a keyed trumpet[79] in 1801, which attracted attention in musical circles and gave a fresh impetus in experimenting with keys upon brass instruments. In 1813 Joseph Weidinger, the twelve-year-old son of the above, gave a concert in Vienna on the *Klappenwaldhorn*[80] (or keyed French horn), about which little seems to be known. Victor Mahillon[81] describes

such an instrument, but ascribes the invention to Kölbel; there was but one key placed on the bell, which on being opened had the effect of raising the pitch of the instrument a whole tone. By alternately using the harmonic open notes on the normal length of the tube, and then by the action of the key shortening the air column, the following diatonic scale was obtained in the third octave:



In 1812 Dikhuth,[82] horn-player in the orchestra of the grand-duke of Baden at Mannheim, constructed a horn in which a slide on the principle of that of the trombone was intended to replace hand-stopping and to lower the pitch at will a semitone.

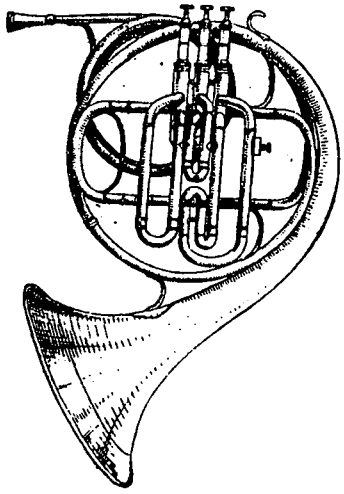


Fig. 8.—Modern Horn (Boosey & Co.)

The most felicitous, far-reaching and important of all improvements was the invention of valves *(q.v.)*, pistons or cylinders (the principle of which has already been explained), by Heinrich Stölzel,[83] who applied them first of all to the horn, the trumpet and the trombone,[84] thus endowing the brass wind with a chromatic compass obtained with perfect ease throughout the compass. The inherent defect of valve instruments already explained, which causes faulty intonation needing correction when the pistons are used in combination, has now been practically overcome. The numerous attempts to solve the difficulty, made with varying success by makers of brass instruments, are described under VALVE, BOMBARDON and CORNET.[85] (K. S.)

Notes

[1]See Michael Praetorius, *De organographia* (Wolfenbüttel, 1618), tab. viii., where crooks for lowering the key by one tone on trumpet and trombone are pictured.

[2]See Victor Mahillon, *Les Éléments d'acoustique musicale et instrumentale* (Brussels, 1874), pp. 96, 97, &c.; Friedrich Zamminer, *Die Musik und die musikalischen Instrumente* (Giessen, 1855), p. 310, where diagrams of the mouthpieces are given.

[3]See Joseph Fröhlich, *Votlständige theoretisch-praktische Musikschule* (Bonn, 1811), iii. 7, where diagrams of the two mouthpieces for first and second horn are given.

[4]See Gottfried Weber, "Zur Akustik der Blasinstrumente," in *Allgemeine musikalische Zeitung* (Leipzig, 1816), p. 38.

[5]*Les Instruments de musique au musée du Conservatoire royal de musique de Bruxelles*, "Instruments à vent," ii., "Le Cor, son histoire, sa théorie, sa construction" (Brussels and London, 1907), p. 28.

[6]*Die Akustik* (Leipzig, 1802), p. 86, § 72.

[7]*Op. cit.* p. 13, § 20, and p. 15, §§ 24 and 25. This apparent discrepancy between an early and a modern authority on the acoustics of wind instruments is easily explained. Chladni, when speaking of open and closed pipes, refers to the standard cylindrical and rectangular organ-pipes. Mahillon, on the other hand, draws a distinction in favour of the conical pipe, demonstrating in a practical manner how, given a certain calibre, the conical pipe must overblow the harmonics of the open pipe, whatever the method of producing the sound.

[8]See Gottfried Weber, *loc. cit.*

[9]See Ernst Heinrich and Wilhelm Weber, *Wellenlehre* (Leipzig, 1825), p. 519, § 281, and *A Text-Book of Physics*, part. ii., " Sound," by J. H. Poynting and J. J. Thomson (London, 1906), pp. 104 and 105.

[10]See Sedley Taylor, *Sound and Music* (1896), p. 21.

[11]*Id.* pp. 23–25.

[12]See Gottfried Weber, *op. cit., pp. 39–41* and Ernst H. and Wilhelm Weber, *op. cit.* p. 522, end of § 285.

[13]See A. Ganot, *Elementary Treatise on Physics*, translated by E. Atkinson (16th ed., London, 1902), p. 266, § 282, "In the horn different notes are produced by altering the distance of the lips." Such a vague and misleading statement is worse than useless. See also Poynting and Thomson, *op. cit.* p. 113.

[14]"Le Cor," p. 22; p. 11, § 18; pp. 6 and 7, § 8.

[15]The phraseology alone is here borrowed from Sedley Taylor, (*op. cit.* p. 55), who does not enter into the practical application of the theory he expounds so clearly.

[16]See Dr Emil Schafhäutl's article on musical instruments, § iv. of *Bericht der Beurtheilungs Commission bei der Allg. Deutschen Industrie Ausstellung, 1854* (Munich, 1855): pp. 169–170; also F. Zamminer, *op. cit.*

[17]The measurements are for the high philharmonic pitch a' = 452.4. V. Mahillon, "Le cor" (p. 32), gives a table of the lengths of crooks in metres.

[18]Robert Eitner editor of the *Monatshefte für Musikwissenschaft*, published therein an article in 1881, p. 41 seq., "Wer hat di Ventiltrompete erfunden," in which, after referring to the *Klappenwaldhorn* and *Trompete* (keyed horn and trumpet) made by Weidinger and played in public in 1802 and 1813 respectively, he goes on to state that Schilling in his *Lexicon* makes the comical mistake of looking upon the *Klappentrompete* (keyed trumpet) and *Ventiltrompete* (valve trumpet) as different instruments. He accordingly sets matters right, as he thinks, by according to Weidinger the honour of the invention of valves, hitherto wrongfully attributed to Stölzel; and in the *Quellenlexikon* (1904) he leaves out Stölzel's name, and names Weidinger as the inventor of the *Klappen* or *Ventil*, referring readers for further particulars to his article, just quoted, in the *Monatshefte*.

[19]See Hector Berlioz, *A Treatise on Modern Instrumentation and Orchestration*, translated by Mary Cowden Clarke, new edition revised by Joseph Bennett (I882), p. 141.

[20]See Victor Mahillon, *Catal. descriptif des instruments de musique*, &c., vol. ii. p. 388, No. 1156, where an illustration is given. See also Dr. August Hammerich (French translation by E. Beauvais), "Über altnordische Luren" in *Vierteljährschrift für Musik-Wissenschaft* x. (1894).

[21]See Major J. H. L. Archer, *The British Army Records* (London, 1888), pp. 402, &c.

[22]*De re militari*, iii. 5 (Basel, 1532). The successive editions and translations of this classic, both manuscript and printed, throughout the middle ages afford useful evidence of the evolution of these three wind instruments.

[23]See Wilhelm Froehner, *La Colonne Trajane d'apres le surmoulage exécuté à Rome en 1861–1862* (Paris, 1872–1874). On pl. 51 is a cornu framing the head of a cornicen or horn-player. See also the fine plates in Conrad Cichorius, *Die Reliefs der Traiansäule* (Berlin, 1896, &c.).

[24]Ermanno Ferrero, *L'Arc d'Auguste à Suse* (Segusio, 9–8 B.C.) (Turin, 1901).

[25]See the mouthpiece on the Pompeian buccinas preserved in the museum at Naples, reproduced in the article BUCCINA. The museums of the conservatoires of Paris and Brussels and the Collection Kraus in Florence possess facsimiles of these instruments; see Victor Mahillon, *Catalogue*, vol. ii. p. 30. Cf. also the pair of bronze Etruscan cornua, No. 2734 in the department of Greek and Roman antiquities at the British Museum, which possess well-preserved cup-shaped mouthpieces.

[26]See Bock, "Gebrauch der Hörner im Mittelalter," in Gustav Heider's *Mittelalterliche Kunstdenkmäler Österreichs* (Stuttgart, 1858–1860).

[27]*Dictionnaire raisonné du mobilier français* (Paris, 1889), ii. p. 246.

[28]Engelbertus Admontensis in *De Musica Scriptores*, by Martin Gerbert, Bd. ii. lib. ii. cap. 29; and Edward Buhle, *Die Musikalischen Instrumente des frühen Mittelalter*, pt. i., "Dies Blaseninstrumente" (Leipzig, 1903), p. 16.

[29]*Le Trésor de vénerie par Hardouin, seigneur de Fontaines-Guérin* (edited by H. Michelant, Metz, 1856); the first part was edited by Jérome Pichon (Paris, 1855), with an historical introduction by Bottée de Toulmon.

[30]As worked out by Edward Buhle, *op. cit.*, p. 23.

[31]Turbevile, *op. cit.*, also J. du Fouilloux, *La Vénerie* (Paris, 1628), p. 70; cf. also editions of 1650 and of 1562, where the horn is called *trompe*, used with the verb *corner;* Juliana Bernes, *Boke of St Albans* (1496), the frontispiece of which is a hunting scene showing a horn of very wide bore, without bell. Only half the instrument is visible.

[32]See "Reliure italienne du xv[e] sièle en argent niélle. Collection du Baron Nathaniel de Rothschild, Vienne," in *Gazette archéologique* (Paris, 1880), xiii. p. 295, pl. 38, where other instruments are also represented.

[33]See Jost Amman, *Wappen und Stammbuch* (1589). A reprint in facsimile has been published by Georg Hirth as vol. iii. of *Liebhaber Bibliothek* (Munich, 1881). See arms of Sultzberger aus Tirol (p. 52), "Ein Jägerhornlin," and of the Herzog von Wirtenberg; cf. the latter with the arms of Wurthemberch in pl. xxii. vol. ii. of Gelre's *Wappenboek ou armorial de 1334 à 1372* (miniatures of coats of arms in facsimile), edited by Victor Bouton (Paris, 1883).

[34]For illustrations see autotype facsimile of Utrecht Psalter, 9th century; British Museum, Add. MS. 10,546, Ps. 150, 9th century; Add. MS. 24, 199, 10th century; Eadwine Psalter, Trin. Coll. Camb., 11th century, and Cotton MS., Nero, D.IV., 8th century; also Edward Buhle, op. cii., pl. ii. and pp. 12–24.

[35]See John Carter, *Specimens of Ancient Sculpture and Paintings* (London, 1780–1794), i. p. 53 (plates unnumbered); also reproduced in H. Lavoix, *Histoire de la musique* (Paris, 1884).

[36]See Jost Amman, *op. cit.*

[37]*Musica getutscht und ausgezogen* (Basel, 1511), p. 30. The names are not given under the drawings, but the above is the order in which they occur, which is probably reversed.

[38]*Harmonie universelle* (Paris, 1636), p. 245.

[39]*Syntagma Musicum* (Wolfenbüttel, 1618), pl. vii. No. 11, p. 39.

[40]*Historisch-biographisches Lexicon der Tonkünslter* (Leipzig, 1790–1792 and 1812–1814).

[41]*De saecularibus Liberalium Artium in Bohemia et Moravia fatis commentarius* (Prague, 1784) p. 401.

[42]See Ernest Thoinan, *Les Origines de la chapelle musique des souverains de France* (Paris, 1864); F. J. Fétis, "Recherches sur la musique des rois de France, et de quelques princes depuis Philippe le Bel jusqu'à la fin du règne de Louis XIV.," *Revue musicale* (Paris, 1832), xii. pp. 193, 217, 233, 241, 257; Castil-Blaze, *La Chapelle musique des rois de France* (Paris, 1882); Michel Brenet, "Deux comptes de la chapelle musique des rois de France," *Intern. Mus. Ges.*, Smbd. vi., i. pp. 1–32; J. Ecorcheville, "Quelques documents sur la musique de la grande écurie du roi," *Intern. Mus. Ges.*, Smbd. ii. 4 (Leipzig,1901), pp. 608–642.

[43]*Neue Zeitschrift f. Musik* (Leipzig, 1870), p. 309.

[44]See *Die Sammlung der Musikinstrumente des baierischen Nat. Museum* by K. A. Bierdimpfl (Munich, 1883), Nos. 105 and 106.

[45]Communication from Dr Georg Hagen, assistant director.

[46]See Musée du Conservatoire National de Musique. *Catalogue des instruments de musique* (Paris, 1884), p. 147.

[47]See Captain C. R. Day, *Descriptive Catalogue of the Musical Instruments exhibited at the Military Exhibition* (London, 1890), b. 147, No. 307.

[48]See V. Mahillon, *Catal.* Vol. 1. No. 468.

[49]See Captain C. R. Day, *Catal.* No. 309, p. 148.

[50]For an illustration see *Catalogue of the Special Exhibition of Ancient Musical Instruments at South Kensington Museum 1872* (London, 1873), p. 25, No. 332.

[51]See *Katalog des musikhistorischen Museums von Paul de Wit* (Leipzig, 1904), p. 142, No. 564, where it is classified as a Jägertompete after Praetorius; it has a trumpet mouthpiece.

[52]For an illustration see F. J. Crowest, *English Music*, p. 449, No. 12.

[53]See Ignatz and Anton Böck in *Baierisches Musik-Lexikon* by Felix J. Lipowski (Munich, 1881), p. 26, note.

[54]See, for instance, frontispiece of Walther's *Musikalisches Lexikon* (Leipzig, 1732); J. F. B. C. Majer's *Musik-Saal* (Nuremberg, 1741, 2nd ed.), p. 54; Joh. Christ. Kolb, *Pinacotheca Davidica* (Augsburg, 1711); Ps. xci.; "Componimenti Musicali per il cembalo Dr Theofilo Muffat, organista di sua Sacra Maesta Carlo VI. Imp." (1690), title-page in *Denkmäler d. Tonkunst in Oesterreich*, Bd. iii.

[55]See Hugo Goldschmidt, "Das Orchester der italienischen Oper un 17 Jahrhundert," *Itern. Mus. Ges.*, Smbd. ii. 1, p. 73.

[56]See "Le Cor," pp. 23 and 24, and *Dictionnaire de l'acad. des beaux arts*, vol. iv., art. "Cor."

[57]Mersenne's drawings of *cors de chasse* are very crude; they have no bell and are all of the large calibre suggestive of the primitive animal horn. He mentions nevertheless that they were not only used for signals and fanfares but also for little concerted pieces in four parts for horns alone, or with oboes, at the conclusion of the hunt.

[58]See William Tans'ur Senior, *The Elements of Musick* (London, 1772); Br. V. Dictionary under "Horn." Also Scale of Horn in the hand of Samuel Wesley; in Add. MS. 35011, fol. 166, Brit. Mus.

[59]A horn-player, Johann Theodor Zeddelmayer, was engaged in 1706 at the Saxon court at Weissenfels; see *Neue-Mitteilungen aus dem Gebiete histor. antiqu. Forschungen*, Bd. xv. (2) (Halle, 1882), p. 503; also Wilhelm Kleefeld, "Das Orchester der Hamburger Oper, 1678–1738," *Intern. Mus. Ges.*, Smbd. i. 2, p. 280, where the appearance of the horn in the orchestras of Germany is traced.

[60]*Das neu-eröffete Orchester*, i. 267.

[61]See Moritz Fürstenau, *Zur Geschichte der Musik und des Theaters zu Dresden* (Dresden, 1861–1862), vol. ii. p. 60.

[62]See "Carl Heinrich Graun als Opernkomponist," by Albert Mayer-Reinach, *Intern. Mus. Ges.*, Smbd. i. 3 (Leipzig, 1900), pp. 516–517 and 523–524, where musical examples are given.

[63]Cf. Chrysander, *Haendel*, ii. 146.

[64]See Moritz Fürstenau, *op. cit.* ii. 58.

[65]See Ludwig von Köchel, *Die kaiserliche Hofkappelle in Wien* (Vienna, 1869), p. 80.

[66]See Victor Mahillon, *Catalogue descriptif*, vol. ii. No. 1160, p. 389.

[67]*Op. cit.* ii. 60.

[68]The Department of State Archives for Saxony in Dresden possesses no documents which can throw any light upon this point, but, through the courtesy of the director, the following facts have been communicated. Two documents concerning Anton Joseph Hampel are extant: (1) An application by his son, Johann Michael Hampel, to the elector Friedrich August III. of Saxony, dated Dresden, April 3, 1771, in which he prays that the post of

his father as horn-player in the court orchestra—in which he had already served as deputy for his invalid father—may be awarded to him. (2) A petition from the widow, Aloisia Ludevica Hampelin, to the elector, bearing the same date (April 3, 1771), wherein she announces the death of her husband on the 30th of March 1771, who had been in the service of the house of Saxony thirty-four years as horn-player, and prays for the grant of a monthly pension for herself and her three delicate daughters, as she finds herself in the most unfortunate circumstances. There is no allusion in either letter to any musical merit of the deceased.

[69]There is an instrument of this early type, supposed to date from the middle of the 18th century, in Paul de Wit's fine collection of musical instruments formerly in Leipzig and now transferred to Cologne; see *Katalog*, No. 645, p. 148.

[70]See *Dictionnaire de l'acad. des beaux arts*, vol. iv. (Paris), article "Cor."

[71]See Dr Gustav Schilling, *Universal Lexikon der Tonkunst* (Stuttgart, 1840), Bd. vi., "Trompete"; also Capt. C. R. Day, pp. 139 and 151, where the term *Invention* is quite misunderstood and misapplied. See Gottfried Weber in *Caecilia* (Mainz, 1835), Bd. xvii.

[72]Gerber in the first edition of his *Lexikon* does not mention Hampel or award him a separate biographical article; we may therefore conclude that he was not personally acquainted with him, although Hampel was still a member of the electoral orchestra in Dresden during Gerber's short career in Leipzig. In the edition of 1812 Gerber renders him full justice.

[73]Vollständige theoretisch-praktische Musikschule (Bonn, 1811), pt. iii. p. 7.

[74]See Victor Mahillon, "Le Cor," p. 28; Chladni, op. cit. p. 87.

[75]See Fröhlich, op. cit. 7; and Gerber, Lexikon (ed. 1812), p. 493; "Le Cor," pp. 34 and 53.

[76]See Praetorius and Mersenne, op. cit.; the latter gives an illustration of the trumpet mute.

[77]*Methode* de *premier et* de *second Cor* (Paris, *c.* 1807). The passage was discovered and courteously communicated by Hofrat P. E. Richter of the Royal Library, Dresden. There is no copy of Domnich's work in the British Museum.

[78]See William Tans'ur Senior, *op. et loc. cit.*

[79]See *Allgemeine musikalische Zeitung* (Leipzig), Nov. 1802, p. 158, and Jan. 1803, p. 245; and E. Hanslick, *Geschichte des Concertwesens in Wien* (Vienna, 1869), p. 119.

[80]See *Allgem. mus. Ztg.*, 1815, p. 844.

[81]"Le Cor," pp. 34–35.

[82]See the description of the instrument and of other attempts to obtain the same result by Gottfried Weber, "Wichtige Verbesserung des Horns" in *Allg. Musik. Ztg.* (Leipzig, 1812), pp. 758, &c.; also 1815, pp. 637 and 638 (the regent or keyed bugle).

[83]See *Allg. Musik. Ztg.*, 1815, May, p. 309, the first announcement of the invention in a paragraph by Captain G. B. Bierey.

[84]*Ibid.*, 1817, p. 814, by F. Schneider, and Dec. p. 558; 1818, p. 531. An announcement of the invention and of a patent granted for the same for ten years, in which Blümel is for the first time associated with Stölzel as co-inventor. See also *Caecilia* (Mainz, 1835) Bd. xvii. pp. 73 seq., with illustrations, an excellent article by Gottfried Weber on the valve horn and the valve trumpet.

[85]For a very complete exposition of the operation of the valves in the horn, and of the mathematical proportions to be observed in construction, see Victor Mahillon's "Le Cor," also the article by above. A list of horn-players of note during the 18th century is given by C. Gottlieb Murr in *Journal f. Kunstgeschichte* (Nuremburg, 1776), vol. ii p. 27. See also a good description of the style of playing of the virtuoso J. Nisle in 1767 in Schubart, *Aesthetik d. Tonkunst*, p. 161, and *Leben u. Gesinnungen* (1791), Bd. ii. p. 92; or in L. Schiedermair, "Die Blütezeit d. Ottingen-Wallensteinschen Hofkapelle," *Intern. Mus. Ges.* Smbd. ix (1), 1907, pp. 83–130.

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_____ Vol. XXV no. 1 (Nov. 1994)
_____ Vol. XXV no. 2 (Feb. 1995)
_____ Vol. XXV no. 3 (May 1995)
_____ Vol. XXVI no. 1 (Nov. 1995
_____ Vol. XXVI no. 2 (Feb. 1996)
_____ Vol. XXVI no. 3 (May 1996)
_____ Vol. XXVII no. 1 (Nov. 1996)

_____ Special Archive Issue (1986)
_____ Annual no. 1 (1989)
_____ Annual no. 2 (1990)
_____ Annual no. 3 (1991)
_____ Annual no. 4 (1992)
_____ Annual no. 5 (1993)
_____ Annual no. 6 (1994)
_____ Annual no. 7 (1995)
_____ Annual No. 8 (1996)

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Joseph Rudolphe Lewy and Valved Horn Technique in Germany, 1837–1851[1]

John Q. Ericson

Introduction

The period after 1835 saw the beginning of the use of the valved horn in the orchestra. Composers and hornists alike were just beginning to grasp the true potential and character of the valved horn. With respect to understanding this important period in the development of the technique of the valved horn, hornist J. R. Lewy is of considerable importance. My previous article, "Beethoven's Symphony No. 9, Schubert's *Nachtgesang im Walde* and *Auf dem Strom*, and the Horn Technique of the Lewy Brothers in the 1820s" (*The Horn Call Annual* 8 [1996]), discussed the first portion of his performing career; this article focuses on the latter portion, with particular attention given to his unique and frequently noted technique of using the valves as crook changes.

The Lewy Family

To review briefly, Joseph Rudolphe Lewy (1802–1881) was part of a family of distinguished valved hornists. His brother Eduard Constantin Lewy,[2] (1796–1846) was the eldest member of the horn playing family. E. C. Lewy was born in Saint-Avoid (Moselle), the first son of musician Elie Lewy.[3] As he showed considerable musical talent, at the age of fourteen he was accepted into the horn class of Heinrich Domnich (1767–1844) at the Paris Conservatory.[4] Two years later E. C. Lewy joined the French army as a member of the music corps of the Old Guard, and he served until after the battle of Waterloo.[5] After several years as a touring musician based in Switzerland, E. C. Lewy was called to Vienna in 1822 by composer and conductor Conradin Kreutzer (1780–1849) to serve as solo horn at the Kärntnertor Theater,[6] and went on to a have a distinguished career in Vienna. In 1834 he was appointed professor at the Conservatorium, and in 1835 he became principal horn of the orchestra of the Imperial Hofkapelle.[7] E. C. Lewy had three musically talented children with whom he toured and performed extensively. His son Richard Lewy (1827–1883) was also a very active performer and teacher of the valved horn in Vienna.

J. R. Lewy was born in Nancy and studied the horn with his brother.[8] From 1819 until 1822 J. R. Lewy was a member of the court orchestra in Stuttgart, and in 1822 he joined his brother in the orchestra of the Kärntnertor Theater in Vienna.[9] In the years 1834–1835 J. R. Lewy went on concert tours to Russia, Sweden, Germany, England, and Switzerland.[10] He spent the winter of 1836–37 in Paris,[11] and from there Lewy went on to Dresden, where he became principal horn in the Royale Kapelle, performing on the valved horn.[12] He remained in Dresden from 1837 until his retirement in 1851.

J. R. Lewy composed a number of works which were published toward the end of his performing career. These works, all for horn and piano, include a *Grand Duo;* a *Divertissement,* Op. 11 on motives from the opera *Les Huguenots; Morceau de salon,* Op. 12 on Bellini's *I puritani;* a second *Divertissement,* Op. 13 on motives of Franz Schubert; and the *Douze Etudes pour le Cor chromatique et le Cor simple.*[13] One additional work is also known today, a one–movement Concerto in F, published posthumously.

J. R. Lewy is one of the first valved horn players about whom there are sufficient extant contemporary quotations to give us an idea of not only his general ability on the instrument but also his tone quality in particular. Composer and theorist Gottfried Weber (1779–1839) devoted a portion of the concluding section of his 1835 article in *Cäcilia* "Ueber Ventilhorn und Ventiltrompete mit drei Ventilen" [Valved Horn and Valved Trumpet with Three Valves] to J. R. Lewy.[14] Weber reported that Lewy had recently passed through Germany on a concert tour from Copenhagen, and that he had performed brilliantly on the horn with three valves. While noting in particular that this concert tour would decidedly help in the "dissemination and general reception" of these perfected instruments, he comments that the tour would have been even more successful if Levy's tone were not so "disagreeably individualistic," lapsing from time to time into a certain "rumble, ... rasping, gnashing, or grunting," which spoiled his otherwise "beautiful, tender, clear and sonorous" tone.[15] So while Weber certainly recognized his virtuosity, he did have serious reservations about his tone quality.

Schilling's *Encyclopedia* of 1842 also gave J. R. Lewy a good review, but was still somewhat cautious on his tone quality, stating,

> His ability on the chromatic horn is really admirable. If his tone is still open to improvement: in this respect only a few horn players of today may reach him, still less surpass him.[16]

Finally,[17] composer Hector Berlioz commented very favorably on J. R. Lewy and the horn players in Dresden after his visit there in 1843,[18] noting,

> The most remarkable of the horn players is Levy, who enjoys a great reputation in Saxony. He and his colleagues use the cylinder[19] horn, to which the Leipzig band, unlike almost all the others in the north of Germany, has hitherto refused admission."[20]

As previously noted, J. R. Lewy was a student of his brother. From the known background of E. C. Lewy, it is highly likely that J. R. Lewy was at least familiar with the technical ideas presented in the *Méthode de Premier et Second Cor* of Heinrich Domnich, and very likely studied extensively from it on the natural horn. Thus, J. R. Lewy

certainly must have been a very capable performer on the natural horn, but he was also very interested in the new valved horn.

The Lewy brothers were among the first artists to perform regularly on the valved horn, performing joint recitals utilizing the instrument by 1826.[21] In this period two important works were composed by Franz Schubert for the Lewy brothers—*Nachtgesang im Walde*, D. 913 (1827) for four horns and mens chorus and *Auf dem Strom*, D. 943 (1828) for voice, horn, and piano.[22] However, it is during the period that Lewy served as principal hornist in Dresden (1837–1851) where we see the greatest number of important works associated with him as a performer or composer. These works will be discussed below.

K. G. Reissiger and Early Works of Wagner

An important composer and conductor of the period who worked closely with J. R. Lewy was Karl Gottleib Reissiger (1798–1859). Reissiger served as Hofkapellmeister in Dresden during the entire period that J. R. Lewy served as principal horn. Reissiger expounded a very unfavorable view toward the valved horn in an 1837 article in *Allgemeine musikalische Zeitung*, the same year that J. R. Lewy was hired; certainly this article gives important insights into the musical climate in which J. R. Lewy worked.

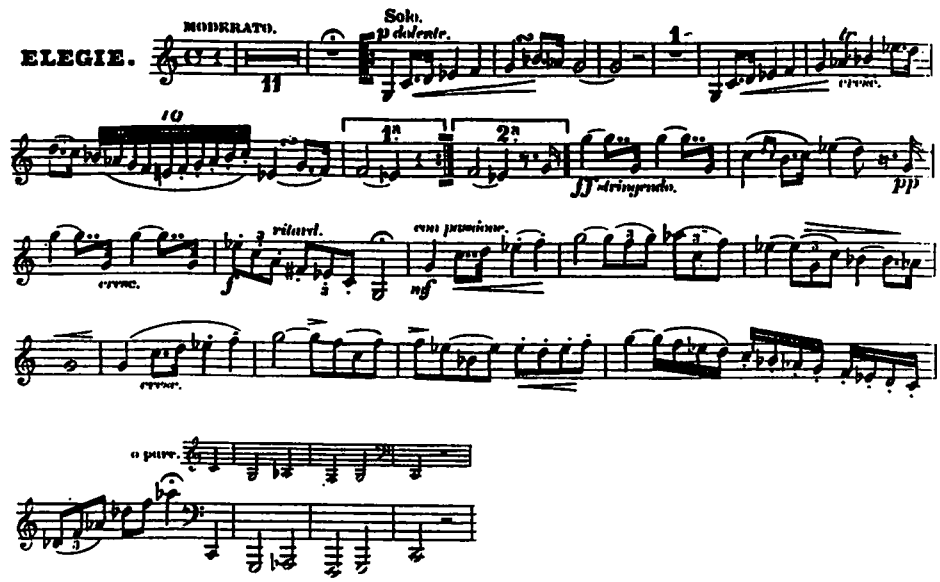
Reissiger opened his article by quoting two passages on the valved horn by composer and critic G. W. Fink (1783–1846) from the third volume of *Universal Lexikon der Tonkunst* (pub. 1835–38), edited by Gustav Schilling (1805–1880). Fink first stated that the valves altered the characteristic tone of the natural instruments irrevocably, and followed by stating that there were wonderful effects possible by the use of open and stopped notes, as Beethoven and Weber understood.[23]

Reissiger went on to list several more objections to the new instruments, first stating his wish that these comments might stimulate other musicians in discussing issues relating to the current "mania" for the new valved instruments.[24] He objected to the neglect of the natural instruments and to the "ear-deafening" introduction of the new instruments into military music. After a discussion of the situation in military bands, he turned to operatic music. Reissiger noted the "characteristic pain" of the stopped horn sounds in, for example, the introduction to the second act of *Fidelio;* played on a valved horn, with a poor, trombone–like tonal color, "how heart-rending." Other examples followed, and he added,

> I hear such a beautiful, sustained solo performed in a colorless monotone on a valve horn, and it seems to me as if the instrument is moaning: 'My love, I am a horn. Don't you recognize me any more? I admit that I am too severely constricted, I am somewhat uncentered and hoarse, my sweetness is gone, my tone sounds as if it has to go through a filter sack in which its power gets stuck.[25]

Reissiger urged musicians not to neglect the natural horn, thus indicating that the "colorless monotone" mentioned is likely a reference to the lack of color changes on the valved horn due to the use of the valves instead right–hand technique. He concluded by reiterating that this article was not written against virtuosos of the valved instruments but rather to stimulate thought and discussion among musicians.[26]

From his commentary, it would seem that Reissiger would have been open to the ideals of the developing French school of valved horn playing. While a thorough discussion is beyond the scope of this article,[27] in short the French sought to combine the expressive capabilities of the natural horn with the chromatic capabilities of the valved horn. The leading proponent of this school of valved horn playing was Joseph Meifred (1791–1867), and his *Méthode pour le Cor Chromatique, ou à Pistons* (1840) explains the ideals of this school clearly.



Example 1. Reissiger, Elégie et Rondeau, *Op. 153, mvt. 1, mm. 1–37.*

Meifred wanted for artistic reasons to maintain the use of some right–hand technique in his valved horn playing in order to preserve what he referred to as the "*Notes sensibles*" [sensitive tones], particularly those a half step lower than the tonic or the fifth of a key.[28] To quote from the *Méthode,* "I have advanced ... that to want to prohibit all the ***stopped notes*** of the ***horn,*** replacing them with ***open*** sounds, would be to inflict harm on the countenance of the instrument and to make it to lose its special character that gives it an indefinable charm."[29] Meifred held firm to the same underlying aesthetic of the natural horn that was held by his teacher Louis François Dauprat (1787–1868); that the lightly stopped tones were an important expressive nuance

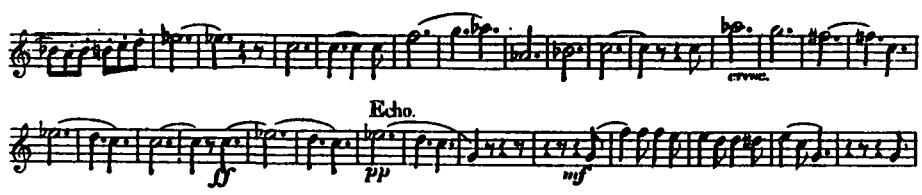
which made the sound of the horn unique and beautiful.[30]

As J. R. Lewy had just spent the winter of 1836–37 in France (and he is also known to have spent additional time in Paris in 1842[31]) it is tempting to hypothesize that Reissiger hired J. R. Lewy in Dresden because of his familiarity with the French school of valved horn playing, with its use of some right hand technique. Lewy certainly must have been familiar with the developing French school of valved horn playing and thus would have had the ability to avoid the "colorless monotone" of which Reissiger wrote.

Reissiger composed several solo works for J. R. Lewy.[32] One of these works was his *Elégie et Rondeau (Elégie suivie d'un Rondeau agréable)*, Op. 153, for the chromatic horn in F, published before 1844.[33] This work, dedicated to J. R. Lewy, calls for the accompaniment of string quartet or string orchestra with two flutes, two bassoons and two horns *ad lib.* The *Elégie* is written in a free, rhapsodic form and treats the horn as a completely chromatic instrument. Example 1 shows the beginning of the work.

The nature of the writing for horn suggests the fluid valved horn technique of J. R. Lewy. The range requirements found in both movements are similar, with an overall range from written F_1 to c'''. F_1, seen in the above example, is not available as a true pitch on the three-valved horn in F, the intended instrument, and would have been performed by lowering $F\sharp_1$ with the right hand or with the lip.

There are many places in this opening section which could be performed in a more colorful manner by using Meifred's right-hand technique. Meifred, however, did not set strict rules in the *Méthode* as to how to apply the principal of "*Notes sensibles*" to musical situations such as these, fundamentally relying on the artistic senses of the performer in maintaining the overall tonal color of the natural horn.[34] The written b' in measure 23 would be a logical note to perform half-stopped (as it is the leading tone), and other covered pitches are possible.



Example 2. Reissiger, Elégie et Rondeau, *Op. 153, mvt. 2, mm.*

Whether Lewy applied this technique to this work of Reissiger is not known. There is only one place where we know with a certainly that the right hand was used to cover the bell in this work. This brief passage of echo horn is found in the Rondeau and is shown in Example 2.[35]

The section in the Meifred *Méthode* on echo horn shows how the notes would be fingered a half step above the written pitches and performed with the bell half-stopped;[36] the above example requires the same technique of J. R. Lewy.

In this work, Reissiger calls for both low, chromatic passage work and for fast bravura sections which certainly would lie much better on the valved horn than on the natural horn. Nevertheless, it would not be impossible to perform the *Elégie et Rondeau* on the natural horn, probably a reflection of Reissiger's conservative attitude toward the valved horn.

The name of J. R. Lewy has also been associated with several of the early operas of Richard Wagner. The association of these two artists began, at the latest, in early 1842, in the period when *Rienzi* was being prepared for its première in Dresden. J. R. Lewy met with Wagner in Paris in January of that year; Wagner mentioned this meeting in a letter to Ferdinand Heine in Dresden.

> Herr Lewy, who has been in Paris for the last week & who will probably be leaving us today, spoke of Reissiger, his opera[37] & so on most respectfully & favourably;—but yesterday—as it seemed (— & as I flatter myself—) on a friendly impulse he recommended that I treat Reissiger with great circumspection:—without wishing to be too personal, he said he felt obligated to consider Reissiger weak-willed & lacking any firmness of character:—he warned me & recommended most insistently that I should go to Dresden ***sooner*** rather than later, in order to be present & see for myself. It goes without saying that I shall come to the performance of my opera & in any event shall arrive about a week early.[38]

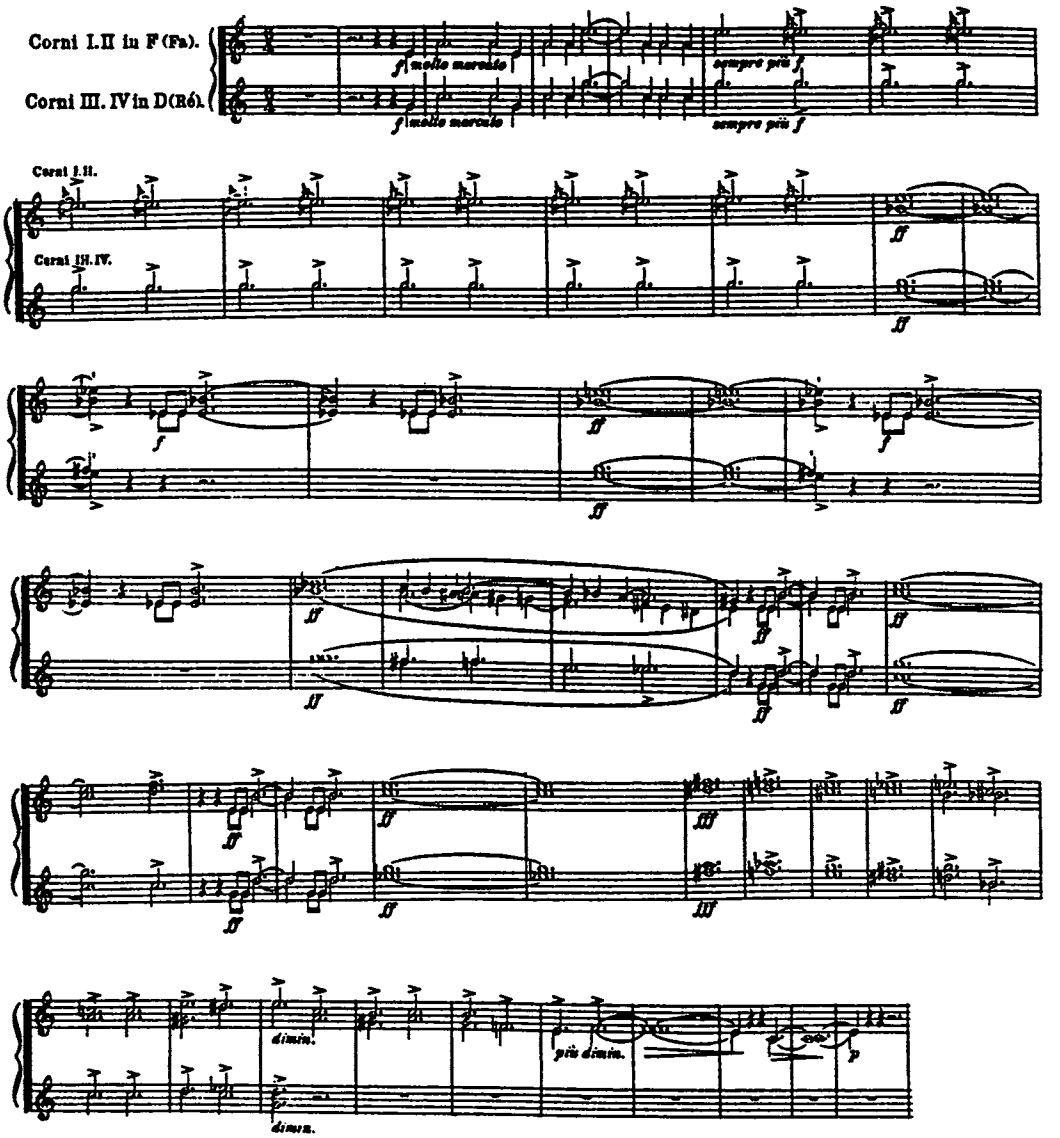
The première of *Rienzi*, which occurred on October 20, 1842, was a great success, and was quickly followed by the première of *Der fliegende Höllander* on January 2, 1843. On these premier performances J. R. Lewy played the first valved horn part. Both of these works were scored for a section of two valved and two natural horns.

While composed in Paris and undoubtedly reflecting elements of French valved horn technique, the horn writing seen in *Der fliegende Höllander* is nevertheless highly worthy of study in relation to early German valved horn technique. The revised version of *Der fliegende Höllander* dates to 1846 (with additional revisions in 1852 and 1860) and reflects Wagner's years of practical experience as conductor[39] in Dresden and contact with German valved hornists.

The orchestration calls for a pair of valved horns crooked in the keys of F, G, and A, and a pair of natural horns crooked in the keys of B♭ basso, H (B♮), C, D, E♭, E, and A. The overture opens as shown in Example 3, for valved horns in F and natural horns in D.

The distinctly contrasting writing for the valved and natural horns in this passage shows that Wagner saw a major advantage in the new instrument. Wagner used the valved horns in F to play a number of pitches not possible to perform as open pitches on the natural horns in D. There is nothing to suggest that he wished the pitches in the valved horn parts to be performed in any manner other than as open pitches using the valves; a definite concern for projection is obvious from the orchestration.

While the F crook is called for the most frequently, Wagner does request other, higher crooks of the valved horns as well. Example 4 is from Act II with the first horn crooked in A and the third horn crooked in E.



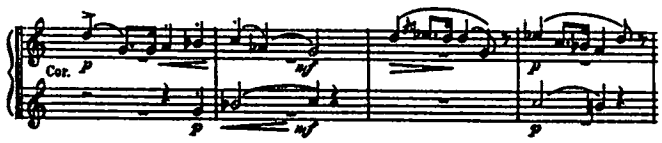
Example 3. Wagner, Der fliegende Holländer, *overture, mm. 1–46.*

The reason for using this higher crook may well reflect the higher tessitura of this passage. While it was possible to perform all the notes on the F crook, the A crook was requested for improved accuracy, and possibly to make the passage look lower, visually, as well—Wagner likely felt that because the notes ***looked*** lower they should be more playable.

Wagner allowed time for quick changes of crooks to be made, and it would appear that he intended the valved horns to use all of the requested crooks. As Meifred noted in his *Méthode,* "It will always be better, in the interest of execution, to use the crook indicated by the Composer."[40] The crooks which Wagner called for on the valved horn are generally consistent with those suggested by Berlioz in his *Grand Traite d'Instrumentation et d'Orchestration Modernes* (1843),[41] and could be applied to many valved horns of the period. While writing for valved horns in crooks other than F may have initially been a reflection of what French orchestral players were doing in this period (as in Halévy's opera *La Juive*[42]), Wagner's maintaining these crooks through later revisions must certainly reflect early German practices as well.

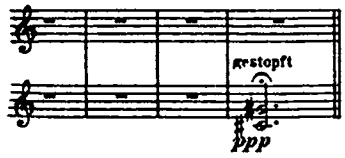
One final passage from this work should be examined with a view to stopped horn notations. An unusual notation is first found in Example 5, at the end of Act III, no. 7, in the natural horn parts in H (B♮).

This notation is seen two more times in Act III, no. 8: measure 166 in the natural horn parts and again in measure 247 in the valved horn parts.[43] The first of these additional examples is in C and the second is in F, but all three examples request the same written pitches. Wagner placed this marking in these horn parts to confirm that these pitches, if performed on a valved horn, were specifically written where they were to be performed stopped with the hand.[44]



Example 4. Wagner, Der fliegende Holländer, *Act II, no. 6, Finale, p. 254.*

The valved horn writing in general is reasonable and clear, and from his background J. R. Lewy certainly would have had no difficultly in performing these early valved horn parts of Wagner exactly as written using the originally requested crooks and standard fingerings.[45]



Example 5. Wagner, Der fliegende Holländer, *Act III, no. 7, conclusion.*

Works by J. R. Lewy

Finally, it is necessary to examine what is known of the horn technique of J. R. Lewy from his own publications. While he did not write a method for the horn, J. R. Lewy did compose some very interesting etudes. His *Douze Etudes Pour le Cor et le Cor simple* were published circa 1850 by Breitkopf and Härtel in Leipzig.[46] It is evident from these etudes that, at least in this period, J. R. Lewy considered fine hand–horn technique essential to playing the valved horn, as several of these studies require the use of a combination of valve and hand–horn technique. It may also be significant that the title is in French in light of the French use of the right hand in the bell on the valved horn,[47] as this technique is not known to have been advocated in any other contemporary German source.

In the preface to these studies J. R. Lewy gave the following instructions:

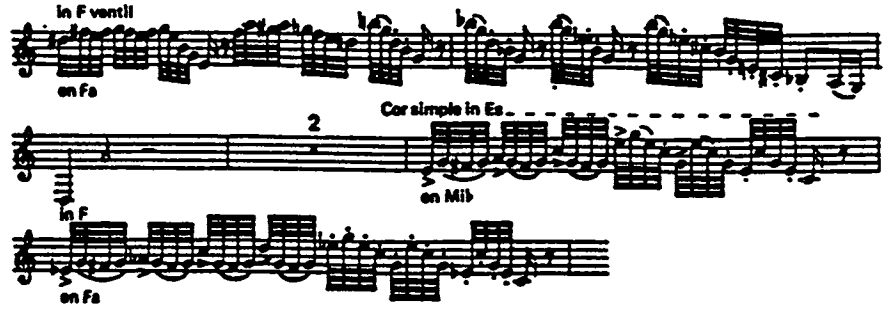
> These studies are to be played on the chromatic F horn, but the valves are to be employed only when the natural horn is inadequate for the bright and distinct emission of the sounds. Moreover, what is written for the simple [i.e., natural] horn is also to be played on the chromatic horn, the valves being used only for playing in other keys without changing the crook. When a part is marked 'In Es,' the first valve is to be used; when 'In E,' the second; and when 'In D,' the third. In this way alone will the beauty of tone of the natural horn be preserved, and the instrument acquire increased capabilities.[48]

Seven of the studies are simply extremely difficult valved horn etudes written in the standard manner, for the horn in F, with no additional notations. Studies no. 3 and 9, however, are for the natural horn, and studies no. 5, 10, and 11 feature frequent crook changes.[49] It is to these three etudes that he primarily directs his prefatory comments on using the valves to make crook changes.

Examples 6 and 7 are taken from etude no. 11. Note the editorial instructions by Lewy of "Cor simple" and "ventil," which make it clear that the F horn sections were to be performed using the valves in the standard manner, and that the E, E♭, and D horn sections were to be performed using hand–horn technique, using the valves to make the required crooks.

A group of ten etudes, edited from the *Douze Etudes,* were also published without piano accompaniment.[50] Example 8 is the solo horn version of the same passage given in examples 6 and 7, taken from Lewy's *Ausgewählte Etüden für Horn* [Selected Etudes for Horn]. In this version editorial instructions of "Cor simple," "avec le main," and "ventil" are omitted, but it is clear that the F horn sections were to be performed using the valves, and that the E, E♭, and D horn sections were to be performed using hand–horn technique, as in the *Douze Etudes.*

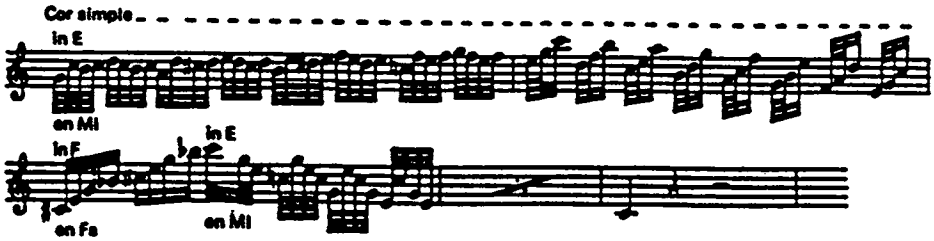
Some forethought on the part of the J. R. Lewy as a composer was necessary in order to write etudes that could be performed by this technical approach to playing the valved horn. The hornist must have all the requested crooks available as valve changes, and the music must all be notated in the proper transpositions and technically practical



Example 6. J. R. Lewy, Douze Etudes, etude no. 11, mm. 19–25.

on the requested crook as well. These three studies are challenging but highly idiomatic for this application of hand–horn technique. These etudes, which cover an overall range from written F_1 to d♭‴, would have required from J. R. Lewy virtuoso technique on both the natural and valved horns and say much of his technical ability.

We must not forget, however, that these etudes most often call for what can only be considered "standard" valved horn technique, using the valves to perform chromatic and diatonic passage work; J. R. Lewy did not treat the valved horn as a type of omnitonic horn.[51] The sections for the F crook noted above and in Example 9 all require very fluid valved horn technique. Note particularly the low-range sections in Example 9, an extremely virtuosic etude which concludes with a section of horn chords.[52]



Example 7. J. R. Lewy, Douze Etudes, etude no. 11, mm. 34–38.

The valves are clearly used as fingerings, not as crook changes, in the majority of these etudes.

A final point of interest from the preface to these etudes is that Lewy used a three–valved instrument built to operate in the standard manner, and that the third valve alone was used to finger the D horn. It would appear that J. R. Lewy preferred tuning each of the valve slides accurately for one key, and used the third valve alone instead of the first and second valves in combination; another possibility is that he wanted to avoid the extra interruptions in the air column caused by using the valves in combination.

J. R. Lewy's *Divertissement*, Op. 13, for horn and piano is another work from this period which sheds light on the unusual valved horn technique requested in some of his etudes. Based on motives of Schubert, it was published shortly after the etudes.[53] The key of G♭ is used in the following transcription (Example 10) of Schubert's famous Serenade, Op. 135. The part opens notated for horn in G♭ and alternates sections in G♭ and F.

No explanation is given in the music for this curious notation. The work later switches to E and then back to F.[54]

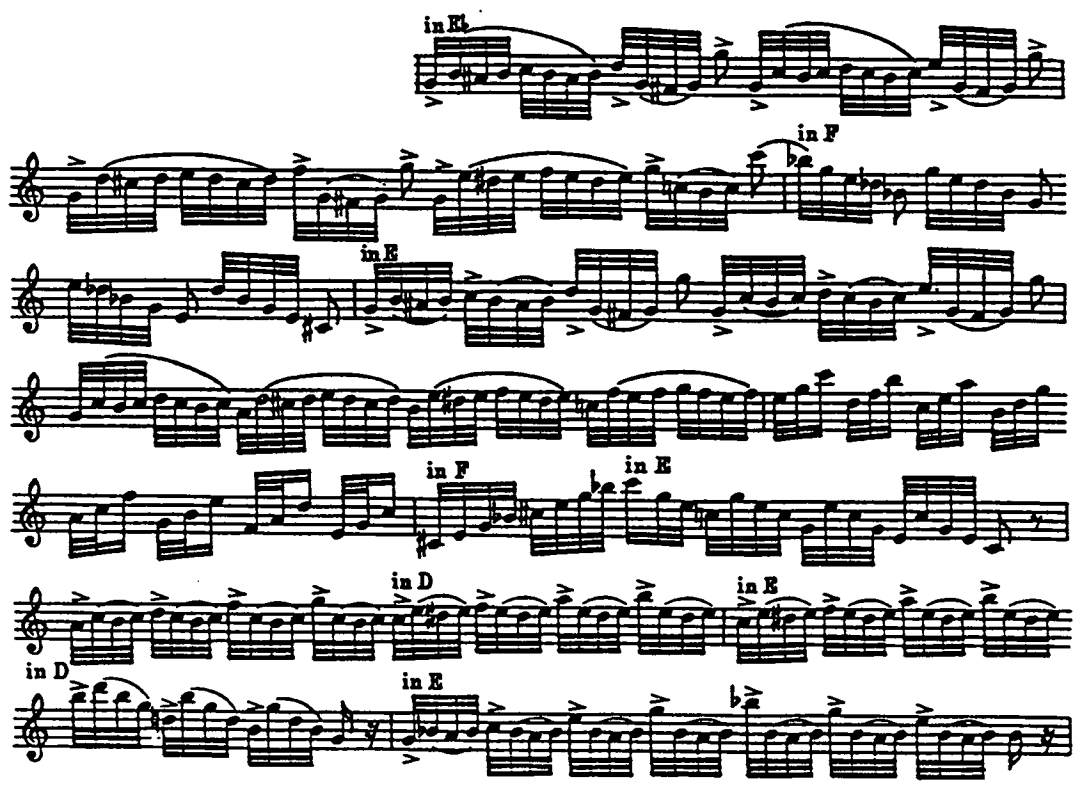
The only previous writer known to the author to have discussed this unusual work, W. F. H. Blandford, commented that the notations for horn in G♭ suggested the use of a half–step ascending valve by J. R. Lewy on his horn, rejecting the idea that he intended the phrases notated in G♭ to be performed as an echo passage.[55] Since there are no recorded references to applying a half–step ascending valve to the valved horn (presumably a fourth valve), this solution seems unlikely.

There are several other possible solutions to what is meant by this notation. The dynamics very strongly imply an echo effect. Meifred had suggested in his *Méthode* that one read echo horn passages up one–half step; however, if Lewy was in effect writing out the transposition for the hornist, the section in the above example should have been notated in E instead of G♭ to accomplish this playing on the F crook.

It is also possible that Lewy performed with "modern" stopped horn technique, reading the passages down a half step. If this is the case, this is the first known reference to this technique, and one could read the G♭ section with standard fingerings on the F crook, fully stopping the bell with the hand. This solution, however, doesn't take into account that G♭ and E are both used in this work, unless two different types of handstopping were requested.

It seems most likely that Lewy intended the entire piece for essentially hand horn performance, using the valves to crook the horn into the various requested keys, as in the three famous etudes. For example, if he crooked his horn in G (G♭ crooks have always been very rare), the key of G♭ could be obtained with the second valve, the key of F with the first valve, and the key of E with the third valve; if the G♭ crook were used, the second valve would be used for F and the first for E. This would be possible technically and would give interesting "shades and nuances" to the work, which the French favored so much.

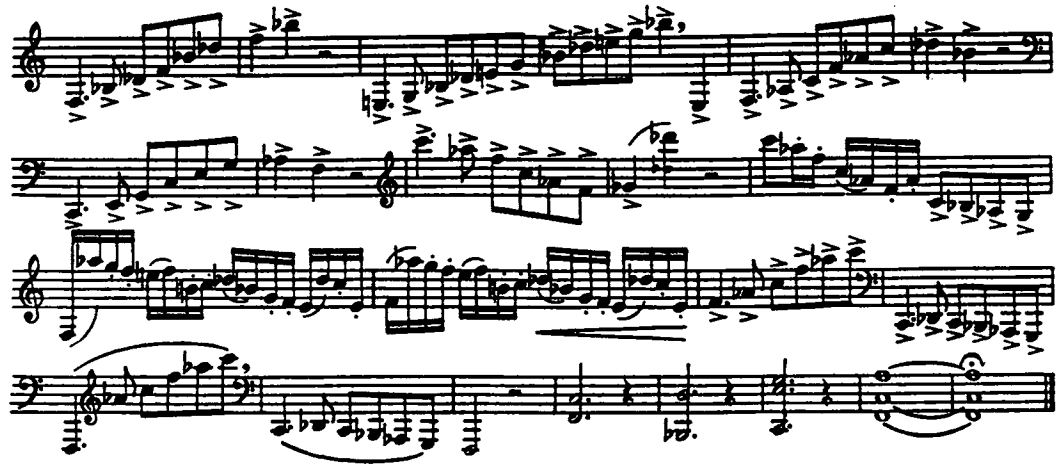
While the application of this technique of using the valves to make crook changes is somewhat different than Joseph Meifred's, at least in notation,[56] this approach to solo playing would appear to have been influenced by Meifred's technical ideas about the use of the right hand on the valved horn. This also corresponds with the ideals which J. R. Lewy



Example 8. J. R. Lewy, Ausgewählte Etüden für Horn, *etude no. 10, mm. 21–30.*

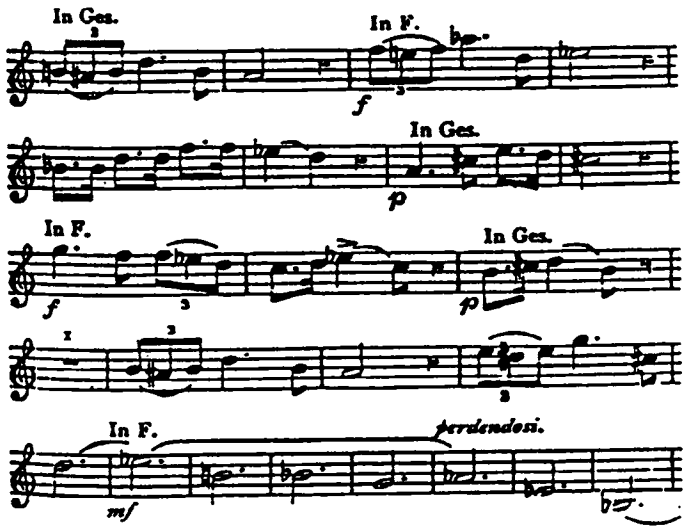
stated in the preface to his etudes. As this *Divertissement* was likely written for his personal use as a soloist, this work shows a practical application of this technique of using the valves as crooking devices.

One final work of J. R. Lewy is also highly worthy of examination, his Concerto in F. This one–movement work, published posthumously, makes an interesting comparison with his other works. Written in a free form, the Concerto is built upon alternating technical and lyrical sections; examples 11 and 12 are illustrations of both characteristics:



Example 9. J. R. Lewy, Ausgewählte Etüden für Horn, *etude no. 3, conclusion.*

The horn writing in this work gives a few more clues to his actual technique. Lewy requested an overall range from written f# to b♭" for the horn in F, somewhat restricted in comparison to his etudes. First, it is clear from these examples that Lewy was not using the valves as mere crooking devices. The second example, with its concluding chromatic scale, suggests that Lewy had a fluid valved horn technique. It would be possible to use some hand–horn technique in either example, possibly using technique similar to that seen



Example 10. J. R. Lewy, Divertissement, *Op. 13, mm. 21–43.*

in France, but this was certainly not necessary; everything could be easily performed with standard valved horn technique. It could additionally be argued that the entire work is playable on the natural horn, but the use of the chromatic scale in the second example is certainly more idiomatic for the valved horn. As this Concerto was likely written for his own personal use, it gives another perspective on his actual technique, which would appear to be, at its heart, standard technique using the valves not as crook changes but as fingerings.

Later Works of Wagner

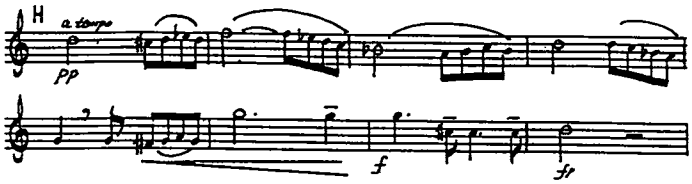
While the use of the valves as crooking devices as requested in some of these works of J. R. Lewy is very interesting, this technique would be of only minor historical interest if it were not for Wagner applying this technique to a major operatic work. These works of J. R. Lewy bear a close resemblance to the horn writing seen in the opera *Lohengrin* (1848). Wagner composed this work in Dresden while he was conductor and Lewy was principal horn. Note the frequent changes of crook required in Example 13.

This example can be performed on the A♭ crook, fingering the second valve in the G horn sections, the second and third valves in the E horn sections, and all three valves in the D horn sections, using some right–hand technique. There are numerous sections in *Lohengrin* which call for a similar technical approach; it would be utterly impossible to make the changes of crooks requested in this work in any other way than with the valves.

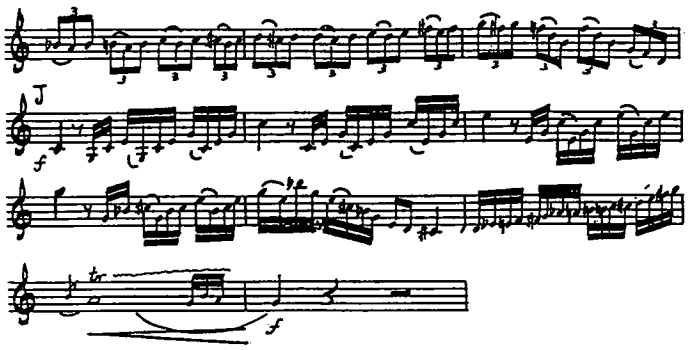
Why did Wagner change his technical approach to the horn so drastically from that of *Der fliegende Holländer*? It would appear that he was not satisfied with the valved horn at that time and turned to the technical ideas of J. R. Lewy to reform the instrument. Two sentences of the preface of the Lewy etudes deserve to be highlighted again: "the valves are to be employed only when the natural horn is inadequate for the bright and distinct emission of the sounds ... In this way alone will the beauty of tone of the natural horn be preserved, and the instrument acquire increased capabilities."[57] These comments were in fact later mirrored by Wagner himself.

The most extensive commentary by Wagner on the valved horn is found in the introductory note to the published score of *Tristan und Isolde*, which appeared in 1860. His statement about the horn and on his methods of writing for it sheds light on his underlying reasons for attempting to use multiple transpositions his horn parts in *Lohengrin*.

> The composer feels called upon to recommend that special attention be given the treatment of the horns. The introduction of the valve has doubtless done so much for the instrument that it is dif-



Example 11. J. R. Lewy, Concerto in F, mm. 154–161.



Example 12. J. R. Lewy, Concerto in F, mm. 187–197.

> ficult to ignore this improvement, although the horn has thereby suffered undeniable loss in the beauty of its tone, as well as in its powers of smooth legato. In view of this great loss, the composer, who is concerned with the preservation of the true character of the horn, would have to refrain from employing valve horns, had he not learned that excellent performers have been able to eliminate these drawbacks almost completely by especially careful execution, so that it was barely possible to tell the difference in tone and legato. In expectation of a hopefully inevitable improvement of the valve horn, it is urgently recommended that the horn players study their parts in the present score with great care in order to find the proper applications of the appropriate tunings and valves for all requirements of execution. The composer has already definitely called for the use of the E–crook (as well as the F–crook). The horn players themselves must decide whether the attachment of the respective crooks will permit the other changes of pitch that frequently occur in the score for easier notation of low tones or of the required timbre of higher tones; but the composer has generally assumed that the individual low tones, especially, can be produced by transposition. — The individual notes marked with a + indicate stopped tones; and even if these occur in tunings in which they are open, it is still assumed that each time the player will change the pitch by means of a valve in such way that the intended tone sounds like a stopped one.[58]

An important point to consider first is the loss in the beauty of the tone due to the valve and its disruption of the horn's power of legato. His comments parallel those of others in this period.[59] Wagner recognized the superior tone and legato of the natural horn compared to that of the valved horn. He also recognized that artists on the valved horn could overcome these deficiencies, and that further improvements would come.

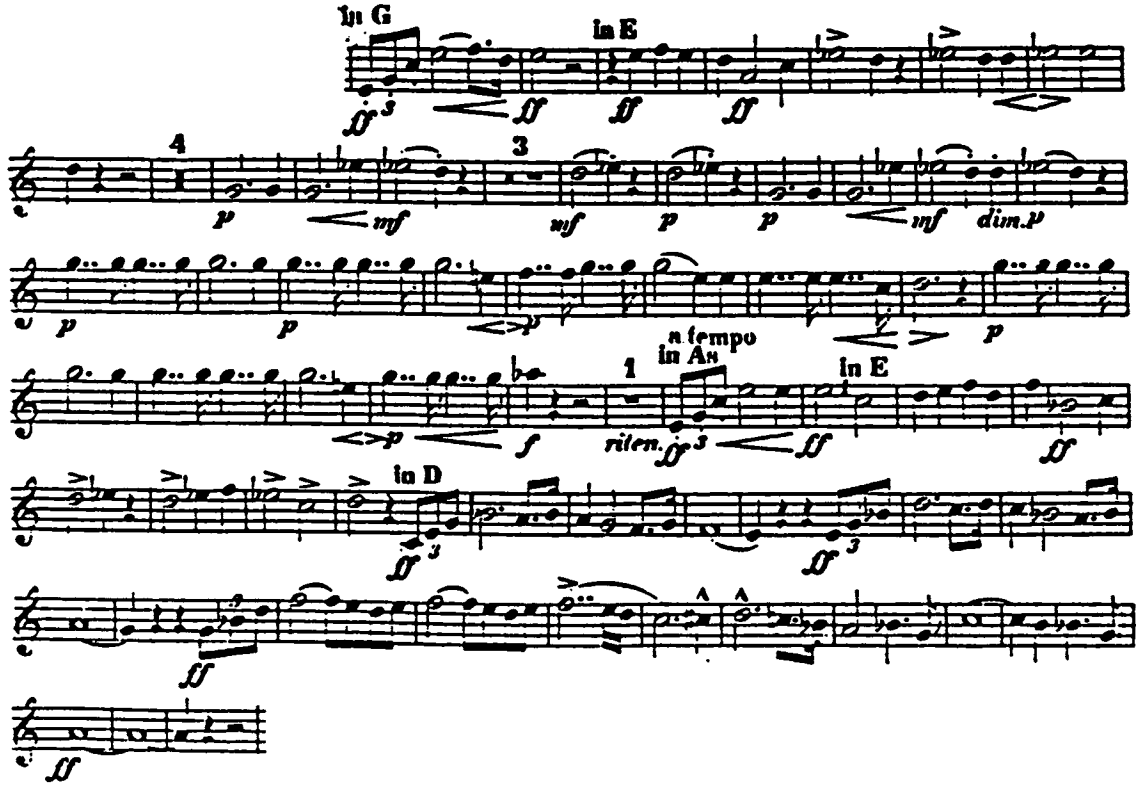
It is clearly stated that primarily the E and F crooks were to be used on the valved horn in *Tristan und Isolde.* Lower and higher crooks were also requested in his horn parts, both for easier notation of lower tones and for the tonal color of high notes. He understood that transposition was likely in the case of the low crooks (especially for the numerous, isolated low range notes frequently encountered in his later works[60]), but he did expect that the higher crooks would be used.

Finally, in *Tristan* Wagner was not looking for any variations of tonal color, except for pitches specifically requested to be performed stopped with the hand. The notation "+" was used to make it clear even if a note "looked" open from the standpoint of hand horn technique, that the hornist was in fact to play it stopped in the same manner that a stopped note would have been performed on the natural horn.

That Wagner was willing to listen to the technical preferences of hornists, as *Lohengrin* seems to evidence, is also shown in another later source. Wagner was aided in the final preparation of the score of *Die Meistersinger* (1867) by hornist and conductor Hans Richter (1843–1916).[61] Richter, who spent 1866–67 preparing the fair copy of the score of this work, is quoted as saying that Wagner at first did not understand the valved horn.[62] Richter, who became a famous international conductor, especially of the works of Wagner, and who had been a horn student of Richard Lewy (nephew of J. R. Lewy) in Vienna from 1860–1865,[63] may have been in a position to know. Two examples given by Richter, verbally reported by Friedrich Adolf Borsdorf (1854–1923, a leading German–born hornist in England) and related by Blandford, are worthy of note:

> At one time Wagner conceived the idea of reforming the horn notation altogether, and propounded a scheme for writing in one of the C clefs, presumably treating the horns as non–transposing instruments—not in itself altogether a novelty. From this he was only dissuaded by Richter's earnest representations of the confusion that it would cause.
>
> Also, when in *Die Meistersinger* he gave to the first horn the subject of Beckmesser's serenade, he actually wrote it at its present pitch for the E crook, on which he expected it to be played. Again Richter, having procured his horn, demonstrated experimentally that it was utterly impracticable, and induced the composer to transfer it to the G crook, where it remains and on which it should obviously be performed.[64]

While these sources focus on Wagner's later works, they do reveal several points. First, Wagner was entirely willing to reform the notation of the horn. But more importantly, Wagner's horn writing style as seen in *Lohengrin* undoubtedly has a lot to do with a general notion of maintaining on



Example 13. Wagner, Lohengrin, Prelude to Act III, horn I, mm. 49–114.

the valved horn the best qualities of the natural horn. This ideal is also consistent with the type of valved horn playing he would have encountered in France, the technique of which J. R. Lewy was also familiar. Wagner had undoubtedly seen an early version of the etudes of J. R. Lewy and applied his technical approach to his operatic horn parts. The pure theory behind this style of writing for the horn must have fascinated Wagner for him to go to the trouble of writing all of the required multiple transpositions.

Perhaps if one were trained for years in this method of using the valves, performing *Lohengrin* exactly as notated would be possible. In practice, however, performers attempting to use the notated method of playing these horn parts must have found it terribly difficult to change tonal centers so frequently. In spite of Wagner's grand design and the great pains taken to write the horn parts in this way, transposition seems to be the only reasonable method of performing this work.

Another factor to consider with the impracticability of the horn parts of this work as written is that Wagner, while he may have consulted with performers, was not a performer himself. Wagner is quoted as saying to a harpist who drew his attention to some of the impossible passages in his part, "I am not a harpist. I have given you my ideas. It is for you to arrange them for your instrument."[65] His impression of what J. R. Lewy recommended technically probably did not reflect the practical reality of this approach to playing the valved horn.

It is possible that J. R. Lewy may have never been personally consulted either. Wagner later recalled the "bugler" Lewy with some hostility in connection with his involvement in the formation of an orchestra union in this period in Dresden,[66] regarding him as the main spy of management,[67] and Lewy also later received the following mention in the diaries of Cosima Wagner:

> While we are talking about Josef Rubenstein's piano playing, R. says how curious it is that Jews seem neither to recognize nor to play any themes; he recalls that Levy in Dresden (not the Viennese one) played through the whole of the Holländer without recognizing the Dutchman's theme.[68]

Whatever they may have thought of each other,[69] J. R. Lewy probably never performed any of the music of *Lohengrin*. Wagner, due to his involvement in the failed 1849 revolution, fled the country and was then banned from returning to Germany. Thus, while originally intended for performance in Dresden, *Lohengrin* was not premiered until 1850 in Weimar under the direction of Franz Liszt.

The unusual horn writing in *Lohengrin* seems not to have influenced other composers, and was never repeated by Wagner. Wagner carried Lewy's ideas too far in *Lohengrin* and quickly moderated his approach to writing for the valved horn. In his later works it can be seen that Wagner relied mainly on valved horns crooked in E and F, using the valves as fingerings.

The system of using valves to make fast crook changes is quite cumbersome. There is no evidence that J. R. Lewy used this technique in the earlier part of his career in the Schubert and Reissiger works written for him, which suggests that it was a later development, perhaps influenced by the French use of the right hand on the valved horn. Even at the end of his career it would appear that Lewy

thought both in terms of fast crook changes and fingerings, with a stated ideal of maintaining the best qualities of the natural horn in his valved horn playing.

His innovative techniques would appear to have had no influence on other horn players of the period. If any one player might have been influenced, his nephew Richard Lewy (1827–1883) would be a likely candidate. A *Wunderkind* on the valved horn (he performed a "große Fantasie" for the "chromatische Waldhorn" with the Hamburg Philharmonic in 1838,[70] and in the same year appeared as a soloist with the Gewandhaus Orchestra[71]), Richard Lewy became a prominent performer in Vienna.[72] Richard Lewy was, however, passed over by Johannes Brahms for an 1867 performance of his Trio, Op. 40 (1865), as he was unwilling to perform the work on the natural horn.[73] This could indicate that Richard Lewy also did not use the techniques advocated by his uncle, which utilized a combination of valve and right-hand technique on the horn. While his unwillingness to perform on the natural horn is not indisputable proof of his not using the right hand on the valved horn as his uncle had, it would seem that if he were using this type of right hand technique he could have performed the natural horn on the Brahms Trio. Richard Lewy's own undated Concertino also shows no evidence to indicate that he used the valves to make crook changes.

Much experimentation was being carried out by early valved horn players and composers. The technique of using the valves to make fast crook changes, as seen in some works of J. R. Lewy and Wagner, was a dead end. These unusual works, however, illustrate the mutual desire of Wagner and J. R. Lewy to maintain the best qualities of the natural horn. It is in this light that the unique technical approach developed by J. R. Lewy makes its most significant impact.

General Conclusions

Much has been written about J. R. Lewy's use of the valves as crook changes. While in theory the valves could be used to make "crook changes" of sorts to perform on the valved horn as a natural horn, the valve was not invented as a mere crook changing device, but as a device to make the horn completely chromatic.[74] In practice the valves were used solely to produce chromatic fingerings by the vast majority of performers. The lone exception to this practice would appear to be J. R. Lewy himself, who used the valves not only as fingerings but also as crook changes. The unusual techniques seen in several of his works and in *Lohengrin*, while interesting, can only be considered to lie outside of the mainstream of valved horn technique. Performers in general did not use the valves to make crook changes with the purpose of playing the valved horn using hand-horn technique. This technique of J. R. Lewy was a late development and was, at its heart, a last gasp at maintaining the color changes of the natural horn on the valved horn. This short-lived application was not typical of the valved horn technique commonly seen in Germany up to then, and was probably borrowed, at least in overall concept, from the French.

Between 1835 and 1850 the technique of the valved horn was beginning to solidify; its use was becoming more widespread. Certainly some highly experimental aspects are present in several of the works examined, but in general the technique of the valved horn was beginning to stabilize in the years leading up to 1850; performers were beginning to adopt the instrument widely. Hornists like J. R. Lewy were experimenting with ways to exploit the new instrument to its fullest potential. While perhaps only a bump on the road in the development of the technique of the valved horn, the unusual techniques of J. R. Lewy give an interesting window into an important period in the history of the horn and are a prelude to the even greater changes which were to come during the second half of the nineteenth century.

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Notes

[1]This article is based on my dissertation, "The Development of Valved Horn Technique in Early Nineteenth-Century Germany: A Survey of Performers and Works Before 1850 With Respect to the Use of Crooks, Right-Hand Technique, Transposition, and Valves" (Indiana University, 1995), and is a companion article to "Beethoven's Symphony No. 9, Schubert's *Nachtgesang im Walde* and *Auf dem Strom,* and the Horn Technique of the Lewy Brothers in the 1820s," *The Horn Call Annual* 8 (1996), 5–13. Some preliminary research on this topic also appeared in modified form in my first article, "The Valve Horn and Its Performing Techniques in the Nineteenth Century: An Overview," *The Horn Call Annual 4* (1992).

[2]Also given as Carl Eduard Lewy, with the surname sometimes given as Levy or Levi for all members of the family.

[3]F. J. Fétis, *Biographie Universelle des Musiciens,* 2nd ed. (Paris: 1874; reprint Bruxellex: Culture et Civilisation, 1963), vol. 5, 294. Uri Toeplitz noted that his father was a cellist in his article "The Two Brothers Lewy," *The Horn Call* 11, no. 1 (October, 1980), 75.

[4]Toeplitz, 75, notes that E. C. Lewy studied with Frédéric-Nicolas Duvernoy (1765–1838). Toeplitz however is alone in stating Duvernoy instead of Domnich, and this is likely in error.

Toeplitz cites no source.

[5]Ibid.

[6]Fétis, ibid.

[7]Ibid.

[8]Toeplitz, 75, notes that J. R. Lewy also studied with Frédéric-Nicolas Duvernoy (1765–1838) but, as Toeplitz is alone in noting that E. C. Lewy studied with Duvernoy (instead of Domnich), this is likely in error. Toeplitz cites no source.

[9] R. Morley-Pegge, *The French Horn,* 2nd ed. (London: Ernest Benn Ltd., 1973), 163.

[10] Fétis, ibid. Toeplitz, 75, reports that J. R. Lewy was even briefly music director to the Swedish navy in 1835.

[11]Fétis, ibid.

[12] *Allgemeine musikalische Zeitung* 46 (November 13, 1839), col. 908. This notice described J. R. Lewy as being the "brother of the famous Viennese horn virtuoso."

[13]Information from C. F. Whistling, *Handbuch der Musikalischen Literatur,* Adolph Hofmeister, ed., vol. 1–3 combined (Leipzig: Hofmeister, 1844), 66, and Adolph Hofmeister, ed., *Handbuch der Musikalischen Literatur,* vol. 4 (Leipzig: Hofmeister, 1852), 58.

[14]Gottfried Weber, "Ueber Ventilhorn und Ventiltrompete mit drei Ventilen," *Cäcilia* 17 (1835), 73–105. This lengthy and interesting article contains 23 sections and is divided into seven chapters; it is a very complete and technical study of the valved horn and trumpet with a stated secondary goal of aiding those who wished to instruct themselves in how to perform upon these instruments. This last goal is in keeping with his most important work, *Versuch einer geordneten Theorie der Tonsetzkunst* (Mainz: 1817–1821, 3/1832), which presented music theory from the standpoint of self-instruction and quickly became a standard reference work on the subject.

[15]Weber, ibid., 104–105. Brief translations by the author.

[16]Toeplitz, 75. The original source and translator are not cited.

[17]One other quotation has been cited with reference to J. R. Lewy from the composer Robert Schumann. In a letter dated Easter Monday, 1839, Schumann wrote from Vienna to Clara Weick, saying,

> Lewy, a youthful horn virtuoso in Vienna, is here again; however, he seems to me to be so silly ... and so pathetic—I don't know why. And he tells such lies to the Viennese about his trip, it's enough to make one die laughing. (Trans. in Bernhard Brüchle and Kurt Janetzky, *Kulturgeschichte des Horns* [Tutzing: Hans Schneider, 1976], 227).

It is not clear, however, if this reference is to J. R. Lewy or to his nephew Richard Lewy. If the reference is to J. R. Lewy, it seems that he also had a tendency to exaggerate things, perhaps for the goal of personal promotion.

[18]Berlioz conducted concerts in Dresden on February 10 and 17, which included a performance of the *Symphonie Fantastique.*

[19]The original term used by Berlioz is *cylindres,* which some sources have translated as "rotary valves." However, as Edward H. Tarr notes in "The Romantic Trumpet," part 1, *Historic Brass Society Journal* 5 (1993), 231–32, the term actually refers, strictly speaking, to versions of the Berlin valve. Berlioz may have been using the term in a generic sense (as had, for example, Georges Kastner in his *Manuel Général de Musique Militaire* [Paris: Didot Frères, 1848]). Berlioz's main point, of course, was that most orchestras in the north of Germany, including J. R. Lewy's section in Dresden, used valved horns, while the hornists in Leipzig did not.

[20]Hector Berlioz, *Memoirs,* trans. Rachel Holmes and Eleanor Holmes, rev. Ernest Newmann (New York: Dover, 1966), 292.

[21]Tarr, "The Romantic Trumpet," part 2, *Historic Brass Society Journal* 6 (1994), 199, cites a performance by J. R. Lewy together with his brother on chromatic horns in 1826 (citing *Allgemeine musikalische Zeitung* [1826], col. 461, cited in Christian Ahrens, *Eine erfindung und ihre Folgen: Blechblasinstrumente mit Ventilen* [Kassel et al., 1986], 26), and also cites a possible earlier performance by E. C. Lewy in 1824 of a horn quartet by [B. D.] (citing *Allgemeine musikalische Zeitung* [1824], col. 856, cited in Ahrens, 116). This latter work, if it is the same Weber quartet premiered in 1819 (Tarr, ibid., 149), may however be for natural horns.

[22]For more information on these works, see my article "Beethoven's Symphony No. 9, Schubert's *Nachtgesang im Walde* and *Auf dem Strom,* and the Horn Technique of the Lewy Brothers in the 1820s," *The Horn Call Annual* 8 (1996), 8–11.

[23]C. G. Reissiger, "Über Ventilhörner und Klappentrompeten," *Allgemeine musikalische Zeitung* 39 (September, 1837), 608.

[24]Nearly the entire article is (roughly) translated in Hans Pizka, *Hornisten Lexikon* (Kirchheim: Hans Pizka Edition, 1986), 494–497; brief quotations in the present summary refer to this translation.

[25]Reissiger, 610, trans. in Ernest H. Gross III, "The Influence of Berlioz on contemporary nineteenth century use of brass instruments," part 1, *Brass Bulletin* 67 (1989), 21.

[26]Reissiger, col. 610.

[27]The most recent discussions of Meifred and the early French school of valved horn playing include my own "The Valve Horn ... An Overview," 9–13, and two articles by Jeffrey L. Snedeker; "Joseph Meifred's *Méthode pour le Cor Chromatique, ou à Pistons* (1840)," *Historic Brass Society Journal* 4 (1992), 87–105, and "The Valved Horn and Its Proponents in Paris 1826–1840," *The Horn Call Annual* 6 (1994), 6–17. Also note the correspondence sections of *The Horn Call Annual* 5 (1993) and 7 (1995) for additional commentary.

[28]Meifred, 42.

[29]Jeffrey L. Snedeker, "Joseph Meifred's *Méthode pour le Cor Chromatique, ou à Pistons,* and, Early Valved horn Performance in Nineteenth–Century France," D.M.A. diss., University of Wisconsin-Madison, 1991, 152; translation of Joseph Meifred, *Méthode pour le Cor Chromatique, ou à Pistons* (Paris: S. Richault, 1840), 4.

[30]See the article titled "On the changes and improvements that some would like to see applied to the horn" in Louis François Dauprat, *Method for Cor Alto and Cor Basse* (Bloomington: Birdalone Music, 1994), trans. ed. Viola Roth, part 1, 5 [13]. It should also be noted that Jeffrey Snedeker recently recorded the compact disc *Musique de salon* which contains three very striking examples of Meifred's valved horn technique in action; the result is that these works ***sound*** very much like the natural horn, but the technique allows for more effective modulations than would be possible without valves.

[31]Stewart Spencer and Barry Millington, eds., *Selected Letters of Richard Wagner,* trans. Stewart Spencer and Barry Millington (New York: W. W. Norton, 1987), 84.

[32]Carl Gottlieb Reissiger, *Solo per il Corno* (Frankfurt: C. F. Peters, 1980), preface by Kurt Janetzky, 2. This work is the *Elégie* portion of the *Elégie et Rondeau.* The two other works of Reissiger involving a horn solo line available to the author for study, *Vier Gesänge* for soprano, horn, and piano and *Der wandernde Waldhornist* for tenor, horn, and piano, however, bear no dedications to Lewy.

[33]Whistling, *Handbuch,* vol. 1–3, 110.

[34]There is evidence to confirm that Meifred's own students did not constantly or consistently apply this technique to their playing, either. The technique of *Notes sensibles* is only requested in two of the thirty etudes of A. Cugnot, who treats it as something of a special effect, in the same manner that he treats echo horn and vibrato (see Cugnot, *Thirty Etudes,* ed. Milan Yancich [Rochester: Wind Music, 1983], 5, 8). These etudes are dedicated to Meifred. If the unique *Notes sensibles* technique of his teacher

were to be used in every etude, it would not be requested so specifically in the music in only two locations. Cugnot won the first prize in the valved horn class at the Paris Conservatory in 1842 (Birchard Coar, *A Critical Study of the Nineteenth Century Horn Virtuosi in France* [DeKalb, IL: Birchard Coar, 1952], 162), and Cugnot was noted in Meifred's obituary as a distinguished pupil (Snedeker, diss., 49).

[35]The modern Peters edition of the *Elégie* [*Solo per il Corno*] also gives another section of echo horn at the end of the movement, not seen in the original Klemm edition as reprinted by Pizka.

[36]Meifred, 75.

[37]*Adèle de Foix*, first performed in Dresden on 26 November 1841" [translators note].

[38]Spencer and Millington, *Selected Letters*, 84–85. Wagner arrived in Dresden on April 12, 1842.

[39]Several sources state that Wagner was Hofkapellmeister in Dresden (for example, Morley–Pegge, 2nd ed., 163, and my first article [*The Horn Call Annual* 4], following Morley–Pegge's lead) but this is in error; Reissiger instead held this position.

[40]Meifred, 71, trans. Snedeker, diss., 239.

[41]Berlioz suggests valved horns crooked in E, F, G, and A♭ as being the best (Hector Berlioz, *A Treatise on Modern Instrumentation*, trans. Mary Cowden Clarke [London: Novello, n.d.], 141).

[42]For more on the topic of crooks in *La Juive* in particular see the correspondence section of *The Horn Call Annual* 7 (1995), 14–15. The opera *La Juive* is known to have been a significant influence upon Richard Wagner (Curt von Westernhagen, "Wagner, Richard," *The New Grove Dictionary of Music and Musicians*, Stanley Sadie, ed. [London: Macmillan Press Ltd., 1980], vol. 20, 105). Wagner himself commented favorably on the work in a review of a production of Halévy's later opera *La reine de Chypre* (1841) (Snedeker, diss., 76, citing Richard Wagner, *Richard Wagner's Prose Works*, trans. William Ashton Ellis [London: Kegan Paul, 1898; reprint, New York: Brode Brothers, 1966], vol. IV, 220–221—the same passage may also be found in Snedeker, "The Early Valved Horn ... in Paris 1826-1840," *The Horn Call Annual* 6, [1994], 11–12).

[43]Noted in John Dressler, "The Orchestral Horn Quartet in German Romantic Opera," D.M. diss., Indiana University, 1987, 91.

[44]Hector Berlioz was also quite clear on this topic. In his *Traite d'Instrumentation* Berlioz called attention to a "dangerous abuse" carried out by some horn players, noting also that the solution was within the grasp of every performer.

> Many composers show themselves opposed to this new instrument, because, since its introduction into orchestras, certain horn-players, using the pistons for playing ordinary [natural] horn parts, find it more convenient to produce by this mechanism, as open notes, notes intentionally written as closed notes by the author. This is, in fact, a dangerous abuse; but it is for orchestral conductors to prevent its increase; and, moreover, it should not be lost sight of that the horn with pistons, in the hands of a clever player, can give all the closed sounds of the ordinary horn, and yet more; since it can execute the whole scale without employing a single open note. Since the use of the pistons, by changing the key of the instrument, gains the open notes of other keys, in addition to those of the principal key, it is clear that it must also secure the closed notes. (Berlioz, *Treatise*, 141–142).

This passage is especially relevant to his own *Symphonie Fantastique* (1832), movement IV, where in a note to the published score (1845) Berlioz requested at the beginning of the movement that the horns "produce the stopped tones with the hand without using the valves" ("faites les sons bouchés avec la main sans employer les cylindres"); this instruction is almost universally ignored today. (See Hector Berlioz, *Fantastic Symphony* [New York: W. W. Norton, 1971], ed. Edward T. Cone, 122, for this marking, not seen in all editions of the work [noted in Snedeker, diss., 77–79]).

[45]Dressler, 70, points out the possibility of using the valves to make the various crook changes requested in the high horn parts (crooking the instrument in high B♭ or A) and, presumably, using natural horn technique to perform the parts. Based on the preceding discussion of French valved horn technique, particularly Meifred's comments on the use of crooks, this seems highly unlikely. There is no evidence to suggest that Wagner saw the valves as merely a way to change crooks in *Der fliegende Holländer;* the valves are instead used as fingerings on a fully chromatic instrument.

[46]W. F. H. Blandford, "Studies on the Horn. II. Wagner and the Horn Parts of *Lohengrin*," part 2, *The Musical Times* 63 (October 1, 1922) 694. Stephen Lyons Seiffert, in "Johannes Brahms and the French Horn" (D.M.A. diss., University of Rochester, 1968), dates these etudes to the 1830s without stating a source. This work is listed in vol. 4 of Hofmeister's *Handbuch*, 58, indicating a publication date between 1844 and 1851. Numerous sources date this publication to ca. 1850, and one, Barry Tuckwell, *Horn* (New York: Schirmer, 1983), 88, dates the work to 1850; Tarr, however, dates this publication to 1849 (Tarr, "Romantic," part 2, 200, citing Ahrens, 20).

[47]Although the title being in French may also be of no real significance, as other works were published in the same manner in this period.

[48]Trans. in Blandford, ibid.

[49]Tarr, ibid. The author unfortunately did not have access to a copy of the original etudes.

[50]Lewy, Joseph Rudolph, *Ausgewählte Etüden für Horn* (Leipzig: Hofmeister, 1969) is one example of this edition (also published by Belwin as *Ten Progressive Studies for Horn*, an incorrect translation of the title; "selected" is a better translation of "ausgewählte," as noted in Johnny Pherigo, "Horn Study Materials: A Survey of New and Reissued Publications Available in the United States with a 1965–1985 Copyright," *The Horn Call Annual* 2 [1990], 34); it is not clear, however, if this version was also published ca. 1850 or came out at a later date.

[51]The omnitonic horn was essentially a natural horn with a single, long graduated valve which could be used to place the horn in a variety of keys. The system was not designed to change crooks rapidly; it could only be operated during rests in the music, and the instrument was otherwise performed with exactly the same technique as the natural horn. While the invention did achieve some success in France, the omnitonic horn was not a fully chromatic instrument, and could not be performed upon as such; the valved horn, in contrast, was a fully chromatic instrument.

[52]Horn chords, called for by a number of composers including Carl Maria von Weber (1786–1826) in his Concertino (1806), are produced by the simultaneous playing of one pitch with the lips and singing a second pitch with the voice.

[53]Blandford, ibid., citing the plate numbers of the publications.

[54]Ibid. The author unfortunately did not have access to a copy of this work outside of Blandford's article. Hans Pizka has announced that he will be publishing the Op. 11 and Op. 13 *Divertissements* in 1997, a welcome addition to the repertoire.

[55]Ibid., 694–95. Blandford, 695, states "it is unthinkable that Lewy should have intended playing the first twenty–two bars in a manner suggesting a ventriloquist imitating a cornet–player on the roof, and blurting into the full tone of the horn at the twenty–third bar."

[56]Meifred's system used no special notations. Meifred was primarily concerned with preserving the proper relationships of open and half-stopped sounds in new tonal areas—the *Notes sensibles*—and relied on the performer to recognize the appropriate locations to perform pitches as "sensitive tones." While Lewy used the valves as a type of crooking device, with a notated change of key indicating the effect, Meifred only used the valves as crooking devices in the sense that a short-term modulation was found in the music to a key area that had many notes available using one fingering, the "effective" key being those produced by a crook and the "false" keys being those produced by the valves (Meifred, 28, 47, and 70).

[57]Trans. in Blandford, ibid., 694.

[58]Richard Wagner, *Tristan und Isolde* (Leipzig: C. F. Peters, [ca. 1911]; reprint with trans. New York: Dover, 1973), vii.

[59]For example, consider the contemporary comments of composer and author Ferdinand Gleich (1816–after 1866). In his *Handbuch der modernen Instrumentirung* (Leipzig: C. F. Kahnt, [1860]), he made the following commentary on the valved horn and its use in the orchestra.

> It is used [by composers], but the beautiful, noble, and pleasant sound of the waldhorn has nearly disappeared with the insertion of valved horns into our orchestras; only a few hornists still go to the trouble of using it on older works written for the simple horn. The majority of the players take everything on the valved horn, and transpose each and every horn part on the valved horn in F, probably only to save themselves the bother of plugging in crooks! With compositions that were written specifically for the valved horn, which therefore are impractical on the natural horn, it is naturally in its place, but to use it [the valved horn] on works of Beethoven or Weber is a vandalism. (Gleich, 41).

[60]Passages of this type are found in E♭, D, and C in *Tristan*. Wagner appears to have used this notational device to avoid requesting low notes not possible on natural horn but is not rigorous in its application. In addition, as he hinted in the note to the score, writing the lowest part in a lower crook does avoid writing excessive ledger lines.

[61]Hans-Hubert Schönzeler, "Richter, Hans," *New Grove*, vol. 15, 847.

[62]Tom S. Wotton, "Notation of the Horn: Some Altered Meanings," *The Musical Times* 65 (September 1, 1924), 810, citing Paul Gilson in *Le Guide Musical*, January 2, 1910.

[63]Tarr, "Romantic," part 2, 200.

[64]Blandford, "Studies ... Wagner," part 2, 697.

[65]Quoted in Wotton, 812; the original source is not known to the author.

[66]Richard Wagner, *My Life*, authorized trans. (New York: Tudor, 1936), 463.

[67]Ernest Newman, *The Life of Richard Wagner* (New York: Alfred A. Knopf, 1937), vol. 2, 47.

[68]Martin Gregor-Dellin and Dietrich Mack, eds., *Cosima Wagner's Diaries*, trans. Geoffrey Skelton (New York: Harcourt Brace Javanovich, 1978), vol. 1, 523. The entry is dated August 14, 1872.

[69]There is one later quote of Wagner, made in reference to an 1864 performance of the overture to *Der Freischütz*, which is sometimes cited in support of their close relationship as artists (for example, Morley-Pegge, 2nd ed., 163). Wagner stated "Under the sensitively artistic leadership of R. Lewy, the horn players patiently changed their whole style of blowing." (Richard Wagner, *Über das Dirigieren*, trans. in Brüchle and Janetzky, *Kulturgeschichte*, 218). Unfortunately, the quote actually refers to a performance in Vienna by E. C. Lewy's son Richard Lewy (1827-1883), not J. R. Lewy. The previously cited quotation of Cosima Wagner likely makes reference to the Viennese Richard Lewy as well.

[70]Kurt Stephenson, *Hundert Jahre Philharmonische Gesellschaft in Hamburg* (Hamburg: Broschek, 1928), 117, cited in Seiffert, 46.

[71]Pizka, 278.

[72]Wagner's comments on R. Lewy have already been noted.

[73]David G. Elliott, "The Brahms Trio and Hand Horn Idiom," *The Horn Call* 10, no. 1 (October, 1979), 65.

[74]As was noted in my previous article on the Lewy brothers in the 1820s; see especially endnote 52 in *The Horn Call Annual* 8, 13.

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