The Horn Call

Journal of the

International Horn Society

Internationale Horngesellschaft

La Société Internationale des Cornistes

Sociedad Internacional de Trompas

Spring 1975

Year Beginning July 1, 1974 — Ending June 30, 1975

The Horn Call is published semi-annually by the International Horn Society
1386 E. Barstow
Fresno, California
93710, U.S.A.
Editor:
James H. Winter

Published schedule is November first and May first. All material intended for publication should be directed to the editor's office by September fifteenth and March fifteenth respectively.

Editorial copy should be typewritten and double-spaced. Musical notation must be on white paper with black ink.

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Advertising rates on request.

The 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.)

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LETTERS TO THE EDITOR

Editor's note: The editorial board of the Society encourages members to express their opinions concerning any subject of interest through this *Letters to the Editor* column. Preferably, letters should be no more than 300 words in length and we necessarily reserve the right to edit all letters.

All letters should include the full name and address of the writer.

Photographs of appropriate subjects are also of interest. Credit will be given to the photographer and the photograph returned to the sender, if requested.

BRIEFE AN DEN REDAKTEUR

Anmerkung des Redakteurs: Die Redaktion der Horngesellschaft möchte alle Mitglieder aufforden, ihre Meinungen und Gedanken zu allen interessanten Themen in der Kolumne 'Briefe an den Redakteur' auszudrucken. Wir schlagen vor, dass die Briefe nicht länger als 300 Wörter sein sollten und wir behalten uns notwendigerweise das Recht vor, alle Briefe zu redigieren.

Alle Briefe sollen den Namen und die Anschrift des Schreibers tragen.

Wir interessieren uns auch für Photographien passender Gegenstände. Dem Photographen wird eine Anerkennung zuteil, und er erhält auf Bitte die Photographie zurück.

CARTAS AL EDITOR

Nota del editor: La junta editorial de la Sociedad desea animar miembros a expresar sus opiniones tocante tópicos de interés por esta columna — *Cartas al editor*. Les sugerimos que estas cartas no contengan más de 300 palabras de contenido; y además, necesariamente reservamos el derecho de redactar todas las cartas.

Las cartas deben incluir el nombre, apellido, y dirección del escritor.

Fotos de tópicos apropriados también nos interesan. Acreditamos al fotógrafo y devolvemos la foto al enviador en demanda.

LETTRES AU REDACTEUR

Sous cette rubrique, le Comité de Rédaction désire encourager les Membres de la Société à exprimer leurs opinions sur tout sujet d'interêt ayant trait au cor.

En règle générale, ces lettres ne devront pas dépasser 300 mots. Le Rédaction se reserve le droit d'y apporter des remaniements mineurs.

Toute lettre devra comporter les nom, prénom usuel et adresse de l'auteur.

Les Photographies des sujets appropriés sont également susceptibles d'être publiées. Le nom du photographe sera mentionné et le cliché retourné à l'expéditeur, sur demande.

LETTERE AL REDATTORE

Osservazione dal redattore: Il comitato editore della Societá desidera incoraggiare i suoi membri a voler esprimere i loro pareri con rispetto a qualsiasi soggetto interessante circa a detta colonna "Lettere al Redattore."

E a suggerire che le lettere scritte

non siano di una lunghezza di più di 300 parole e necessariamente vogliamo riservare i diritte di redattore a tutte le lettere.

Accluso nelle lettere si dovreble leggere il nome intero e l' indirizzo dello scrittore.

Fotografie de soggetti adatti sono anche d'interesse. Credito sará dato al fotografo e la fotografia sará restituita al mittente a richiesta.

Sir:

Now Easter is gone! I was attacked by quite a cold, and thus forced to stay indoors. Poco a poco the heap with the unanswered letters diminished . . . and here we are.

My last meeting with Ib . . . was in Gothenburg in the beginning of this month in connection with a "Scandanavian Horn Workshop" (from which I am sure you will get a report): "Jim Winter has asked me to send him a list with the names of the hornists in the Scandinavian orchestras . . ." Ib: "Oh no, he just got a splendid one from me?! That should not be necessary for still some time. We *very* seldom change people here!"

Since you mention Iceland: They have extended their horn-section in Reykjavik from 4 to 5, and the new co-principal is Christina M. Tryle from New Mexico, who was at the Workshop in Pomona, and has been studying with me in Oslo since May last year.

Philip Farkas visited Oslo in January; it was a most pleasant visit. He gave some lectures and enchanted everybody.

Best greetings . . . looking forward to seeing you in Canada!

Yours,
Frøydis Ree Hauge
Oslo, Norway

Editor's note: The preceding letter was in response to a request for horn personnel in Scandinavia. Readers are referred to *The Horn Call,* Vol. III #2 for the horn personnel in the Scandinavian orchestras.

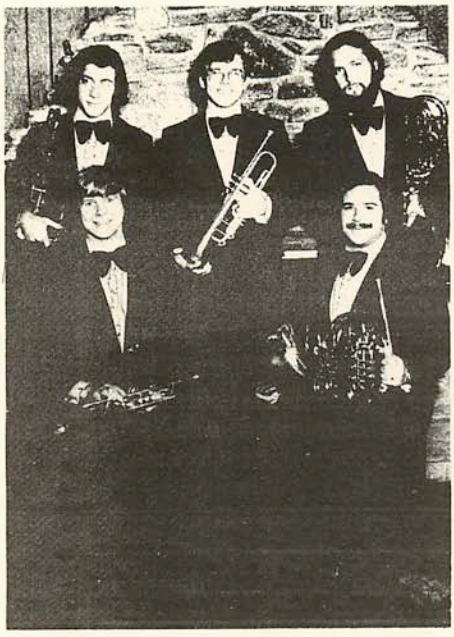
Sir:

My compliments to all involved in producing an excellent journal such as the *Horn Call.* I always wait expectantly for it to arrive.

I have enclosed a short paragraph on the history and activities of the Annapolis Brass Quintet, America's only full-time brass quintet, of which I have been hornist since the fall of 1973. I feel this will be of interest to many as few chamber ensembles exist in the United States on a full-time and independent basis, let alone a brass quintet.

The Annapolis Brass Quintet had its genesis in 1966 at the United States Naval Academy by two of its present members who were members of the Naval Academy Band. In 1971 the Quintet was organized as a professional ensemble. The Annapolis Brass Quintet now has a ten month season extending from mid-September to mid-July that is comprised of public school concerts in the Baltimore-Washington, D.C. area, college concerts,

community concert series tours, recording and various miscellaneous bookings such as the "Music at Maryvale" chamber concert series (Baltimore, Md.), the Folger Shakespeare Library concert series (Washington, D.C.), and radio concerts (WQXR - New York, N.Y.). In the summer the Annapolis Brass Quintet is the resident ensemble at the International Music Camp at the International Peace Gardens on the North Dakota-Manitoba border. In November 1975 the Annapolis Brass Quintet will tour Europe, visiting at least six different countries. The Annapolis Brass Quintet has recorded for Crystal Records of Los Angeles.



The ABQ members pictured are: David Cran (trumpet) and Calvin Smith (horn) - seated. Tim Beck (trombone), Robert Suggs (trumpet) and Robert Posten (bass trombone) - standing, left to right.

With best wishes from Annapolis, Maryland -

Calvin Smith

Sir:

The following is an account of the International Masterclasses which took place in the Villa Huegel Essen, West-Germany, in September 1974.

Perhaps you may be able to include it in a future edition of the *Horn Call*.

If this is of interest, the writer is a member of the Australian Broadcasting Commission's Queensland Symphony Orchestra, and at the time of writing was studying with Hermann Baumann in West-Germany.

Sincere regards and thanks for the wonderful job you are doing for the *Horn Call* and the I.H.S.

Gareth Freebury
Yeronga, Australia

From September 21st - 28th 1974, in the palatial former Krupp family's Villa Huegel in Essen West-Germany, occurred an event that should prove to be a milestone in the history of the horn. This was the first, of what is hoped to be many, International Horn Master-Class weeks conducted by Germany's great virtuoso and teacher Hermann Baumann. This was run by the Folkwang Hochschule Essen, in conjunction with the City of

Essen. Simultaneous with the horn were Master-Classes in piano and violin, also in the Villa Huegel.

A concert given by the respective professors on Friday 20th Sept. opened the Master-Classes week. The highlight of the concert (for hornplayers anyway!) was a performance of Brahms Horn Trio with some magnificent hornplaying by Hermann Baumann.

Although the number of active participants was not big, it was truly international with hornists from Australia, Canada, Germany, Holland, Israel, South-Africa and Switzerland. The number of "hospitanten", or listeners, varied daily from about eight to well over one hundred at the final public lecture/demonstration, again with a cross-section of nationalities.

For the "actives" each performed a Mozart concerto of his choice and much time was devoted to style of performance and understanding of the music that is perhaps central in horn repertoire. Undoubtedly there were several highpoints in the week. Hearing four original hand-horns playing Rossini's Rendez-vous de Chasse was a "bolt from the blue". All one's preconceived notions about horns and hornplaying are modified after hearing this quartette culminating with the magnificent sound of that final chord. Also, when one has heard Mozart's concerti demonstrated on hand-horn, one realizes that in France they were not so silly after all to continue teaching hand-horn, in the Conservatoires, long after the rest of the world had stopped. We can all learn and profit today from the hand-horn, even if we never perform publicly upon it.

Much worthwhile time was devoted to the essence of hornplaying in the form of the Baumann Warm-ups. Many of today's exercise books could well be re-written in the light of the exercises and the thoughts underlying them. Time too was spent on the playing and understanding of orchestral studies from German repertoire, so that those who were not of German origin might have a better understanding of what they play.

The week finished with a public concert in the concert hall of the Villa Huegel; the horn and piano classes combining for this concert. The horn class was represented by some very fine performances, particularly from Meir Rimon (Israel) Beethoven Sonata and Ab Koster (Holland) Schumann Adagio and Allegro. Two quartettes were played, the previously mentioned Rossini on hand-horns and a quartette by Mitushin, which is a fine piece of horn writing. Interposed between the horn pieces were piano sonatas!

So ended a truly international week devoted to the horn, but before ending mention must be made of the fine accompanyment from Annelore Lepetit, wife of Jean-Pierre Lepetit (fourth horn in the Baumann recording of the Schumann Concertstuck and maker of very fine horn mouthpieces). She has accompanied both Hermann Baumann and Johannes

Ritzkowsky in performance and therefore added much to the musicality of the proceedings.

For those who never made it this time I hope you get to the next one. You will never regret it and it could be you who will let some fresh air into your preconceived notions about hornplaying!

Friends:

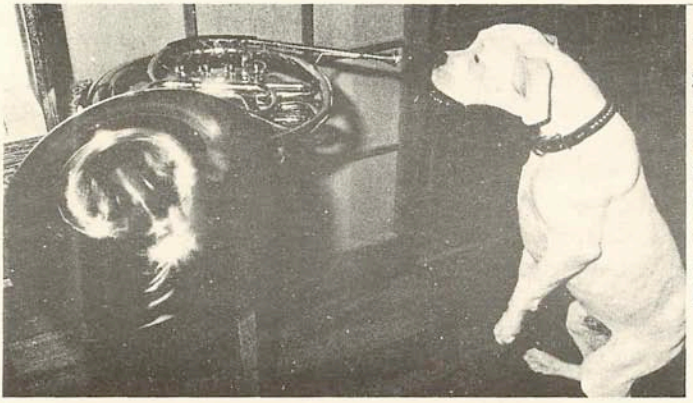
Things around the Kelly household are back to normal again! At least, we are gradually getting there!

On March 4 I woke up with strange pains in my shoulders. I had Arlene to drop me off at the hospital on her way to school. In the doctor's office, I had a heart attack - which, if you are going to have one, is a nice place to have it! They put me in the intensive care unit for a couple of weeks and finally let me come on home on Easter day.

The doctors and nurses and others in the hospital gave me the best of care and did all that they could to make my stay comfortable. I discovered what a liquid diet, a soft diet and a regular diet was in Japanese food. It wasn't exactly what I would have eaten at home; but since I like Japanese food, I enjoyed it. The nurses were quite concerned that my feet stuck out about eight inches beyond the foot of the bed, but with an extra blanket from home, that problem of a foreigner in a Japanese hospital was solved!

In a Japanese hospital, the family is expected to do many of the nursing and cleaning jobs in the hospital room. Because of this, Arlene stayed with me nearly two weeks, sleeping in the room with me. Our sons, Glenn and Larry, brought her food into her each day and stayed some during the day to allow her to go home. Japanese ladies taking care of other patients helped her considerably in learning the routine of dinner trays, garbage disposal and the like. How thankful we are for them, for the hospital medical staff for their care and for Christian friends in Japan and around the world for their prayers and concern.

I have been home a month and have finally been told I could work



"Horn playing is going to the Dogs!" "Caesar" attempting his first tune on Kelly's horn. *(Taken by Chunichi Shimbun)*

in the office a very limited time each day. In an effort to conserve as much energy as possible and to clear up my desk of a good deal of mail that has stacked up, I am duplicating this letter. My interest in writing you is as strong as ever. My doctor's restrictions are also strong, however, and it seems wise to follow them carefully.

We always appreciate your interest and prayers, and will look forward to hearing from you.

Merle Kelly
Nagoya, Japan

P.S. SOS!!! Need advice from horn-player doctors about heart patients tooting horn again.

Sir:

Let me say how interesting the successive copies of *THE HORN CALL* are becoming to us as they reach the Paxman firm — do please keep up the good work.

Looking through Vol. IV, No. 1 (Autumn 1973), I note that Professor Marvin C. Howe has the absolute answer to the question of handstopping: full marks to him. Good marks also hopefully to Dr. Malcolm Henderson on completion of his pirouette — at the moment he seems to be facing the other way; the sources he quotes in his conclusion are regrettably suspect, having themselves all been misled by a notably mistaken authority of a generation ago in the field of musical acoustics. Morley-Pegge's book too, though dear to me for many aspects of his subject (as he was himself — I knew him very well), is not strong on acoustics; that is a topic about which he openly admitted knowing little and caring less. His dubious reception of Blaikley's ideas must not be taken as a balanced assessment, as he confided to me that he could not understand what it was all about. He only knew that his own method of handstopping (assuming a ½-tone rise for horns pitched from D to F) worked, and no one has ever disputed that. It was tacitly owned that the whole subject of acoustics was paid only lip-service in his otherwise fascinating and delightful book, and to those who knew him it is plain from his treatment of it that this was out of duty rather than interest. Even so he fared better than a more recent standard work, which would have us believe that mathematically the harmonic series progresses by octaves; its author is thus led into some weird inferences about the horn's acoustics.

I have myself played professionally for nearly 30 years, and for much of that time have been actively engaged in designing horns. For some time a completely logical explanation (to me) for every phenomenon encountered has rested in one comprehensive theory, answering every question ever raised — about open and stopped hand-position (what is this about two 'regimes'?), pressure-wave patterns and air-displacement in tubes, wild surmises about end-correction at a bell-mouth, everything. Having persistently subjected this theory to every test that has occurred to me (which I intend to

continue) and feeling that I had been sitting on this information long enough, I decided earlier this year to publish it: a version for the horn's theory in the forthcoming edition of Grove's Dictionary, and another in the next issue by the Galpin Society. Since one waits so long for these learned works to appear, and as all this is of such topical interest in your own pages, I have compiled a condensation (with illustrations) which I now enclose to you. I know it is very long for your purpose, but I do feel that since it is so all-embracing (covering indeed the matter which might be touched on by a dozen separate contributions), it could not very well be shorter; much is omitted as it is.

Anyway, here it is — the fruits of many years' work, laid on the line.

Yours,
Richard Merewether
London, England

Sir:

Enclosed is my effort and contribution to the continuing dialogue (meaningful dialogue?) regarding the great debate on stopped horn. I think it contains a few ideas and observations not previously discussed as well as review of previously published statements on the subject. I must admit to some "touch-in-cheek" attitude and hope I don't get a sore tongue in consequence.

I enjoyed the Sixth Annual Workshop very much, indeed! The artists and clinicians were outstanding in every way. I extend my congratulations and thanks to Bob Marsh, Ball State University, to you, and all the officers and Advisory Council of the International Horn Society for a most delightful week. Best wishes for more.

HORNPOWER!
Dr. Paul M. Mansur
Durant, Oklahoma

P.S. I am quite taken with the Cooke Nocturnes and plan to perform them this fall. Enclosed is a photo of myself with the "Horn Power" T-shirt. Perhaps a demand will arise among us for such an item with the I.H.S. logo.

From The Editor's Desk

This column is going to be remarkable for its brevity, and will consist of a trio of accolades, an expression of thanks, and a plea:

First, the accolades (and would I had the means to make a public presentation of some kind, of something tangible): The new Secretary-Treasurer of the International Horn Society, Mrs. Nancy Fako, has been turning in a superb job of getting everything in order — membership lists, mailing addresses, and above all, finances. Your editor and all members of the Society are deeply indebted to her. Backing her steadily, and taking a sizeable chunk of the load by obtaining use of the computer center at Baylor University, Vice President William Robinson is one of the reasons the I.H.S. is still in existence. Finally, and largely unheralded by virtue of her behind-the-scenes position, Suzanne Riggio has served very effectively as the advertising agent for the journal. Ladies and Mr. Robinson — many thanks to you, from your editor for all of the Society.

Secondly, it is only proper again to thank all of our members who have shown great patience and faith during the past year. It goes without saying that both the Secretary-Treasurer and the Editor have received countless letters, asking for information, but only very rarely have they been even brusque, much less truly caustic.

Finally, a plea: Some years ago, when your editor spent some time in the Chicago area, there was a column in the *Chicago Tribune*, entitled "In the Wake of the News." The columnist always sprinkled his writings liberally with a little couplet, "The Wake depends/Upon its Friends." (The word "HELP" was added, sometimes only once, sometimes in quantity.) The *Wake* depended upon its friends; *The Horn Call* depends absolutely upon its readers — letters, news items, copies of reviews, articles of technical or historical nature . . . One reader has suggested a series of "profiles" of celebrated hornists; for obvious reasons, your editor is a little at a loss as to where to start. A simple postal-card from a reader, with a name, a statement of the present position of the person to be "profiled," and if possible an indication of the address of the "profilee" would be of great help.

HELP!
The Call Depends
Upon Its Friends
HELP!

Musical "Middletown" Revisited

Random Memories of the Sixth International Horn Workshop
(not necessarily in order of importance)

— Malcolm C. Henderson

The Ball State University campus is unexpectedly — to me — large; so large, that by walking through the main faculty garage on the way from dormitory to University Hall, the center of activity, you got only half as wet as you did walking outside the whole way. In other words, it rained quite a lot, but that did not dampen the delightful feature common to all the Workshops: the informality and companionship of the cafeteria meals. If one is not cursed with shyness, they are wonderful times to make new acquaintances and to get some idea of the personal quality of the many distinguished artists that come to these events, as well as those of the rising generation. Even the sometimes long waits in line are an opportunity for gossip and new contacts.

As last year, among the high spots were Frøydis Hauge's contributions; this year not only formally in the final concert Friday night (*Variations on a Theme by Haydn* — I. Graziani) and on the Wednesday evening program (*Morceau de Concert* — Saint-Saens) but also in a lecture demonstration with the intriguing title "The Use of Prune Music in Horn Literature." It turns out that a "prune" in Norwegian seems to be the same as "old chestnut" in English. She provided a useful list of a couple of dozen titles of prunes for informal use, about half suitable for use in church. Some, like Dukas' *Villanelle* seemed a little long and difficult for knockabout use! But she demonstrated many of them with great wit and good humor.

The toughest technical moments for the audience were the attempt by Dr. Aebi and me to lay to rest the idea that full-stopping does *not* raise the pitch of the open horn by a half tone. Dr. Aebi published (reprinted from the "Brass Bulletin") in last Spring's *Horn Call* a full account of his experimental laboratory investigations of just what happens inside a horn when it is stopped. My own attempts at explanation, also in the *Horn Call*, were purely qualitative, though I reached the same conclusion. Whether we convinced anyone by the lecture or not is uncertain; an old quotation runs: "Nobody comes away from a lecture on a controversial subject saying 'Why, yes, of course!' "

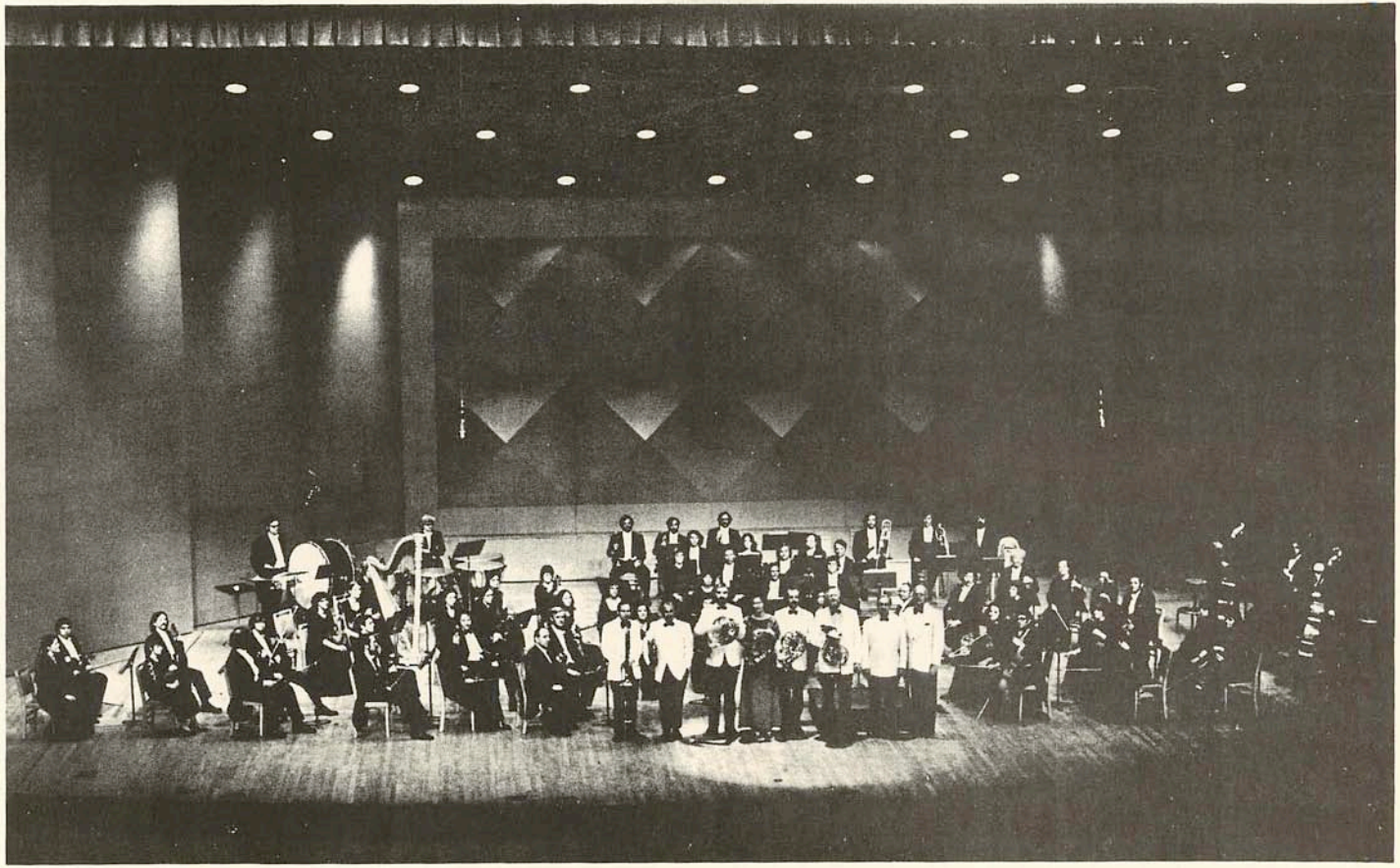
A pleasant feature this year was that considerably more music, either new or unfamiliar to me, was played during "participant recitals." Some of it was "highly forgettable," but it was all varied and entertaining. The final concert deserves a word or two. The American premier of Michael Haydn's *Double Concerto for Horn and Trombone* was memorable particularly for the double cadenza as well as for the interesting contract in sonorities: Alexander Grieve from Melbourne on Horn and Edward Malterer from Ball State's Faculty on Trombone. Barry Tuckwell's effective abbreviation of Gliere's *Concerto* much improved the piece.

I got the impression that there was rather less "playing about" in dormitory and hall in the evenings and at breaks. Perhaps so because there was more formal music in the evenings than at Claremont or Bloomington. The general level of skill seemed very high, even in the "playing about." It would be invidious and presumptuous of me to criticize any of the performances more specifically, but I was lost in musical delight most of the time. Quite the best "workshop" yet.

An unusual event was the lecture/demonstration Wednesday morning by Mr. Louis J. Stout and Miss Deborah Tomchak: "The Horn, from the Forest to the Concert Hall." Horns of all sorts from the Cromagnon to the present were shown and many played. Horns made of horn, ceramic materials, and conch shells were all featured. A high point was the demonstration of a twelve-foot straight valveless brass horn in F played at the mouthpiece by Stout and at the bell by Miss Tomchak's hand: an unusually difficult way to play Mozart!

The Chicago Symphony Horn Quartet (Clevenger, Howell, Oldberg, and Schweikert) played *in memoriam* to John Barrows who died recently. Lovely as it was, I could not help comparing the horn quartet to a quartet of male voices. As a "Barber Shop" quartet singer I miss the contrast in the horn that exists in the male voice between the registers. In the horn they are all alike. You can tell if the Bass or Baritone in the male quartet is invading the tenor area, an effect unavailable to the horn quartet. I say this with apologies to "Color Contrasts" and George Hyde, and to Lowell Shaw and "Fripperies."

The climactic event on Friday Evening was, as usual, the massed choirs of 300 plus horns all on stage at once. This year we played three religious works in tribute to John Barrows and Carl Geyer: "The Heavens are Telling," Beethoven, arranged by Pottag, conducted by Philip Farkas; "Adagio Religioso" by C. D. Lorenz, Robert Marsh conducting; and "The King's Prayer" from Wagner's *Lohengrin,* arranged by Lowell Shaw and conducted by Dale Clevenger. As participant I was unable to tell how they sounded to the audience, but they were exciting and moving to play, even though in the *fortissimi* I could only play by some inner feeling rather than by ear. It is impossible to "hear" one's own horn in such levels.



Festival Orchestra, soloists and conductors

Ensemble rehearsal

Lesson on the Hindemith Sonata

OLD HORN PLAYERS NEVER DIE!

Standing, l. to r.: Alan Hyde, Vince Burrows, "Gus" Brightmore, Sydney Coulston, John Manners, George Holley; sitting: Charles Gregory, Raymond Bryant, Frank Probyn, Alf. Cursue, Fred Harris.

A DREAM COME TRUE

London Horn Reunion 26 October 1974

A Personal Record

— Patrick Strevens

Bring together about fifty Horn players in mid-morning; stir in others in small numbers as time and playing commitments allow; spice with reminiscences; stir in liberal quantities of refreshment; bring the ingredients into contact by constant circulation and keep the mixture on the boil. The result: a day to gladden the hearts of all present, who hope it will be the forerunner of many gatherings in the future.

For some time Alan Civil, Jim Brown and Ian Harper dreamed of bringing together London Horn players to honour the five senior player/teachers who have been instrumental in moulding the profession into what it is today. The problems were for a long while insuperable. How to find a time when a reasonable proportion could be available at once? Would many players turn up, remembering the small British IHS membership? Most important of all, who would put up with an invasion of Horn players and arrange to cater for them at reasonable charge? In the event, the answer to the last question came from enrolling all those attending as temporary members of the Savage Club.

In the heart of London's famous Clubland, this club is a stone's throw from St. James's Palace. Unlike the majority of London clubs, where you must avoid breaking a code of dress and behaviour laid down decades ago, the atmosphere of the Savage Club is relaxed, as befits a club for actors, artists, musicians, scientists, lawyers and writers. The walls of the bar are completely covered with framed cartoons drawn on the occasion of each annual dinner and featuring the Chairman for that year. Prominent is a cartoon of Alan Civil, complete with hosepipe.

FRANCIS BRADLEY was the one senior player to be honoured who was unable to attend. As the only member of the group still taking an active part in the playing profession he wears his more than seventy years lightly and is still in superb command as Principal Horn of the English National Opera. Better known by its old title of Sadler's Wells Opera they have a heavy schedule. Next day they were due to give a Wagner concert at The Maltings, Snape, main concert hall of the Aldeburgh Festival and a hundred miles out of London. Incidentally, his co-principal (colloquially known as the bumper-up), Lance Baker, expected to have a lazy day listening to Francis playing every note.

Francis, who changed his name during World War I, is a son of the

legendary Adolf Borsdorf who came to London from Germany in 1879. Adolf not only became the leading London Horn player but revolutionized Horn teaching in his capacity of Professor at both the Royal Academy and the Royal College of Music. Francis learnt from his father at the Academy and his distinguished career includes a long spell as Principal Horn in the London Philharmonic Orchestra. At the start of World War II he echoed an important episode in his father's career: in 1904 Adolf, leader of "God's own Horn Quartet", was a prime mover in the founding of the London Symphony Orchestra; in 1939, when Beecham left the LPO to its own devices, Francis assumed an identical role in the new-style, self-governing LPO.

I spent over four years as fourth Horn to Francis, starting as a young professional just out of the Academy. To play in his section was a continuing education in musicianship and professional deportment. He is also a splendid raconteur, able to talk for hours on end about former times in the profession. Even after thirty years I can recall the romantic bloom on his tone that was especially suited to Brahms, Strauss and Bruckner solos. At the same time his orchestral ideal is to display those qualities of ensemble and tonal effect that can only come from a real feeling for teamwork on the part of all four members of the quartet. What an experience it was to play Freischütz Overture day after day with him!

After the whole LPO Horn section resigned in 1953 Francis and I were soon together again at the Royal Opera House where his playing of the first Horn parts of The Ring, Strauss operas and Wozzeck was outstanding. All the same, his meticulous handling of all the operatic and ballet repertoire showed his keen professionalism. I well remember how we kept boredom at bay in the *n*th performance of Coppélia by turning the slow Csárdás into a long breath contest, the aim being to play as far as possible without taking breath — in fortissimo.

Francis left Covent Garden a few years later, played in My Fair Lady and free-lanced for some years before joining Sadler's Wells. It was during his period of freelancing that he was invited to become Professor of Horn at the Guildhall School of Music and Drama, the music college sponsored by the City of London, where he still teaches.

ALAN HYDE obtained a degree in Mathematics at Cambridge University in 1927, not the usual passport to a successful career in music. He joined the Hallé Orchestra in 1931, staying two years before coming to London and the LSO for a further two years. After a year with the LPO he returned to the LSO in 1936, where he remained until 1948, apart from the war years. These were spent as lecturer in Mathematics at the Royal Military College of Science.

Alan was a regular Wagner Tuba player in various orchestras includ-

ing Covent Garden. It was mainly when playing the "Lollyphone" that we worked together. In case conditions vary around the world I should explain that playing this self-willed instrument carries extra payment here (danger money?) and "lolly" is one of our slang words for money! Wagner Tuba players have a lot of time on their hands and while we waited the conversation would range over the detailed description of the differences between one mouthpiece and another along with similar well-researched information on makes of instrument. Now I happen to be one of those simple folk who choose an instrument and mouthpiece and continue to use them for decades — the man-behind-the-gun syndrome, perhaps — and after a while I would steer the conversation toward higher mathematics. Alan always obliged with a dissertation that went way above my head but nevertheless made fascinating listening.

This analytical ability must have been a natural asset in his teaching, to which he returned after retiring from Horn playing in 1957. Besides his mathematical lecturing Alan was Horn Professor at the Guildhall School of Music 1945-55. One of his most prominent pupils at the reunion was Tony Tunstall. He is Principal Horn at Covent Garden, where he has played since joining the orchestra in 1948.

CHARLES GREGORY joined the LPO in 1933 and remained as Principal Horn until 1946. He was a co-director, and for a time Chairman, with Francis Bradley of the LPO during and after the struggles in 1939 to keep the orchestra together and find it work. This task had to be accomplished against the backdrop of the jittery atmosphere of the phoney war — that period of waiting that was to herald the devastating air-raids on all Britain's major cities and towns. One of the landmarks of the real war that remains in the folklore of the orchestra is the night in 1941 when the Queen's Hall, London's major concert hall, went up in flames. The LPO had been rehearsing there during the evening for a concert next day and many valuable instruments were lost. The horns were saved by the wooden touring boxes they were packed in. These were found next morning in the basement band room. Water from the fire hoses ran down the hot walls of the building and formed a steaming lake. In that lake floated the horn boxes, the unharmed instruments inside.

Charles took over Aubrey Brain's duties as Professor at the Academy when Aubrey was out of war-time London with the BBC and then while he recovered from a serious back injury. Charles was teaching there when I arrived as one of his first post-war students in 1945. His method was to provide a sound technical framework on which any student who had musicianship could build. Some students were disdainful of his constant use of the repetitive Bremond studies (Sadly out of print for many years) and longed for melodic work and

concertos. I, until then largely self-taught, revelled in this painstaking approach. One thing that always impressed me was that when I used to walk up to his house for a lesson I would hear Charles practising — not showing off with a display of pyrotechnics but playing long notes.

After leaving the LPO in 1946 Charles played in Australia until 1950. On his return he played at Covent Garden for three years before freelancing up to his retirement. In 1964 he left the Academy and was succeeded by Jim Brown. For some years he ran a guest house near Land's End at the extreme southwestern tip of England. He has now moved to Mousehole in Cornwall and is once again teaching in his calm and friendly manner. At the reunion it was good to hear him quietly but firmly setting out his views on our examination-ridden education system: "They all get a smattering of far too many subjects & they would gain so much more from an hour's practice!"

SYDNEY COULSTON is best known as the senior professional in Manchester, but began his career in 1932 in the Hastings Municipal Orchestra. He then went to the Hallé, the Liverpool Philharmonic and finally the BBC Northern where he was Principal Horn for thirty-four years. During this time he was chosen to play in the Coronation Orchestra in Westminster Abbey in 1953. For twenty years he has been Horn Professor at the Royal Manchester College of Music. This college has now merged with the Northern School of Music to form the Royal Northern College of Music and he has been put in charge of the Brass department in new purpose-built premises. He seems to be happy with the new arrangement and to consider it will settle down well after surmounting the inevitable teething troubles. He also told me to be sure to say that what he is really proud of is that he is a handicap seven golfer. A very sane attitude.

FRANK PROBYN was the senior member of the group to be honoured and at eighty-seven years old he held court to players of every age. It was noteworthy that the newest member of the profession was as keen to speak to him as was the colleague of an older generation. He was Beecham's choice as fourth horn in the newly-formed LPO in 1932 and stayed with that orchestra until Beecham formed the Royal Philharmonic in 1946. Frank immediately joined Beecham's new orchestra and remained with the RPO until he retired. But it was his long stint as professor at the Royal College of Music that formed his greatest contribution to the profession. He took over from his own teacher, Adolf Borsdorf, on the latter's death in 1923 and remained professor until about 1957. A large number of those present were his pupils and he became the focal point of the proceedings.

It seems strange that in all my years in London orchestras we only met on one occasion, and that was not a playing engagement. I was

one of his successors in the fourth horn seat of the LPO and therein lies the clue: the other members of a quartet play in various positions in rival orchestras; the fourth horn is usually only engaged as a deputy when his opposite number is absent for some reason. It follows that fourth horns are especially glad of an opportunity to meet socially. It was enlightening to meet Frank again, another player who appreciates the particular problems of playing at the end of the line of horns. But the really remarkable thing was to find that he still goes to concerts and indeed had spent the previous evening at the Royal Festival Hall, watching the British première of von Karajan's film of Verdi's Otello. He was obviously bowled over by the production, and spoke highly of von Karajan's influence on every detail of the undertaking.

Among the eighty-seven players present most of the orchestras were represented. This was the largest number that could be present out of the 135 who were invited. Martin Shillito, freelancer, had the excuse that he was getting married that afternoon. His best man, Terry Johns, was with us for a time before leaving for the wedding. The New Philharmonia were present in force, likewise the LPO, who left early to drive to Eastbourne to give a concert. The BBC were well in evidence, of which more anon. Some English Opera and Royal Opera players came. And it must be realized that there has been such a game of musical chairs in recent years that it would be impossible to say, for instance, how many ex-LPO members there were — they could probably have made up a Horn quartet, thrown in four Wagner Tubas and still have had a bumper-up or two to spare.

Over-sixties were invited as guests and included: Victor Brightmore, Raymond Bryant, James Buck Senior, Vince Burrows, Alf Cursue, Colonel Fred. Harris former Director of Music to the Grenadier Guards, and George Holley. All these were able to come except Jim Buck.

Besides those who have retired there were some like myself, who have left London, or at any rate the mainstream of Horn playing. Many are teaching, others have entered professions like accountancy, the law, or business. Raymond Few is now the music adviser to the Entertainments Department of the Greater London Council and as a Recording Producer frequently works for Decca. John Dennison, pre-war pupil of Frank Probyn, and Director of the Royal Festival Hall, towered over the throng. Norman Del Mar was to be seen bustling through the crowd. He is best known as a conductor and a writer on Richard Strauss but was for years second horn to Dennis Brain. When somebody said what a shame it was Dennis could not be there he rolled his eyes heavenward, more in one of his characteristic gestures than to indicate where Dennis might be found,saying, "He's here somewhere don't you think?" Perhaps the very special atmosphere

of the reunion can best be described as a blend of reminiscence and the down-to-earth cynicism common to Horn players. In addition, unspoken memories of shared experiences hung in the air.

Four lady players accepted the invitation — and had to be prised out of the bar from time to time "A rule of the Savage Club, madam!" Two of these, Livia Gollsancz, daughter of the publisher, and Elizabeth Brett, no longer play. Shirley Civil, Alan's wife, and Jill Essame, who used to work for Paxman's, are in the thick of things. Shirley is regularly called upon to play Wagner Tuba, and I shall never forget Klemperer's monumental understatement after a beautiful performance of the Bruckner 7 slow movement, "Not bad for a woman!" Shirley is also well known as the player who, with her fair hair and striking appearance, generated a personal round of applause from the Lisbon, Portugal, audience when she mounted the platform for a Philharmonia concert.

The reunion organisers did not neglect to throw a glance in the direction of the maddening instrument we all have to coax to do our will. Paxman's horn Centre was represented by Bob Paxman, Dick Merewether, Willie Watson and John Ward. Anton Alexander even flew over from Germany. When I told him I still own Francis Bradley's beautiful Alexander double horn bought in about 1930 he confirmed the story of the wartime adventures of another Horn owned by Francis. He left an instrument with Alexander for overhaul in 1939 and the war started before it could be returned. All through the war it hung on the wall of the workshop, despite many German offers to buy it and the bombing that made a shambles of the building. After the war it found its way back and is still in use. No wonder many British players remain faithful to Alexander Horns.

After we had done justice to a varied buffet lunch and further liquid refreshment the photographers got to work. We then gathered in the lounge for a more formal — slightly — session. Greetings were read out from players who could not be present, and a few who could. Among those read out were telegrams from Leonard Brain, Ifor James and Barry Tuckwell. Jim Brown told us how marvellous it was to see everyone there and Ray Few proposed a vote of thanks to Jim for all the hard work he had put in to set it all up.

Alan Civil explained that the BBC had chosen this day to tie up eleven Horn players far off in East London with rehearsals for Schoenberg's Gurrelieder through the morning, afternoon and evening. He went on, "The afternoon rehearsal, by divine intervention, has been cancelled, once more proving that Jesus was a Horn player!"

Frank Probyn then raised himself steadily to his feet, and in his characteristically inflected voice spoke of his pleasure at being among us. He spoke of the days he remembered when you had a nar-

row bore instrument, upright piston valves and a gang of crooks (Jim Brown: "Now you only have the gang of crooks.") Undeterred by this typical interjection that showed how Horn players will honour their elders only if they are prepared for verbal fisticuffs, Frank said how glad he was to see, "so many old friends with young faces — so many young faces with wide shoulders." Returning to the old F Horn he reminisced, "In those days, if you could play twelve consecutive notes without a fluff you were considered a fine player. Today any or all of you could stand comparison with any Horn players in Europe — or the USA."

The talk continued, but by late afternoon the crowd had thinned out. Some, like the LPO squad, left to take part in evening performances. Others searched for somewhere to continue the chat. But all agreed this should be the first of many Horn Reunions.

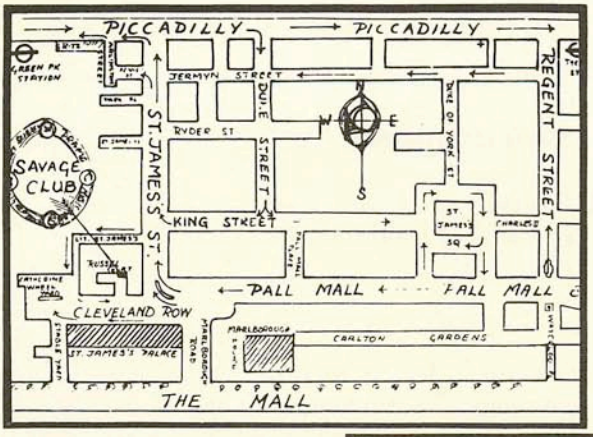
Alan Civil in contented mood

Photos by Mick Baines.

Alan Hyde, left, Frank Probyn, right, with Jim Brown: "Now you only have the gang of crooks."

Alan Hyde, left, with Frank Probyn

Sydney Coulston, left, with Anton Alexander



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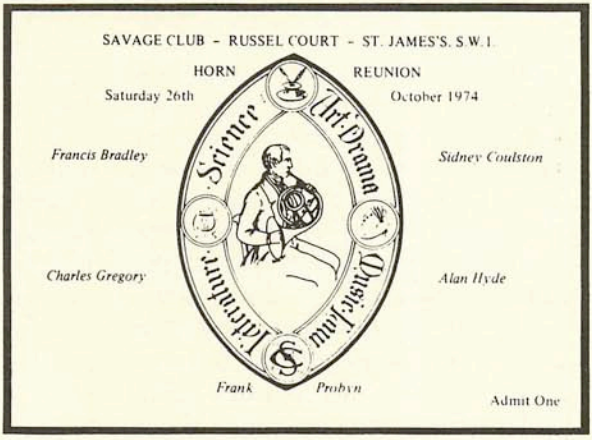

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CRAFTSMANSHIP

THE FUNCTION OF ART TODAY
(*Can Painting Help Us?*)

— Alexander Grieve

The more mechanized our civilization becomes the more we need to examine our manual skills. i.e. Performance on instruments — Painting — Drawing, etc. Who has not heard the common complaint that in spite of all the present day features of a newly built home, in a short time the roof leaks, the plaster cracks, the doors jam! We marvel at the speed of things, the size of industrial manufacturers, the length of our highways! Our appetite for numerals has become so great that the average man hardly knows, or cares, much about tradition of FINE CRAFTSMANSHIP, and/or, long, long, hours of practice. Mass production has brought us comforts and pleasures, but it has also made us disruptive; intellectually lazy.

The *Perception,* that is necessary to *distinguish,* between the *ordinary* and the *honestly wrought* has, in my opinion, been dulled to an *alarming* degree.

Anyone who has taken the opportunity afforded by the museums, or has had the added advantage of travel, cannot overlook the realization that the *quality* of workmanship of the past has a lesson to teach. Man made things in the history of the arts worthy of collecting and cherishing. Somehow, someway, we have to recapture the RESPECT our ancestors had for an honest day's work. We must, I feel, stop "cutting corners." This applies just as much to the independent pictures we paint. The performances we give — as it does to the commercial jobs — we execute on commission.

There is no substitute for thoroughness. No substitute for discipline between heart and hands: between heart and lips. I believe that it is the spiritual element. This unwavering dedication to ideals that has made our whole craft tradition a *moral* issue to be concerned about today. Art can be the play of imagination "over" life, revealing potentialities and possibilities undreamt of in rational philosophy. Thus, art defines the goal of human work, helps turn work into creative and imaginative play.

This preamble now allows me to suggest — *"Can Painting Help Us?"*

It seems to me that Musicians are often reluctant to use visual aids to their teaching. Perhaps it is that their heightened response to

sound is compensated for by a less than average response to the visual arts. Television can be said to have helped popularize art forms and, as well now-a-days, the number of full-time music and art students is colossal. So — the visual arts can now influence vast areas of life in a way which would have been unthinkable some thirty years ago. There is a willingness to discuss them, yet the same people, when attempting to talk about music, are more often than not inarticulate and tongue-tied. This is understandable — for it is easier to appreciate a *tangible object,* than *sounds* which exist only for a brief moment in time.

I think it can sometimes be helpful to consider contemporaries who, we feel, instinctively exude to the same spirit. In this way I would link Victoria and El Greco who share a similar religious intensity, as well as the dark troubled background of sixteenth century Spain. Gainsborough and Mozart are contemporaries who produced commissioned works. Gainsborough's portrait of William Hallett and his wife, Elizabeth, is known as "The Morning Walk" and was painted in 1785. It illustrates the *formality* and *elegance* of the period, while its perfection of form and scrupulous attention to detail are qualities *we would also attribute to Mozart.* Two great Romantic artists, Turner and Berlioz, span the centuries stylistically and each sought to express himself in words as well as in his chosen medium. Turner's greatest achievement lies in the representation of light. Berlioz's in the use of orchestral colour.

In a recent critical Biography of Turner, the writer holds the view that music enabled Turner to increase his range of expression. (Certainly he wrote out songs in his sketch books and learnt to play the flute). Both Reynolds and Turner used musical analogies and Turner once said that, "Every tone must be Dorian, Lydian, Ionic, Bacchanalian." His poem "The Origin of Vermillion - or - The Loves of Painting and Music", is an allegory of the *relationship between* the *two arts.*

It is sometimes possible to clarify a musical point by visual means. For example, the distortion of reality which we find in so much of Picasso's work. By this I mean the *wilful* disposal of lines and objects so that they bear a relationship to each other which would NOT be possible in real life. The technique is seen at its most simple in a painting such as "Still Life with Classical Head" of 1925. Here we see the profile and the full face *simultaneously,* while the finger board of the guitar is placed at a new angle. It seems to me quite valid to use this as a means of explaining the avoidance in certain neo-classical works of the tonal implications of the melodic line so that, for instance, an obviously dominant phrase is accompanied by stubbornly tonic harmony, or, one note of a straightforward triad is thrown out of alignment with the rest of the chord. Examples abound

in twentieth century music.

The examples I have mentioned seem to me to be straightforward and understandable. It is a subject - "The Sister Arts" - that suggests to me that there is plenty of room for "extra-musical aids" in teaching and the pursuit of one's chosen instrument.

The handling of talent is a "creative process and involves the *total personality* of the *pupil*." Teaching is not a dead-end, but a valuable contribution to music and a profound human experience.

LEUTGEB'S LEGACY

The Mozart Horn Masterpieces

— James MacDonald

Can you imagine comprehensively studying the horn without the Mozart concerti? Imagine trying to teach it! These works may be overplayed (and sometimes badly played) but surely they rank with the best and most popular concertos ever written, and they certainly form the backbone of traditional solo horn literature. And what horn player has never performed, or wanted to perform Mozart's chamber music with horn. Besides all the Divertimenti, Cassations, and so on, the Quintet with strings (K386c) and the piano and wind Quintet (K 452) and masterpieces.

For all of this fine horn literature, one person is responsible: Ignaz Leutgeb. It was largely for him that Mozart wrote these works. Learning of the circumstances of the composition of these works leads to a more intimate and believable appreciation of Mozart's highly specialized horn writing.

First of all, what about this horn player? Little is actually known of Ignaz Leutgeb. (The spelling Leitgeb is sometimes used, but it is simply a phonetic spelling according to the Viennese pronunciation.) A contemporary of Giovanni Punto, the other extremely renowned horn virtuoso of the period, Leutgeb toured only briefly, and early in his career. He then settled in Vienna, where he met his old acquaintances from Salzburg, the Mozarts, and became Wolfgang's personal friend. The Mozart-Leutgeb relationship is uniquely interesting since Leutgeb probably never sought or performed solo horn works of any other composer and Mozart composed all of his solo horn works for Leutgeb, with only two exceptions.

The known exceptions are a Waldhorn-Stückl (K33), composed at age ten and now lost, and the Sinfonia Concertante (K297b), in which the horn part was written for Punto. This last piece was written in Paris in 1778, just before Mozart returned to Vienna to write the rest of his important horn works for Leutgeb.

The legacy of masterworks inspired by Leutgeb includes the four complete concerti and a Concert Rondo, as well as several fragments for horn and orchestra, plus a horn quintet and perhaps a piano-wind quintet as well. Many other works were shaped by Leutgeb's influence, including some horn duets and some divertimenti, which he certainly must have played. (The accompanying table gives more details regarding Mozart's more important works for the horn.)

After beginning his playing career in Salzburg, Leutgeb performed concerti of his own composition in Paris at the Concert Spirituel, in April and May of 1770. Part of the criticism in the Mercure de France gives us some insight as to Leutgeb's style.

> (His) "superior talent (was a) wonder to his hearers (and) his outstanding quality is to 'sing' the adagios as perfectly as the most mellow, the most interesting, and the most accurate voice."

To inspire such praise, Leutgeb must have used his excellent tone quality with convincing musicianship. The mention of accurate pitching implies that he must have had a highly refined hand technique, even though the use of the hand in the bell was comparatively new at the time. (Hampel is said to have 'invented' it about 1750.)

By examining many brief references in the Mozart family letters, we can piece together important elements of Leutgeb's life. He was clearly a close friend of the Mozart family. St.-Foix, in an early article about the virtuoso, states that for a time Leutgeb was Mozart's "servant and friendly messenger." In 1773 Leutgeb went to Milan, and since Wolfgang and his father Leopold were also there, the family letters of this period are informative concerning the player. Leopold Mozart reported that "Leutgeb is looking after himself well, and will make quite a fortune here, for he is exceedingly popular." He predicted success for Leutgeb's first concert.

During this period, Mozart does not appear to have written anything for Leutgeb, possibly because his father was still carefully guiding the young Wolfgang's career, and probably did not consider the time spent composing for a friend to be worthwhile. This is no reflection on Leutgeb's talents (already documented above) — Mozart's later works for him include some challengingly difficult sections. Also, the horn had not yet risen to the lofty status as a solo instrument that it was to acquire over the following decade.

One popularly known fact about Leutgeb is his management of a cheese shop in Vienna, which he established in 1777. He did this using a rather generous personal loan from Leopold Mozart, and it is ironic but all too much to be expected that Leutgeb should eventually die in prosperous circumstances as a merchant (in 1811), while his genius friend Wolfgang Mozart should die a pauper in 1791.

This is not to imply that Leutgeb was ungrateful for the works that Mozart wrote for him. The letters tell us that in Mozart's last year he often visited Leutgeb for supper, or to stay the night, or go to the opera with his friend. These and other letter references indicate that Leutgeb generally aided Mozart in every way possible. There is no doubt that he had a profound respect for Mozart's genius, as well as a sincere personal friendship; for both reasons he tolerated Mozart's lean brand of humour, which was always very active when he composed horn solos. Dedications listed in the table of works show that Mozart often chided the horn player, and several stories confirm this. Comments written into the manuscript of the completed version of the Concerto No. 1 are at times intranslatably rude, but always in good fun. One famous story relates how Mozart hurled a pile of music across the work-room floor and demanded that Leutgeb retrieve the sheets, in proper order, while he composed. Still another story describes Leutgeb kneeling behind the woodstove while Mozart composed a concerto for him.

This humiliating type of humour directed at Leutgeb has often been

explained as evidence of the player's unrefined peasant nature and poor education. Although it appears in scores of articles, this theory is unconfirmed, due to the incomplete knowledge of Leutgeb's life history. However, it does not make sense that this musician could be as lacking in culture as some would have us believe. If he had been, he could not have enjoyed a successful professional music career with trips to Paris and Milan. And could a fool have opened and profitably run a retail cheese business simultaneous to his musical activities? Leutgeb obviously had good taste and good sense to go along with the practical jokes of his friend, for he knew that when Mozart laughed as he composed, some of the finest solos in all of horn literature were being created. Two centuries of grateful horn players and music lovers have acknowledged the worth and beauty of these works and Leutgeb should be given his due credit for encouraging every whim of Mozart.

There is more than anecdotal evidence of Leutgeb's influence. The first recorded request for a concerto is in a letter from Mozart's father in 1777, in which the loan for the shop was mentioned first!

> Mr. Leitgeb, who has now bought in a suburb of Vienna a cheesemonger's shop (the size of a snail's shell), wrote to us both after your departure, promised to pay me in due course, and asked you for a concerto.

Throughout the next decade, Mozart and Leutgeb were in frequent personal contact, which precipitated a steady flow of solo horn works. St.-Foix summarizes Leutgeb's good fortune:

> His solicitations bore fruit: one could say that this worthy man was among the most richly furnished. ...(The solo works were) spaced out during the most beautiful periods of his (Mozart's) maturity.

Some of the works unquestionably intended for Leutgeb contain personal jokes, such as the following comments found in the First Concerto: "beast - oh what bad intonation - who? - oh my! . . . Ah, you make me laugh ..." The solo part of the Fourth Concerto is written, just for fun, in four different ink colours. Dedications include to the "ox, ass, and fool Leutgeb" for the Second Concerto, and "to you, Mr. Jackass" in the First Concerto. Other more subtle jokes occur, such as the special marking for the Rondo of the Second Concerto, which is adagio in the solo horn part and the correct allegro in all other parts. This was either to indicate a tendency of Leutgeb to drag the tempo, or in order to delight in the horn player's confusion at the first reading. Equally subtle humour in the Fourth Concerto is the intentional mis-dating of the horn part as April, 1796, which was ten years ahead of its true time of composition, 26 June, 1786.

The list of Mozart's works for Leutgeb reveals a few inconsistencies and brings up some questions. The concerto fragments have mostly been sorted out. *Anh* 98a, being the only solo horn writing in E major, may have been intended for another player — perhaps Punto — who, as mentioned above, inspired Mozart in 1778 to compose for him the Sinfonia Concertante.

Regarding the Twelve Duos for Two French Horns, K 487, there is a belief that they were written as Mozart played skittles with Leutgeb, shortly after completing the Concerto No. 4.

The final major question about Mozart's horn works concerns the Concerto No. 3, which appears to have been written at two different times.

The second and third movements are continuous in page numbering and pen style in the manuscript, but are separate from the first movement.

In the contrasting middle section of the finale of this concerto, there is a reference to the theme of the A-flat Romance. This tends to confirm that they were composed at one session, and the first movement was added to them (or vice versa) at another time. This return of thematic material, and the inspiration of the Romance, which has been described as "melodic beauty that suggests total, almost heavenly response", suggest a very late date for the composition of this work, perhaps 1788 or 1789. The date 1783 (changed from 1782) appears on the first movement, but it was most probably composed separately.

Even more interesting is the very close thematic and structural connection of the Romance (second movement) and a work for solo horn and strings by Michael Haydn. There are circumstantial facts which tend to support a relationship of some kind. In 1783, Mozart had written two duets for violin and viola in order to help Michael Haydn, who was ill at the time, meet a deadline. A Mozart letter of 15 May, 1784, during a visit to Michael Haydn, explains a common problem.

> The Salzburg copyists are as little to be trusted as the Viennese. I know for a positive fact that Hofstetter made two copies of Haydn's music. For example, I really possess the last three symphonies he wrote.

This may be how Mozart acquired the material for his Romance for horn and orchestra, which became the slow movement of the Third Concerto. If so, it agrees with other evidence and a separate analysis, which concludes:

> If Mozart based his Romance on Haydn's, . . . he was a composer of talent, able to recognize good basic raw material and prune and expand it with skill and taste - which he was.

Any suggestion that the concerto (at least the Romance and Rondo combination, whenever it was written) was intended for anyone other than Leutgeb is certainly incorrect. One could argue that it could have been intended for Punto, since it is fundamentally different in many ways from the other concerti. However, a careful examination of the manuscript has revealed that at two places in the Rondo there are pauses for possible cadenzas, Mozart has written "Leitgeb" beside each of the fermatas. This occurs after bar twenty-one of the Rondo, and again thirteen bars from the end of this movement. (This is indicated in the illustration of that page of the manuscript.) There is also the possible scrawl of the letter "L" (Leutgeb?) near the cadenza point of the first movement, but it could also be the indication "tr--" for the final shake of the cadenza. Leutgeb's gift of musical creativity has already been indicated by the earlier mention of the Paris tour of 1770, when he played his own concerti. He certainly had a fluent technique to display in the cadenza, judging from the difficulty of the Mozart works for him.

All the movements of the Third Concerto were therefore clearly intended for Leutgeb, and like the other solo horn works, it was influenced by his playing style.

What emerges from this examination of the Mozart concerto is a fascinating picture of a very beautiful and human relationship between Mozart and Leutgeb, and certainly a most fruitful one for the solo horn repertoire.

TABLE
CHRONOLOGICAL LIST OF W. A. MOZART'S HORN COMPOSITIONS FOR IGNAZ LEUTGEB.

No.	Date	Opus	Title	Key	Notes and Dedications
1	Mar. 1781	K 371	Konzert Rondo	E-flat	Single movement, incomplete accompaniment.
2		Anh 98b Anh 97 Anh 98	(Fragment) " "	E-flat " "	Probably attempts at a first movement to combine with the Konzert Rondo to form a concerto.
3	Dec. 1782 Apr. 1787 Apr. 1787	K 386b K 412 Anh 98a K 514	Concerto No. 1 First Movement (Fragment) Finale	D D E D	"To you, Mr. Jackass" (Probably not really related to this concerto.) Sketched 1782, completed 1787. No bassoons, as in First Movement. Jocular comments throughout horn part.
4	Dec. 1782	K 386c (K 407)	Quintet (horn, violin, 2 violas, cello)	E-flat	Called "Leitgeb's" in Mozart's letter references. Difficult concerted horn part.
5	May, 1783	K 417	Concerto No. 2	E-flat	"Wolfgang Amade Mozart has taken pity on the ox, ass, and fool Leitgeb at Vienna, May 27, 1783."

No.	Date	Opus	Title	Key	Notes and Dedications
6	1783 (1788-89?)	K 447	Concerto No. 3 First movement Romance Finale	E-flat E-flat " E-Flat	On the manuscript, 1782 has been changed to 1783. Probably composed separately. Almost identical to a work of M. Haydn. "Lietgeb" written over cadenza points.
7	1784	K 452	Quintet for piano and winds	E-flat	Leutgeb influence uncertain. Composed for a festival. Mozart considered this one of his best works.
8	June 27, 1786	K 495	Concerto No. 4	E-flat	Mozart's own catalogue records: "A horn concerto for Leitgeb". Blue, red, green and black ink.
9	July 27, 1786	K 487	Twelve Duos for Two French Horns	?	Keys unspecified. Probably for Leitgeb. Range to twenty-second* harmonic - fifth higher than normal.

Sources: Köchel, *Verzeichnis;* St.-Foix, "Les Concertos"; Marx, "Twelve Duos"; Rasmussen, "The Romance from K 447"; Manuscript of W. A. Mozart Concerto No. 3, K 447.

**Editor's note: 24th? g'" in any case.*

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Rasmussen, Mary, "Mozart, Michael Haydn, and The Romance from the Concerto in E-flat Major for Horn and Orchestra, K 447," *Brass and Woodwind Quarterly,* I: 1 and 2 (Winter, 1966-67).

St.-Foix, Georges de. "Les concertos pour cor de Mozart," *Revue de Musicologie,* IV: 10 (1929).

Other information in the article is from personal research for the author's thesis: *"Virtuosi and The Horn Repertoire,"* M. Mus. Thesis, University of Western Ontario, 1972. The musical example is from the original manuscript, kept at the British museum, London, England.

Editor's note: Mr. MacDonald included a photocopy of the original manuscript of a passage from Concerto No. III, but it was unfortunately not usable in printing.

You Say You Married A HORN PLAYER?

— Suzanne Riggio

Congratulations! You couldn't have married a nicer profession.

This article is especially dedicated to you:

if, when your horn player announced his strings needed replacing, you rushed right out and bought shoestrings for his tennis shoes.

if, when he stated that the slide was dirty, you took your trusty bucket and a bottle of Mr. Clean out to the children's play equipment.

and if, when he came home and complained about the clams, you said you hadn't realized he was playing in a seafood restaurant.

So, for you, a horn player's spouse, what follows are special definitions to help you live with your member of what one of our glorious leaders, Phil Farkas, calls a "peculiar breed." Remember you'll always be playing second horn (this is no place for fiddles) to that mass of coiled plumbing.

Horn — a six-to-eight-pound heap of coiled tubing that can be used to produce music. Sometimes. This you knew. But did you know that it is your number one rival? Or that it is sometimes referred to by name, as "Boopsie" or "Harold"? "Horn" may also refer to a person who plays the horn, such as Boopsie or Harold.

Bell — the big flared end of the horn out of which the noise comes. If you have to remain in the same room with it, cultivate sitting near the other end.

Mouthpiece — a cone-shaped metal object that your horn player collects in multiples and keeps in your new ginger jar. It fits on the small end of the horn opposite the bell and is the most intimate part of the instrument.

Embouchure — a horn player's kisser. It fits the mouthpiece. The whole concept of embouchure is very complicated; it's enough to know he values it more than Elizabeth Burton values the Cartier Diamond. If he's had a bad evening, never, never suggest his embouchure might be at fault.

Chapping — the worst thing, short of a rap in the mouth, that can happen to a hornist's lips. Ruins playing. Keep Chapstick in every room and in his coat pockets. (If your wife is the horn player, drop a half dozen in her purse every six months.)

Valves — the machinery on the horn that aids in playing the different musical sounds, or pitches. Held together by cork and string. May be blamed for a bad day.

String — short lengths of cord that make the valves function. They always break during a concert.

Mouthpipe — a piece of pipe on the horn connected to the mouthpiece. Must be washed out once a week with a snakelike brush. Avoid washing strawberries or dyeing curtains in the sink on Mouthpipe Day.

Slide — one of many pieces of curved pipe that can be pulled out of the horn. Can be adjusted to make the horn better in tune. Once adjusted, it's always in tune. Never mind if the hornist sounded a little off; that wasn't he. It was the bassoon.

Hands — both used to play the horn. The weaker left hand (except in southpaws) moves the valve levers with precision and strength. The right hand is in the bell where it can be moved imperceptibly to grossly to create different shadings of sound and pitch. Also guaranteed to make little children ask, "Hey, Mister, how come you got your hand up your horn?"

Practice — that infernal noise that disrupts your household for at least an hour a day. Try to convince him to practice in the basement, the attic, or the outhouse, but, if that's not successful, take the kids to the dentist, visit the pigeons in the town square, or take up the tuba.

Job (also called gig, concert, performance, rehearsal, service, and gotta-play-my-horn-tonight) — The horn player's work, the source of bread. Complained about a lot, but secretly relished and enjoyed.

Tone — the sound of the horn. Can be noble, lusty, blaring, beautiful, haunting, veiled, melancholy, nasty, or brassy. Any of which, when heard on TV, will cause your horn player to sit up, lift his head, flare his nostrils, glaze his eyes, and get a silly grin across his mouth. Don't interrupt. He won't hear you. Neither will he notice the action on the screen where the horse drags his rider through a clump of cactus. The call of the horn is a call to godliness. There's not a thing you can do about it.

Party — a gathering of horn players who drink coffee, tea, or whatever and listen to recordings of horn players. Conversation is at a minimum, consisting of "Listen," "Wow," and "Oh, Geez." Another kind of party, occuring after several drinks of whatever, is noisier. Here, horn players have to play horns, but they neglected to bring them to the party. So they play "The Beer Barrel Polka" on your kitchen funnel, your garden hose, and your music stand. While this is happening, you should practice your tuba in the attic.

Bobble — a missed note, followed by "Oh, golly, gracious me!" or some similar hornist's expletive. You should ignore bobbles, but, when pressed, you should say, "Just think of all the **right** notes you played." Bobbles are expected of horn players; witness the many names they are given; clam, mistake, broken note, miss, bloop, blooper, clinker, goof, gurgle, water in the horn, break, clunker, cracked note, scratch, and smear.

Water — the gurgly stuff that accumulates in the horn. Jokes to the contrary about spittle and coffee (after breakfast), it really is water for the most part — condensation. It must be emptied. To protect your rugs, provide him with a spittoon or a watertight waste can and hope his aim is true.

O.K. Study the above list. Ask your horn player questions. And when you can't stand it anymore, start taking horn lessons.

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HULLABALOO IN A HORN BELL
or
THE DILEMMAS OF A HORN

— Paul Mansur
Southeastern Oklahoma
State University

A number of articles and letters to the editor have appeared in *The Horn Call* in the last several years dealing with stopped horn. Fortunately, there seems to be little discrepancy about how to play stopped horn or when to use stopped horn. No one has devised a superior technique for stopping by use of the right pedal extremity. (That's a foot, friends!) We even had a panel discussion and illustration of stopped horn presented at the Sixth Annual Workshop at Ball State University.

A controversy has arisen over what happens acoustically *within* the horn. Some claim pitch rises; others claim it lowers. The result has been a most enervating and delightful squabble; a healthy indication of our true fraternal nature in the great brotherhood of the horn. Definitely, this is an intrafamily fight. (Keep out, Trumpets, or we give you a fat lip!)

I doubt that the present writer will end the controversy but feel that I may add a notion or two that deserve a bit of consideration.

To begin: advocates of both positions are correct or partially so. If one follows the procedure outlined by Stephen Seiffert in his article found on Page 47 of May, 1972 issue of *The Horn Call*, Vol. II, No. 2, and by Marvin Howe in Vol. IV, No. 1, Page 19, the notes are lowered in pitch exactly as they say. If one stops the horn and tests the notes by arpeggiating the overtone series as Malcolm Henderson suggests on Page 25, Vol. IV, No. 1, the notes are clearly one half step high — the notes are raised.

Now, here's a how-de-do! If both phenomena can be so easily illustrated then there must be some logical explanation of how both ideas work and thus resolve the conflict. I suggest that there are two distinct phenomena involved. Dr. Henderson suggested the idea of "regimes." Part of the problem is strictly semantic. The effect that Howe describes and *Horn Call* editor Winter demonstrated in the session at Ball State on June 14, 1974 should properly be called "hand-muting." "Stopping" and "muting" are two closely-related but distinct techniques. "Echo-horn" is another term associated with and synonymous to hand-muting. There are actually two "modes" of playing the horn: open, (including hand-muted), and stopped.

Acoustically, the introduction of a foreign object into a vibrating air column lowers the pitch. Dr. Malcolm Henderson demonstrated this with a bottle and a pen at the demonstration on June 14, 1974. Hornists utilize

the principle constantly when inserting the right hand in the bell. An old trick of clarinet players, when caught without an "A" clarinet, was to suspend a string inside the bore from the barrel joint to the bell of a Bb clarinet. The result is a treacherous, but sometimes effective, "A" clarinet for emergency use.

The key idea of the hand in the bell is that it affects the *air column* and its standing waves. A moderate use of the hand allows the normal "open" sound of the horn. When pushed into the bell far enough to lower the pitch a half-step then the open mode has become "muted." The farther in the bell the hand is placed the flatter the pitch. Throughout this mode the air column's length is unchanged. The hand should be kept fairly loose and relaxed. The hand is "dampening" the vibrations much as the string inside the clarinet dampens the vibration down a half-step. By pushing on farther into the bell some additional lowering may be obtained. This accounts for the many terms that were used in the natural horn era. Notes were described as "half-stopped," "three-quarter stopped," and "full-stopped." The designation as "half-closed" or "half-muted" might be more consistent with the "open" mode concept.

However, if the hand is made firm and one presses hard against the bell as if to seal off the air stream the mode changes to stopped horn with a sharp rise in pitch. When playing stopped horn, the farther in the bell the hand goes, the higher the pitch; move the hand out and the pitch will lower. Contrast, please, with normal and hand-muted playing in which we insert the hand more to *lower* pitch and withdraw it to *raise* pitch. Hand motion has exactly the opposite effect in these two modes. The reason, in my opinion, is that stopping effectively shortens the length of the tubing. It appears to me that the bell is largely inoperative when stopped. It still functions when muted and is still in the open mode.

This explains the great difficulty people with small hands have in stopping the horn. It is very difficult to close the bell adequately and the stopped pitch is too high. (If stopping the horn lowered the pitch then those players with small hands could lower the pitch more than those players with large hands as then can press the hand farther into the bell. So long as they remain in the muted (open) mode they *can* control pitch as well as those players with larger hands.) I solve this problem with my students by having them tune the stopped mode with the main F tuning slide pulled out farther than normal and note very carefully this slide position. Then when a stopped passage occurs they pull the slide to this position during a rest shortly beforehand. They then play open passages before and after the stopped passage on the Bb horn. As soon as there is a rest long enough to return the F slide to its usual position then normal double horn usage may resume. If the student has a stop-valve then there is no problem; it is tuned and maintained in that position.

Professor Howe offered a small sum of money to anyone at the afore

mentioned session of June 14 who could gradually change from open to stopped horn and make the pitch rise. It is manifestly impossible. The pitch "breaks" up when the bell stops functioning and that length of tubing is cut off by the hand. This was also demonstrated on June 14 by James Winter when I asked him from the audience to play a fundamental concert Bb on the Bb side of the horn and then stop it. A number of observers seemed surprised to hear the note rise sharply. There is *no* lower harmonic for this tone. It can be lowered by the hand a half-step or more in echo-horn mode but when actually stopped the pitch *rises*. There is no possibility of hand-flattening the second harmonic down a major seventh from B-flat concert to B-natural.

The charts and material prepared and presented by Dr. Willi Aebi at the Workshop session of June 14 and published in *The Horn Call*, Vol. IV, No. 2, beginning on Page 40, provide empirical and discrete data showing that the pitch of a stopped horn rises. The confusion is and has been over calling a "muted" sound a "stopped" sound. The soft muted horn sound can be pushed into a metallic quality that approximates that of stopped horn. Stopped horn can be played gently so as to produce a soft echo-horn effect. The hand has knuckles and irregularities which make the pressure on the bell spotty and uneven allowing for some nerve-shattering changes back and forth between the two modes; especially in the lower half of the range. Professor Philip Farkas, our dean of American horn players, referred to this unstable technique of Echo-horn in his lecture of June 10, 1974. He also noted that the technique is used much more extensively in France than in other parts of the world. (Also, see Wayne Barrington's letter to the Editor in *The Horn Call,* Vol. IV, No. 2, page 8.)

This suggests that a given pitch can be played either hand-muted or stopped with little or no hand adjustment. I suggest you try this by alternating fingerings several times from a half-step above (relaxed hand) to a half-step below (firm hand) the intended pitch. The mode will break back and forth rather easily and the pitch remain constant. This illustrates why one can not *gradually* change to stopped horn. (Are you listening, Marvin?)

Another aspect of stopped horn that no one has referred to at all sufficiently, is stopping the Bb and deskant F horns. All discussion, with the exception of Seiffert's article, has concerned the F horn. It is unfortunate that so many people play only a four-valve double F-Bb horn and so few realize the advantage in facility made possible for many works using a stop-valve. Both four and five-valve single Bb horns have this stop-valve as standard. (There are also some double horns with stop-valve.) It must be noted here that hand-stopping on the Bb side of a double horn, or a three-valve Bb horn, is not very practical. Notes are about three-fourths of a tone sharp. Thus, a half-step correction by

fingering down a half-step is insufficient to correct the pitch and a whole-step fingering adjustment exceeds the correction needed. Hence, a stop-valve, which has approximately the same length of tubing as the second valve of an F horn, when brought into play corrects the pitch properly.

A deskant horn or F alto horn is pitched one octave higher than the conventional F horn. The tubing to each valve is half as long as the corresponding tubing of an F horn. A stopped tone on the deskant horn is a *whole-step* sharp. Correction in pitch is made by a *whole-step* fingering alteration to that of the note a full step below the indicated note.

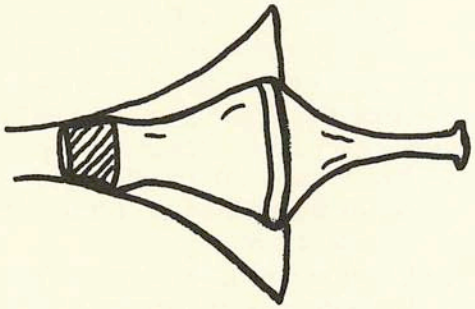
Now, let us note very carefully that hand-muting on the F, Bb, and high F horns is accomplished in the *same* manner. By closing the bell with the right hand, keeping the hand fairly relaxed until the pitch is a half-step flat, we achieve a hand-muted or echo-horn effect. The correct pitch on all three horns is obtained by transposing *up* a half-step. A stopped pitch may be obtained in approximately the same hand position within the bell. The important difference is to press or squeeze outward with the hand. Thereupon, the pitch breaks up into the stopped mode. The F horn breaks up a half-step, the Bb horn three-fourths of a step, and the high F horn a whole step. The correction involves the addition of enough extra tubing to bring the pitch back to the proper level. *The length of additional tubing required is identical on all three horns!* The length of tubing of the F horn *second* valve is the same length as that of the *stop-valve* on a Bb horn which is the same length as that of the *first* valve on a deskant horn in F.

On a triple horn in F, Bb, and high F, the three instruments utilize *different* lengths of valve tubing to correct pitches when hand-muting. But a single stop-valve will correct pitches properly on any stopped note on any of the three horns. Half-step correction works on any horn when hand-muting because the entire horn is still functioning. The hand is merely dampening the pitch downward in the open mode. But when the horn is stopped a proportionate amount of the instrument is no longer functioning. It is in the stopped mode. Pitch correction is attained by adding the *same proportionate* amount of tubing back into the horn. This is why a fixed length of tubing will correct a stopped pitch created by the hand cutting off a fixed length of the instrument.

It seems to me quite important to consider the use of mutes also. The way they function and their various designs support the idea of the two modes suggested earlier. The usual non-transposing mute of wood, fiber, plastic, or metal has three slim corks that touch the bell. The mute is hollow so the air column vibrates the full length of the instrument. The bell is touched at only three points, remains functional, and the pitch remains steady as the pitch dampening is slight. The horn remains in the "open" mode. A transposing or "stopper" mute, usually of brass, has a

large cork which engages the complete circumference of the bell throat. The air column still extends to the bell opening but the cork has "stopped" the bell making it non-functional and the pitch rise is one-half step. The effect is very similar to that of hand-stopping, and functions in the stopped mode. The tubing within this type of mute is proportionately the right length to fix the pitch one-half step sharp. (See paragraph below.)

I have seen one mute of the "stopper" type that was non-transposing. It belonged to Arkata Yegudkin and is now in the possession of George Yaeger, conductor of the Abilene Philharmonic Orchestra and former solo horn in the Oklahoma City and San Antonio orchestras. It is copper and quite large as the sketch below indicates. The flare is fully as wide as a trombone bell. In fact, it rather resembles two trombone bells placed together edge to edge. However, it is in two pieces that fit together as a metal lid on a tin can. The end extension could be reversed to rest inside the inner half and be carried within the bell in a conventional horn case.



Non-Transposing Stopper Mute

This mute "stopped" the bell function as in hand-stopping but the pitch correction is made by placing the required extra tubing in the mute itself. The air column is extended outside the bell a sufficient length to compensate for the elimination of bell function. This mute works equally well on an F or Bb horn as does any other non-transposing mute, but functions in the stopped mode.

An inference must be made about the hand technique of the nineteenth century. If there was a consistent style for every natural horn pitched from C Alto to Ab Basso as Seiffert suggests, (op. cit. p. 48) which applied to intervals, then the only hand technique which works is the hand-muting effect. The stopped notes would help fill in some gaps where a pitch could not be obtained by hand-muting. In many instances the notes were interchangeable, such as C-sharp which could be raised eighth harmonic (stopped) or a lowered ninth harmonic (muted). I am firmly convinced also that the general dynamic levels of the natural horn passages were much softer than the levels we are accustomed to today.

The instruments were smaller, lighter, and the mouthpieces much smaller. I strongly suspect that the "full-stop" of long ago was actually often a hand-muted tone. The hand-muted tone quality fits the context and concept of the natural horn far more musically than the metallic stopped sound we use today.

The dilemma is that we have more choices in tone color than many of us may have realized. If we, the performers, don't always know just what we are doing then we can be more sympathetic to the plight of composers who don't know what to write in order to obtain a desired effect. I have played many parts that I felt were edited incorrectly. Some marked + were clearly to be hand-muted. The style of others marked "muted" fairly shouted to be hand-stopped. Then what about the use of a mechanical mute? How are we to discriminate between the options to use a mute, to hand-mute, or to hand-stop? We need a consistent set of terms and symbols acceptable to composers, conductors, and hornists.

I would suggest that we consider the term "muted" be restricted to use of a mute. The symbol could be a plus sign within a triangle ⧊ calling for a mechanical mute. Let's retain the familiar plus sign + as the symbol for stopped horn. To clarify the effect desired and the technique required we may use the plus sign within a circle ⊕ to indicate "hand-muted" or "echo-horn". This would indicate clearly that the hand should be used but the pitch correction is an upward transposition. (The reader is referred again to Wayne Barrington's letter to the Editor in Vol. IV, No. 2.) It might be wise to use the designation of "Echo-horn" to avoid any possible confusion with the use of a mute.

I have been practicing and teaching these terms for more than 25 years. They are practical, effective, and communicate precisely to the performer what is desired and what is required for performance. It matters not, gentle reader, what you believe about stopped horn; these terms and techniques work. They convey accurate, understandable information that we can instantly apply to performance in complete unity of style and technique.

Doctrinally, if you will, I stand with C. P. Earnest, (Letter to the Editor, Vol. IV, No. 1), Barrington, Henderson, and Aebi that a stopped pitch is raised. There seems to be an irrefutable overkill of hydraulic and acoustical data to establish the fact of raised pitch. To Seiffert, Howe, and Winter, if not yet converted to this gospel, then I urge that we blunt this dilemma ecumenically by uniting in the suggested terminology and symbolism.

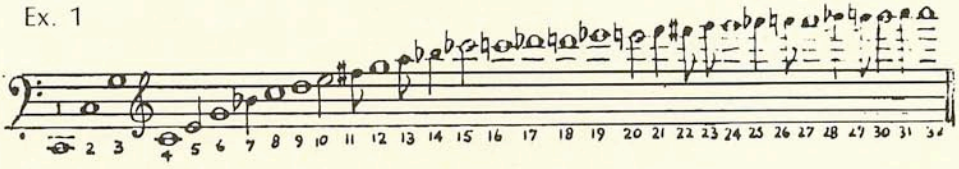
⧊	⊕	+
"Muted"	"Echo-horn"	"Stopped"

THE QUESTION OF HAND-STOPPING

— Richard Merewether

I - *THE HARMONIC SERIES*

Ex. 1



Above are the first 32 notes of a harmonic series. As written out thus over a fundamental of C, the whole range may then be read as necessary in any key — like a classical horn-part. Certain of its notes are in varying degree flat by our chromatic scale; here these are written in differing note-values — the shorter the note, the flatter the sound.

Any musical note has a frequency reckoned in cycles-per-second, and a sound-wavelength at reciprocal variance with that. It is convenient to imagine the fundamental of the series as having a relative frequency of 1, after which those of the successively rising harmonics follow in arithmetical order. The whole series may thus be shown as having its frequencies in the ratio 1:2:3:4:5:6:..... with corresponding wavelengths of 1:1/2:1/3:1/4:1/5:1/6:.....; the latter (being mathematically in 'harmonic progression') lend that name to the whole concept. The numerical position of any term in the line hence denotes its frequency as that multiple of the fundamental, and thus also may be seen its relation with fellow-members.

The complete series is theoretically that which may be 'overblown' on a cylindrical tube open at both ends, or obtained from a vibrating string. Either, oscillating as a whole, will produce its lowest (fundamental) note; oscillating in successively 2, 3, 4, 5 etc. parts yields the subsequent harmonies.

The harmonic series has several powerful properties in the formation of musical sound. It seeks out sympathetic vibrations from the surroundings at its own frequencies, as it were feeding on them, and drawing all into the scheme. Within that membership all the terms reinforce one another's performance — every note has its own complete family of harmonics, represented further up the line. Any two notes sounded together (say 4 & 5) engender two more quite strongly: their sum and their difference (9 & 1 in that instance) — the latter 'differential' resonances being particularly important. A consecutive group of notes

(e.g., 4, 5, 6, 7, 8) will hence generate or 'endow' strong frequencies representing the absent 1, 2, 3, because it is in the very nature of the harmonic series to do so. In fact such endowment actually supplies the lowest three open notes of a horn: the fundamental, pedal-C, and the next G.

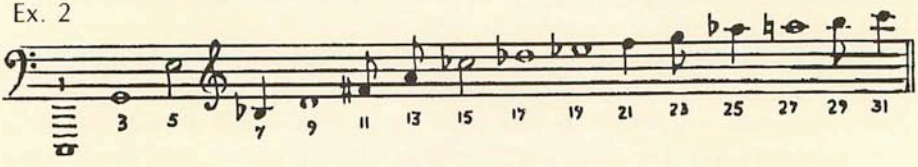
As the harmonic series thus looks after its own, subsidizing weak members and even fabricating resonance for missing ones, so it may utterly suppress any interloper. An influential family sounding at frequencies 8, 10, 12, 14, 16, (obeying the ratio 4:5:6:7:8) would not admit an odd-numbered intruder, and any such would meet strong opposition to its being heard. Conversely, another group in the ratio 1:3:5:7:9 (underprivileged to a degree) embodies no such internal strength: the common difference (2) is not present in the series, nor is that of any pair; no term is the double of any other. The whole is quite barren of such relationships as appear so profusely in the former group, and furthermore the injection of only one even-numbered stranger (say 2 or 4) would vastly improve its internal harmony. Later we shall compare these two — on the one hand the self-sufficient series, fiercely exclusive: on the other, one impoverished and welcoming assistance.

Thus armed with a few of the harmonic series' repertory of tricks, let us see what happens when we place our lips against the end of a cylindrical tube (like a hosepipe), and blow it as a horn.

II - *NOTES PRODUCED FROM ENDBLOWN TUBES*

When a player's lips are set against the end of a tube, it can no longer give the complete series of harmonics as listed earlier; it becomes another type of resonator known as a 'stopped pipe'. A new fundamental is formed an octave lower than before, and above this only the odd-numbered terms of the expected series are obtainable. These may be written down as before (with our notational system for indicating flatness in pitch) by taking the odd-numbered harmonics from the series shown in ex. 1 and transposing them down an octave, thus: —

Ex. 2



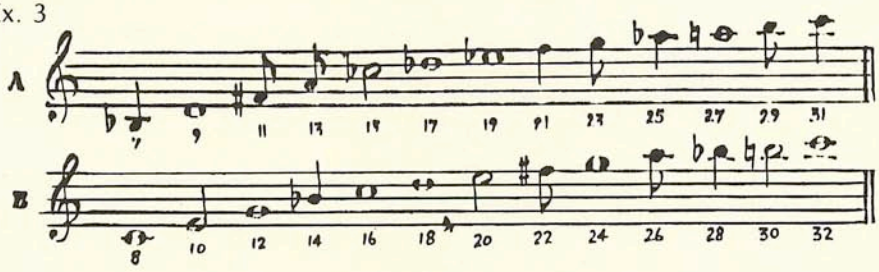
The value 1 has been reassigned to the new fundamental frequency, for easy recognition of arithmetical relation within the series; for any comparison with the latter, all the figures of ex. 1 should thus be doubled.

Observe that the new ratio is that awkward one 1:3:5:7:9:.....which was shown to be anathema to the acoustic formation of musical sound.

We also note that the ratio 2:4:6:8:10 is a desirable one, and if these two series are inspected side by side it will be seen that, although the first three terms show wide differences between the two rows of figures, thereafter the disparity lessens appreciably and ever continues to do so. It has already been said that notes of frequency 8, 10, 12, 14, 16 will themselves supply 2, 4, and 6, so we need only seek a way (perhaps by distorting the shape of our hosepipe resonator) to change its frequencies after the first three, i.e., 7:9:11:13:15:..... so as to coincide with the series 8:10:12:14:16:.....

Let us look at both of these set out in our code of musical notation as before: stave A shows the hosepipe's notes, stave B those (belonging to a complete harmonic series) at which we are aiming: —

Ex. 3



Reading vertically, the first pair shows a discrepancy of over a tone, the second just under a tone: by the sixth pair the disparity has diminished to a semitone, and by the high C it is only very slight.

It will be shown that by appropriately flaring-out the non-blown end of a cylindrical pipe into the familiar bell, these discrepancies may be entirely removed, and our endblown tube will be yielding open notes of frequency in the ratio 8:10:12:14:16:..... (alias 4:5:6:7:8:.....) — and these will then themselves furnish the missing lowest three notes. (The tube has three 'real' resonances of its own, which have not been sharpened sufficiently to conform in series with the higher set; they exist below the favoured usurpers which we play and hear, but are sternly suppressed by the same forces which install those so firmly. The actual pitch of the three dispossessed harmonics depends upon the degree of flaring and its profile; the real, though mute, 2nd note of an F-horn usually lies about 2-tones below the sounding pedal-note, and the real 3rd one rather more than a tone below the G above that — in some horns so close as to jam the clear emission of this note. The present writer seeks in design to manoeuvre the unusable vestiges of these notes from hindrance to useful influence, and draws attention to other rudimentary, spectral notes, at ½, 1½ and 2½ times the fundamental frequency. Products of 'sub-endowment', these are 'semi-differentials' from 1, 2, 3 etc., 3, 6, 9 etc., and 5, 10, 15 etc. above them; examples are found in

the works of Beethoven and others.)

In effect then, the flared horn produces a complete harmonic series albeit an octave higher than might have been expected, at the pitch given by a cylindrical tube only marginally longer but open at both ends.

For any interested in a piece of schoolboy's mathematics, there follows a tabulation of the above results (for endblown hosepipe and flared horn) expressed algebraically. To see how this transformation comes about, let us look at the wave-patterns of air-pressure in the cylindrical tube, and what happens when we flare out its end.

		TABLE A: Endblown Cylindrical Tube					TABLE B: The same with open end suitably flared-out						
Open Note No	Derived from True Harmonic No	Frequency	No of Parent-Cycles in Matrix-Pattern	×	Wave-length	= Tube-length occupied by Matrix-Pattern	Frequency	No of Parent-Cycles in Matrix-Pattern	×	Wave-length	= Tube-length occupied by Matrix-Pattern	= Total Tube-length	− Part of Flare not required
1	1	f	$\frac{1}{4}$	×	λ	= $\frac{\lambda}{4}$	$2f$	$\frac{1}{4}$	×	$\frac{\lambda}{2}$	= $\frac{1}{2}\left(\frac{\lambda}{4}\right)$	= $\frac{\lambda}{4}$	− $\frac{1}{4}\left(\frac{\lambda}{2}\right)$
2	3	$3f$	$\frac{3}{4}$	×	$\frac{\lambda}{3}$	= $\frac{\lambda}{4}$	* $4f$	$\frac{3}{4}$	×	$\frac{\lambda}{4}$	= $\frac{3}{4}\left(\frac{\lambda}{4}\right)$	= $\frac{\lambda}{4}$	− $\frac{1}{4}\left(\frac{\lambda}{4}\right)$ *
3	5	$5f$	$\frac{5}{4}$	×	$\frac{\lambda}{5}$	= $\frac{\lambda}{4}$	$6f$	$\frac{5}{4}$	×	$\frac{\lambda}{6}$	= $\frac{5}{6}\left(\frac{\lambda}{4}\right)$	= $\frac{\lambda}{4}$	− $\frac{1}{4}\left(\frac{\lambda}{6}\right)$
4	7	$7f$	$\frac{7}{4}$	×	$\frac{\lambda}{7}$	= $\frac{\lambda}{4}$	$8f$	$\frac{7}{4}$	×	$\frac{\lambda}{8}$	= $\frac{7}{8}\left(\frac{\lambda}{4}\right)$	= $\frac{\lambda}{4}$	− $\frac{1}{4}\left(\frac{\lambda}{8}\right)$
5	9	$9f$	$\frac{9}{4}$	×	$\frac{\lambda}{9}$	= $\frac{\lambda}{4}$	$10f$	$\frac{9}{4}$	×	$\frac{\lambda}{10}$	= $\frac{9}{10}\left(\frac{\lambda}{4}\right)$	= $\frac{\lambda}{4}$	− $\frac{1}{4}\left(\frac{\lambda}{10}\right)$
6	11	$11f$	$\frac{11}{4}$	×	$\frac{\lambda}{11}$	= $\frac{\lambda}{4}$	$12f$	$\frac{11}{4}$	×	$\frac{\lambda}{12}$	= $\frac{11}{12}\left(\frac{\lambda}{4}\right)$	= $\frac{\lambda}{4}$	− $\frac{1}{4}\left(\frac{\lambda}{12}\right)$
↓	↓	↓	↓		↓	↓	↓	↓		↓	↓		↓
n	$2n-1$	$(2n-1)f$	$\frac{2n-1}{4}$	×	$\frac{\lambda}{2n-1}$	= $\frac{\lambda}{4}$	$2nf$	$\frac{2n-1}{4}$	×	$\frac{\lambda}{2n}$	= $\frac{2n-1}{2n}\left(\frac{\lambda}{4}\right)$	= $\frac{\lambda}{4}$	− $\frac{1}{4}\left(\frac{\lambda}{2n}\right)$
↓	↓	↓				↓	↓				↓		↓
∞	∞	∞				$\frac{\lambda}{4}$	∞				$1\left(\frac{\lambda}{4}\right)$	= $\frac{\lambda}{4}$	− $\frac{1}{4}(0) = \frac{\lambda}{4}$

f = Frequency } of sounded fundamental on endblown cylindrical tube
λ = Wavelength }

Table A: (illustrated in fig. ii)

In an endblown cylindrical tube, matrix-patterns of all its modes of resonance occupy the whole length, and cease (i.e., final pulses reflect back into the tube) at its free end. Such a tube of length $\lambda/4$ contains when in fundamental oscillation one quarter only of a hypothetical matrix-pattern of length, and the audible frequency is in accord with this wavelength. All other possible modes of resonance are successively tabulated, yielding sounding wavelengths of $\lambda/3$, $\lambda/5$, $\lambda/7$, $\lambda/9$, $\lambda/11$ etc.; frequencies too are listed.

Table B: (illustrated in fig. iii)

When the same tube has been appropriately flared-out at the free end, each of its successive matrix-patterns' final pulses reflect from a point progressively further along the taper — e.g., the 4th and 5th from the tube's 7/8 and 9/10 points respectively. Note that the first three terms (marked *) are included for the sake of completeness, but in practice constitute a special case — see explanation in text. The result of this continual, progressive shift of reflection points is to bring the sounding wavelengths into coincidence with the 'natural' harmonic series (λ/2, λ/4, λ/6,) λ/8, λ/10, λ/12 etc. [alias (λ, λ/2, λ/3,) λ/4, λ/5, λ/6 etc.]; corresponding frequencies also are shown.

N.B. I. Although the endblown cylindrical tube is not of musical use, it does reveal the origin of a flared tube's behaviour, and the ultimate length to which the latter ever tends as the frequency of notes required of it increases.

II. Wavelengths and consequently frequencies heard of a flared tube in its successive harmonics are identical with those of a cylindrical tube marginally longer but left open at both ends.

III - *PRESSURE-PATTERNS FORMED IN ENDBLOWN TUBES*

The arithmetical series which governs the behaviour of all endblown tubes is not the numerically complete one: it is 1:3:5:7:9:11:.... The tube's confined air oscillating as a whole gives a fundamental frequency, and the subsequent harmonics are yielded by its oscillation in 3, 5, 7, 9, 11 etc. parts. When we play, the air inside forms itself into a different pattern for each harmonic; we will investigate its dispersal from some parts of the tube to gather in compression at others, and (for the present discussion) disregard its alternating zones of agitated displacement and calm. These pressure-patterns represent a kind of blueprint specimen, a matrix which stands in the tube, pre-ordaining the form of the soundwave ultimately projected. The matrix-pattern itself is to be imagined as built-up from quarterings of a 'parent' cycle equal in length (for each harmonic) to the soundwave heard.

An endblown tube is known as a quarter-wave generator. In fundamental resonance its matrix-pattern would only represent one quarter of a hypothetical parent-cycle; its second note is generated from a matrix depicting three-quarters of a shorter parent-cycle, the third harmonic from a matrix comprising five-quarters (1¼) of an even shorter parent, with seven-quarters (1¾) of its parent-cycle for the fourth har-

monic, and so forth. Although the above has been difficult to describe, it is readily seen from the patterns drawn in fig. ii, where calibrations show the number of quarterings of the particular parent-cycle (always the equivalent of the soundwave we hear) relating to each harmonic.

Every parent-cycle (though progressively shrinking in length for each ascending harmonic) constantly takes this form: —

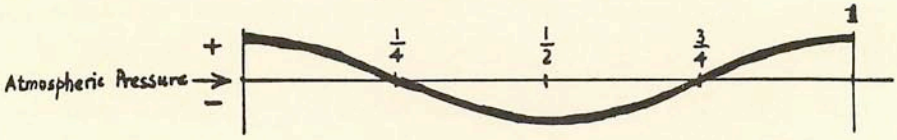


Fig. i

Note that its quarter and three-quarter stages are equal in pressure to the atmosphere; the matrix-patterns in the tube (which do not move whilst we play) will always dispose themselves so that one of these points falls at the tube's end adjacent to the outside air, and so that a compression will always exist at the end closed by the lips. It should be reiterated that no wave-pattern rushes through the horn, nor some headlong torrent of wind — nothing does, except reciprocating pulses (one in each parent-cycle) plying between successive compressions in the matrix-pattern at the speed of sound, and each passing on energy to the next cycle like the baton in a relay-race. The first such pulse originates in the tube's initial compression — itself transmitting a signal from each tiny movement of the vibrating lips, adjusted by the player to the frequency he wishes to play. (In an actual instrument, these vibrations are funnelled and intensified into a narrow mouthpiece-throat which forms the beginning of the compression there, helped by the tubing being drawn down in diameter.) The chain continues for as many (or few) parent-cycles as exist for a particular harmonic, each compression present turning one pulse back and triggering another, until eventually a pulse reaches the tube's open end and discharges itself on the inert air there. It then recoils; we revert through the pattern to the blown end, where a new phase will constantly begin as long as the breath-flow maintains activity. The repeated impacts on the air at the open end instigate a soundwave to radiate from there into the surroundings.

At this stage we may depict the pressure-patterns for the first five notes as blown on a hosepipe (fig. ii), because they show the source of behaviour for those of a tapered horn. Compressions and rarefactions are respectively hatched-in with plus and minus signs; calibrations show the varying complexity of parent-cycles composing matrix-patterns for each harmonic, and the zones equivalent to atmospheric pressure (appearing as blank) may be clearly seen. (Any vent opened in the tube-wall at such a place would scarcely affect the note being played.) Observe that the

even harmonics' matrix-patterns always end at the ¾-stage of a parent-cycle, those of odd ones at the ¼-stage; in the former the ultimate pulse approaches its reflection-point from rarefaction in the matrix-pattern, in the latter, from a compression. (One might expect even harmonics to respond differently from odd ones in playing: they do — the latter can seem insecure and wander in pitch, though the disparity is minimized in a good instrument.) The zone of compression is seen at the blown end for all the tube's harmonics.

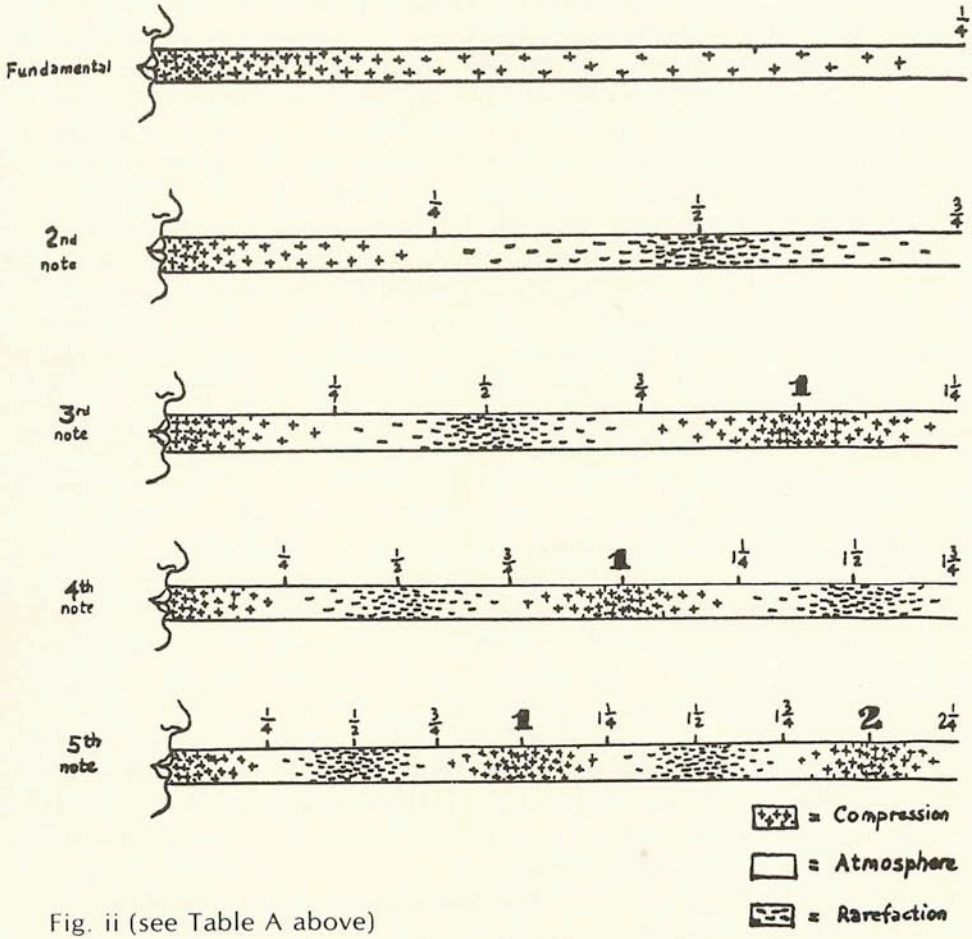


Fig. ii (see Table A above)

PRESSURES IN THE MATRIX-PATTERNS WHICH OCCUPY AN END-BLOWN HOSEPIPE SUCCESSIVELY FOR PRODUCING ITS FUNDAMENTAL, 2nd, 3rd, 4th & 5th HARMONICS.

THE MATRIX-PATTERN PRE-ORDAINS THE FORM OF THE SOUNDWAVE WHICH ITS PULSES ARE TO GENERATE AT THE TUBE'S OPEN END.

Now we shall imagine the tube's free end flared-out. We shall forget about its fundamental and the following two harmonics (as already proposed) and show what has happened to the 4th and subsequent ones through the flaring process. Look at the 5th note of the hosepipe (fig. ii); it forms a compression only one-ninth of the way back in from the open end. A widely flaring bell will never permit a compression there — its diameter is (by intent) too big; what it does is to crowd the whole pattern back, shrinking it so as to occupy such of the tube as it can in the narrower part, and this operation accordingly reduces the wavelength of its parent-cycle and sharpens the note heard. This process takes place for all harmonics, but as these ascend their matrix-patterns successively fare better in the tapered tube and are able to occupy ever more of it; they are thus progressively sharpened less than lower ones. In each case the unoccupied remainder of the bell serves to amplify the sound as when one calls through a megaphone; it forms the horn's tone.

Fig. iii shows a horn's 4th, 5th, 6th, 7th, 8th, 9th and 16th notes being sounded. The ends of the matrix-patterns (i.e., the final pulses' reflection-points as they impel a soundwave out of the bell) are indicated by an arrow in each case; note how this is far back (towards a real horn's finger-hook) for the 4th harmonic, but ever progresses towards the bell as the notes rise. A hand is drawn, placed meticulously in the bell (as it always must be if notes sounding beyond an octave above the piano's middle-C are to be clearly obtained); the duct thus formed between the palm and the bell's wall is essential, to contain the ends of these extreme matrix-patterns and their pulses' critical reflection-points. (In fact, the higher the note played, the nearer its final pulse's reflection-point tends to an ultimate one outside the bell, easily calculable for any horn: an infinitely high harmonic would require a tube-length equal to half the wavelength of the instrument's sounded fundamental, and at that distance, measured from the mouthpiece-throat along the tubing's axis, lies the ultimate reflection-point for that horn — for a frequency infinitely high and a wavelength of nothing. That is why no F-horn is ever as long as 12'9". The above emerges from the algebra in the previous chapter, and should resolve those fearful acoustical tangles wrought by failure to interpret what happens within an instrument's bell. A factor called 'end-correction' was borrowed from the theory of organ-pipes, and in desperation applied at the plane of the bell-rim in an effort to rationalize wild anomalies into a manageable pattern. It has unhappily over the generations caused great confusion, becoming for some an imprecise premise leading to dubious conclusions; many who contest the latter cling yet to processes by which they were reached.

We are now led to the crucial subject of right-hand position — for so long the subject of individual fads and fancies which may well destroy a player's upper range (and its contribution to general timbre even when

not itself sounded), should they fail to provide a smooth elongation from the horn's bell-throat outward.

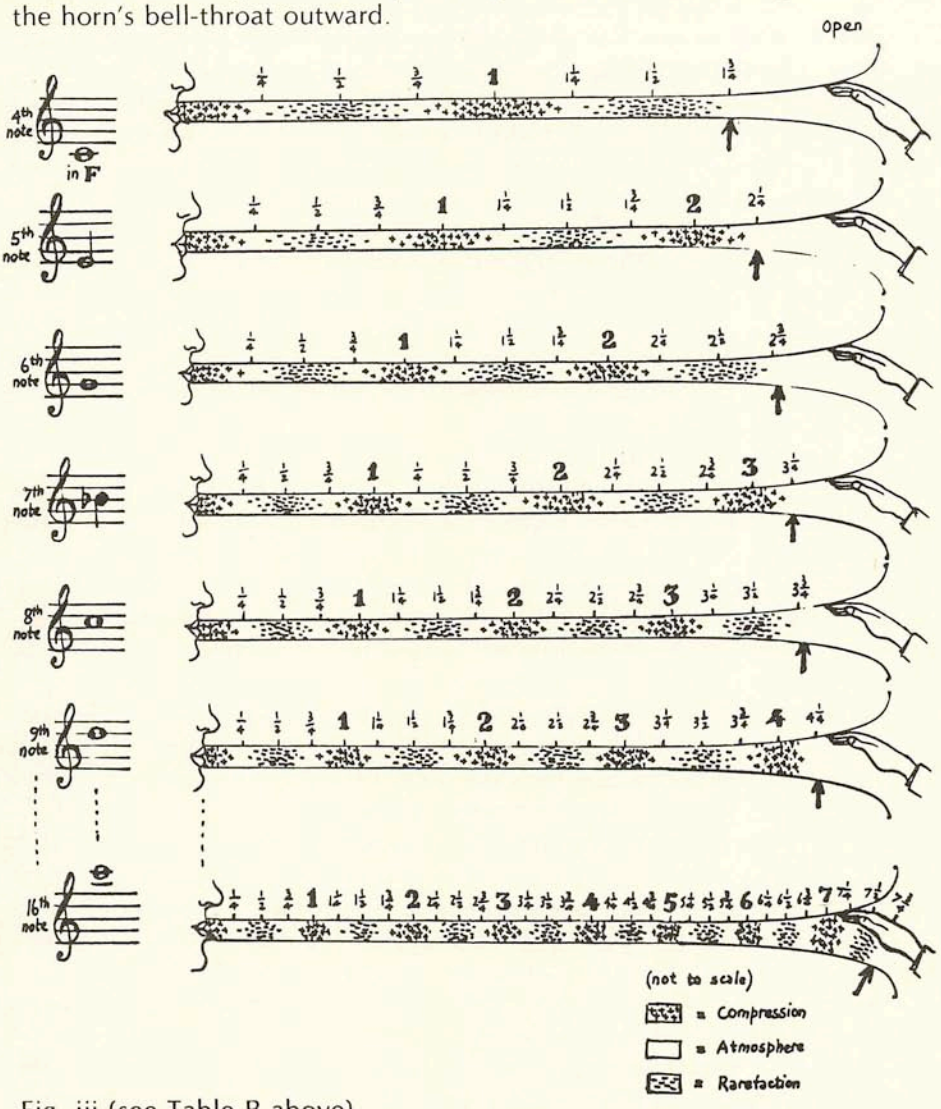


Fig. iii (see Table B above)

PRESSURES IN THE MATRIX-PATTERNS WHICH OCCUPY AN F-HORN SUCCESSIVELY FOR PRODUCING ITS OPEN NOTES AS SHOWN AT LEFT.

OBSERVE THE PROGRESS OF REFLECTION-POINTS (MARKED BY ARROWS) TOWARDS THE BELL-MOUTH AS THE NOTES RISE IN PITCH, EVENTUALLY NECESSITATING A PASSAGE FORMED BY THE HAND TO CONTAIN THE PATTERN'S END.

IV - *RIGHT-HAND TECHNIQUE — OPEN & STOPPED HORN*

A studied placement of the right hand in the bell was decidedly exploited by performers during music's Classical period (with its exacting demands for high playing) and by the later hand-horn virtuosi; since then the instrument has developed a much wider downward compass, and many (though by no means all) schools of playing have lost touch with this branch of technique — and some high notes too. The horn can in fact be played up to the written G (12th note of an F-horn, 9th of a Bb) reasonably well with the sketchiest or even no hand-placement. A low-player might even thus pursue his entire professional career, with a dull timbre, and attributing an insecure upper register to lack of use or to individual shortcoming; the strong player is not unknown who achieves wonders of range despite a hand-position less than ideal. Neither of these is an example of fulfilled potential.

Having traced the path of those vital reflection-points as the horn's notes ascend (ultimately leading right out of the bell), we shall now investigate in practice what happens when no hand is present to form the necessary channel for their progress. In conversation, Arthur Benade once maintained quite correctly (before he had experimented with hand-held instruments) that a horn's bell can project no well-defined frequencies beyond the above-mentioned range, and marvelled that so many players — seemingly by sheer insistence — could successfully defy this limitation. The author was pleased to produce the following demonstration (his party-piece — alarming to hear), and had converted him to advocacy of this technique for extending the horn's selectivity a further octave, when someone hastily brought in the coffee.

Take an open F-horn, withdraw its slide somewhat to adjust the pitch for playing with no hand in the bell, and thus sound the open notes ascending in a deliberate, slurred arpeggio. Apart from a rawness of tone, all will be well enough up to high G, but then the well-defined centres of the notes will become noticeably absent and the ascent will continue increasingly in the manner of a siren-like glissando, scarcely broken by the faint steps of separated notes. Many players can continue so upwards for an octave or so, showing the effect quite strikingly. Now return the tuning-slide to a normal setting and carefully arrange the hand (not yet in the bell) in the style traditional for the hand-horn, thus: with fingers extended together flat, and the thumb in the same plane flexed without gap beside the forefinger's base (giving the hand maximum breadth), slightly cup the palm then into a shallow scoop and hold it up against the light — if any chinks show, its owner will have to devise some means of closing these in order to handstop low notes with accuracy. Slide the hand thus posed into the bell along its further inside wall, palm towards the body and all fingernails touching the metal (which they should never

leave). Continue inward movement until the thumb's nail and knuckle, and the backs of the top two joints of all fingers, are supporting the horn; see that the little finger too is well in contact along its side. Care should be taken that the heel of the hand (in its open position) should not approach too close to the nearer wall of the bell, whose curvature the hand should imitate. With the palm thus placed, repeat the upward slur of open notes, and from high G onwards the harmonics will now speak step by step in the most precise clarity and definition, right up to the 24th note (an octave above). The tone also throughout the gamut will have taken to itself the wealth of all these formant partials, and in addition every interval of a good instrument (octaves, fifths etc.) will emerge as true as may be. The hand so held is in the ideal starting-position for partial or total bell-closure with minimum movement — merely a pivoting motion.

The above right-hand technique is especially critical for the proper use of descant-horns in f-alto or b^{b}-soprano — particularly if these have been designed with a normal horn's bell to produce that tone-quality. In the latter case the instrument's lower and middle notes rely on its upper ones being exactly centred on firm peaks of resonance, prescribed as though by frets on a stringed-instrument's fingerboard. In such a bell only scrupulous hand-position can provide that definition.

One hears it suggested that, if such modification by the hand is essential to the horn's efficient performance, why has not an appropriately designed bell been found to fulfil that function instead? The answer is that many such instrments do exist: they are called trombones, flugel-horns, baritones, all sorts — and sound like them. For it is the amplifying part of the bell (unoccupied by the matrix-pattern) that dictates a tone-colour, which in a horn is further 'shaded' by the player's hand. In ascending its range the horn's tone grows continually thinner; observe in fig. iii that lower and middle registers have a considerable length of this 'megaphone' to lend sonority — not so the upper notes.

Turning now to the matter of constricting the open bell-end by closing the palm right over it: this could only nullify the flared-out freedom that we purposely introduced to sharpen the lower harmonics of a cylindrical tube. Blocking the flare up again reverses it effect, until the tube's matrix-patterns are the same as they were before tapering; once more (for all harmonics) they occupy the whole tube as far as the closure before final pulse-reflection — the tube's open end now being those crannies to the outside air that no hand can quite close. Indeed when the bell is stopped really tightly, the total of such vents falls short of the original cylindrical tube's cross-sectional area, and lower harmonics will have regressed even flatter than those prior to flaring.

In fig. iv are shown the fully-stopped 5th, 6th, 7th, 8th, 9th, also 16th and 17th harmonics, of that same horn as is shown open in fig. iii. It can

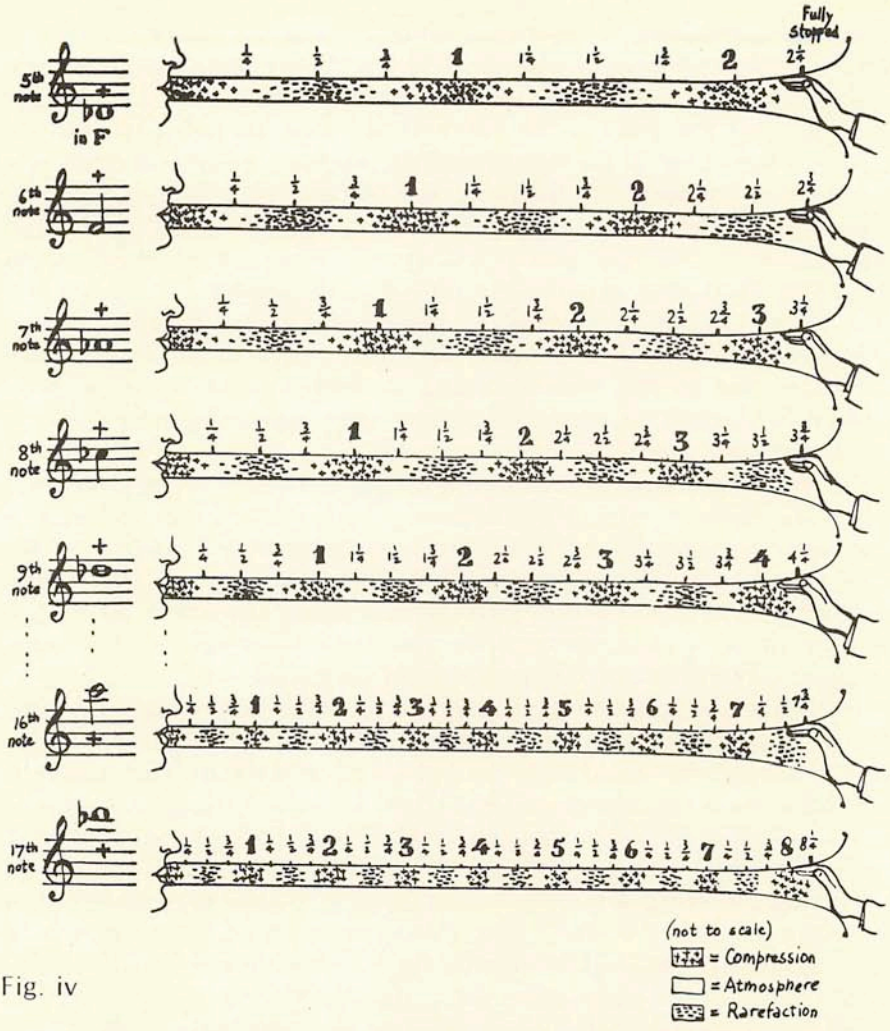


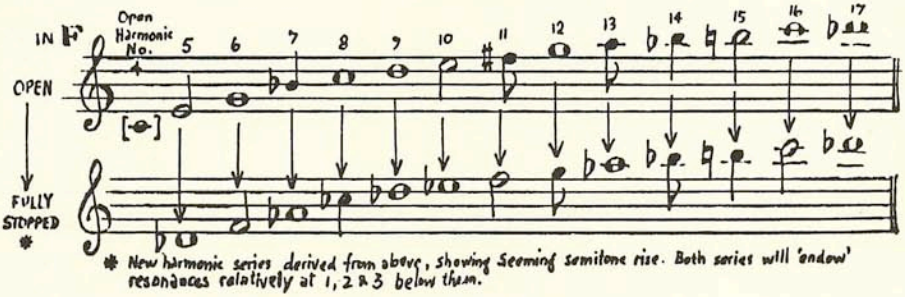
Fig. iv

PRESSURES IN THE MATRIX-PATTERNS WHICH OCCUPY AN F-HORN SUCCESSIVELY FOR PRODUCING ITS HARMONICS AS SHOWN AT LEFT, FULLY-STOPPED.

OBSERVE THAT THE REFLECTION-POINTS FOR ALL HARMONICS, WHICH THE FLARE (fig. iii) HAD VARIOUSLY DISPERSED INTO THE TAPER, HAVE NOW BEEN RE-UNITED BY HAND-STOPPING AT THE TUBE'S END AS IF IT WERE UNTAPERED (cf. fig. ii). NOTE ALSO FROM THE SKETCHES THAT WAVELENGTHS FOR HARMONICS 5, 6, 7, 8, 9, 17 ABOVE HAVE ALL VARYINGLY INCREASED TO DEPICT A SERIES ½-TONE ABOVE HARMONICS 4, 5, 6, 7, 8, 16 OF THE OPEN HORN (fig. iii) — THE RECKONABLE RESULT OF HANDSTOPPING.

be seen that the wave-pattern of the hand-stopped 5th harmonic has assumed the exact form of the hosepipe's 5th harmonic in fig. ii, and subsequent ones have similarly reverted. Also it can be assessed from the sketches that the stopped 5th harmonic's wavelenth has lengthened to approach that of the open 4th harmonic in fig. iii, the stopped 6th note approaches the open 5th, and so forth. All these fully-stopped notes lie in a new harmonic series, in pitch a step above that of the open horn, and like the latter will 'endow' the missing low notes of their series — provided bell-closure is efficient.

As a practical demonstration that this is true, again take an open F-horn, with the hand in the starting-position described earlier, and play the written first-line E (5th open note); with care the lip-tension can easily follow its fall in pitch while the hand slowly pivots over to the tightest possible closure — by which stage the note will have smoothly sunk a minor 3rd. Repeat the exercise with the 6th open note, which will slide down 1-tone. The 7th note will fall more than 3/4-tone, the 8th 2/3-tone, the 9th 9/16-tone, the 10th a semitone and so on — each succeeding harmonic being flattened less until by the 16th the pitch is barely altered by handstopping. (It must be continually insisted that the tightest stopping is very difficult for some builds of hand unaided, that the difference between complete and inadequate occlusion is tiny but critical; this experiment must not be dismissed as void because an individual may not stop the bell to the necessary degree — as many can do easily.) In ex. 4 these pitch-changes are put into musical notation with our code of descending note-values for increasing flatness:—



Ex. 4 Showing the derivation of fully-stopped notes, each from the 'open' note above it.

It will be seen that the result of closing the bell tightly is exactly as if the bell had thereby been docked of a semitone's length. Although no such shortening has in fact occurred — nothing less than complete excision of 9" of tubing from the horn would suffice — the reckoned semitone rise is a wholly convenient rule-of-thumb upon which players

have come to rely with good reason. To them, tight handstopping (on horns pitched from D up to F) should indeed represent an abrupt upward leap of a semitone throughout the entire range, and any other result or lack of definition is due to inadequate closure. One stresses the abruptness of this pitch-rise; in handstopping the 4th open note and those above it, an initial tendency for the pitch to sink (as in the above experiment) is then followed, if the lips do not accommodate that fall, by the note 'clicking' up a semitone at full closure — exactly as a yodeller's voice breaks into falsetto, and for the self-same cause: a sudden switch to the adjacent harmonic during a slur.

Here is an interesting indication that resonances below the 4th harmonic on an F-horn are endowed, and not real harmonics of the tube; it subsists in the fact that the above-mentioned upward click on reaching full closure occurs above that harmonic but not below — lower ones merely slide up a semitone eventually after no really well-defined pitch-fall: a clear case of 'anything goes' except for correct open and fully-closed conditions. When the 4th open note is gradually handstopped, the relaxing lips can trace its fall for nearly a major 3rd, but at the final stage of closure the player encounters a strong fully-stopped resonance as it were already awaiting him below — the one endowed by the lower line of notes in ex. 4. When the 3rd note as played open is subjected to handstopping it certainly does not click up to its new pitch, but slides up; nor will it before that be subjected to much flattening. The same is obserable for the pedal-note: it will not break upwards on full closure to another harmonic — none is there. One could predict that result also for the fundamental, but the present writer is unable to demonstrate it.

It is clear why the favoured keys for hand-horn music centre about E and E^{b}. For horns pitched above these keys the apparent shift resulting from handstopping progressively exceeds a true semitone (though players capable of phenomenally tight closure can make it so, as far as the key of B^{b} at a pinch). Single-horns in that key are commonly equipped with a short length of valve-tubing to aid this, their reckonable shift when fully-stopped being about ¾-tone; that of the f-alto descant is approximately a whole-tone, with 1½-tones for b^{b}-soprano. As tube-lengths increase for horns lower than D, the reckoned rise becomes ever less than a semitone, and tends to disqualify such instruments for truly chromatic use without valves.

In practice it transpires that a tube-length equivalent to a semitone shift on an F-horn (about 9") proves constant for horns in all keys, as an addition for handstopping without the necessity to transpose.

This explanation of all the questions raised by handstopping follows so acceptably in accord with the foregoing, and is so consistent with every detail that the author can detect in practice, that he is the more firmly convinced that all this material represents the long overdue solution to

many vexed problems. In his view, arguments whether stopping raises or lowers the pitch need never now recur — it lowers it, always, but if correctly done may be safely deemed to raise it; both claims are thus perfectly well answered.

The entire theory (not quite complete in the above resumé, of necessity) is now offered to all — players and acousticians alike — for use if they will as a hypothesis to be tested: for every conceivable prediction to be made from it and then verified, or not. Its author has been engaged in that pursuit for a long time (there are great opportunities if one has the run of a little horn-factory, with dedicated craftsmen for friends), and now strongly feels that this knowledge has been sat upon and incubated long enough.

"Stopped" Playing on the Horn

— Christopher Leuba

The following essay was written two years ago, before the explanation proposed by Professor Marvin Howe was made available on the pages of *The Horn Call.*[1] Professor Howe's description of the process, the degree of lowering the intervals, as described on page 20, is, I feel, consistent with my own experience.

His explanation of the causes of this phenomenon does not, however, convince me and I wish to propose a simpler idea. The substance of my explanation is to be found in section 4 of this paper. If this explanation is substantively that proposed by any previous writers on this subject, I must plead that the language of the explanations I have thus far read has obscured those intentions.

1. When the horn is "stopped" the perceived pitch does not rise: it falls. Composers have understood this and written their music accordingly. The well known conclusion of the Elegy from the "Serenade" by Benjamin Britten [(a)] is an obvious example, with a stopped "g" gliding (portamento) to an open g sharp. [(b)] I suggest that one try to persuade a hornist to do the reverse, i.e., glissando from a *stopped* g sharp down to an *open* g natural, a half step lower: if the player has any success whatsoever, it will be shaky and uncertain, and represents the triumph of an extraordinarily strong embouchure over an unwilling horn!

2. The pitch falls at varying degrees, depending upon where in the harmonic series one starts from, and of course, the relationship of the size of the player's hand in proportion to the size of the throat of the bell of the horn.

The following table of the harmonic series, as played on a Geyer horn with "characteristic" qualities, (i.e., flat fifth harmonic, in-tune octaves, etc.) indicates the notes resulting when the hand is placed in the normal "stopped" position. [(c)]

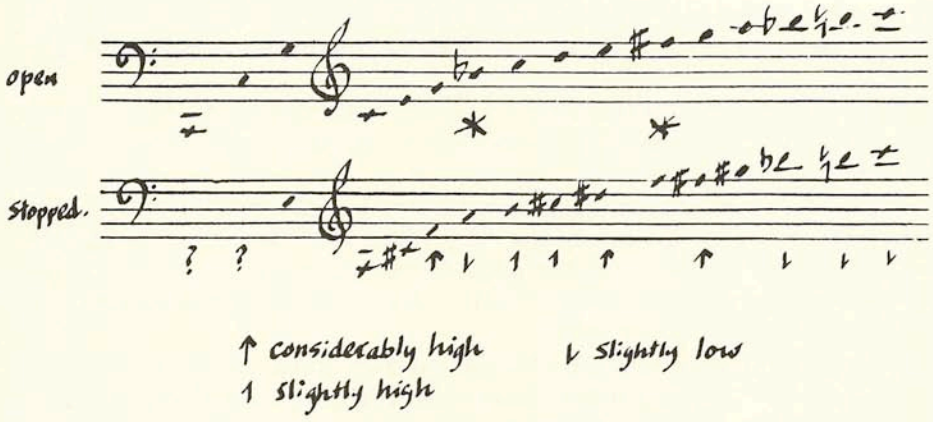
Those open harmonics marked with an asterisk * are generally not used because of intonation deficiencies. However, the resulting stopped tones may be usable.

(a) Benjamin Britten, *Serenade for Tenor Solo, Horn & Strings, Op. 31,* Hawkes and Son, London 1944

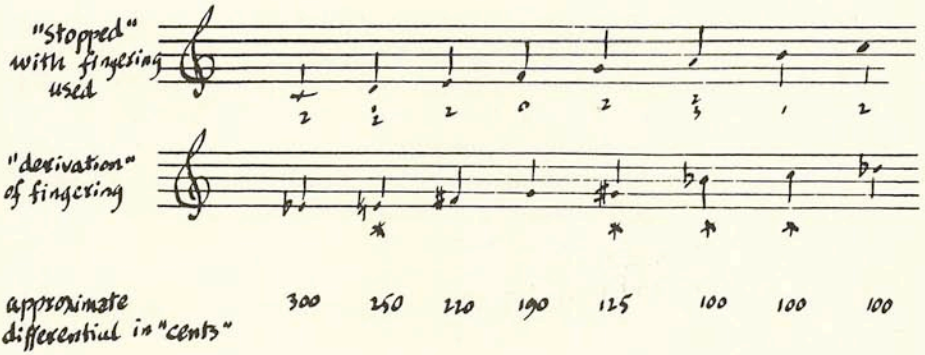
(b) Pitch references are to "Concert pitch."

(c) Notation for Horn in F.

A similar sequence can be projected for the harmonics of the B flat horn.



Next is indicated a C major scale (sounding F major) with the fingerings used on the F horn, stopped. Below this scale are indicated the "open" tones from which the stopped tones are derived. The numeral below the "derivation" is the measurement in "cents" [d] of the approximate distance between the stopped note and the open one from which it is derived, essentially in agreement with Professor Howe's findings.



It appears from the above tables that the higher one goes up the harmonic series, the less the hand affects the frequency of the open tone.

It has been my experience that the pitch once established at a stopped position will *always* rise as the hand is opened. The more the hand stops the bell throat, the greater the difference will be. There is no point at which the process reverses itself: this can be more easily demonstrated by

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(*d*) A "cent" is 1% of an equal-tempered semitone: 100 cents = one equal-tempered semitone.

starting from any degree of stopped playing, partially or totally closed, and gradually opening the hand. The pitch will rise. However, when starting from an open horn note, it is quite simple to jump to the next step in the harmonic series. Gustav Mahler makes effective use of this technique in his *Symphony No. 4 in G Major,* three bars before figure 9 in the first movement.

3. The above notwithstanding, I use the fingerings of the notes a half step lower when playing "stopped", just as do those players who claim that the pitch rises.

Where is the inconsistency? There is none. It is the result of a series of coincidences, arising from factors discussed in section 2, the uneven alteration of pitch at different registers as illustrated by the table of fingerings I use for a C major scale, along with the "derivations" of those fingerings.

Several of the notes are actually derived from "false", artificial or alternate fingerings. When a player determines the effect of his own hand on the bell of the instrument he plays, he can work out for himself a chart for the entire range on both the F and B flat horns.

4. If, as I maintain, the hand in the bell, shortening the effective length of the vibrating air column is *not* the predominating factor in determining the resulting stopped frequency, what is? If, as I maintain, the pitch drops, what causes this?

It is my thesis that it is not the change in the length of the vibrating air column which is operative, but rather the change in the *density* of the vibrating medium, the air. In placing the hand tightly in the bell, one can easily feel the greatly increased resistance offered to the player's lips, and to the flow of air. I suggest that the air within the horn in this circumstance is under considerably more pressure, i.e., *more dense*. It is a principle that, all other things (dimensions, etc.) being equal, a substance which is more dense will vibrate at a lower frequency, and a less dense substance will vibrate at a higher frequency.

Steel strings, being more dense than those made of gut, vibrate at a lower frequency, and must be tightened more in order to achieve the same frequency.

Another demonstration of this phenomenon is to be observed when one breathes helium from a party balloon: the voice resonance rises, giving a "Bugs Bunny" effect; as the helium is gradually replaced by normal air, the voice resumes it normal resonance. Personal investigation, by blowing helium into a horn, has convincingly demonstrated to me that this phenomenon applies to the horn as well: filled with helium, the harmonic series rose, and by mixing helium with natural air, I could create "helium modulations", notes which would gradually drift downwards as I blew more natural air, replacing the helium.

Following the same principle, by blowing against the hand in the

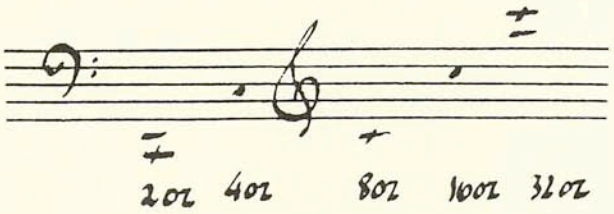
stopped position, the density of the air is increased and the resonance frequencies drop.

An easy test of this idea is possible: the writer, however, lacks suitable equipment. If my thesis is correct, a tone generated by some means other than air pressure through a diaphraghm, as for example, by a vibrator activated embouchure, would not increase the air presure, i.e., density, within the instrument. In this case, the frequency would certainly not fall, but might possibly rise, as now the shortened air column would probably be governing and operative factor.

5. One more question remains to be investigated: Why is the lowering of the frequency greater in the low register than in the higher partials of the harmonic series?

Research conducted by Dr. Arthur H. Benade [2] suggests that, in the higher partials of the harmonic series, the taper of the bell section of the horn disperses the energy developed at the mouthpiece in a progressively less efficient manner, until finally the highest harmonics do not speak. Confining the throat section of the bell with the hand assists in channelling the otherwise dispersed energy — increases the air pressure that it is possible to maintain in the bell section — and thereby assists in producing the higher harmonics.

I suggest that some sort of parallel relationship exists with the stopped hand position, and that it has a much greater effect upon the lower modes of the harmonic series than upon the higher, since the *increase* of pressure by stopping *is constant,* whereas it requires a geometric increase of pressure to ascend each octave [3] as shown by the following chart —



If, for example, stopping the bell increases the internal pressure by a constant 3 oz. per square inch, it would be evident that this 3 oz. is less of a factor in altering a note which requires 32 oz. per square inch than in one which requires only 4 oz. This, I suspect, is the reason for the greater effect of stopping in the low register.

REFERENCES

1. Marvin Howe, "Stopped Horn", *The Horn Call, Vol. 4, No. 1 (Autumn 1973)*
2. Arthur Benade, "The Physics of Brass Instruments", *Scientific American, July 1973*
3. Personal conversations with Arnold Jacobs, Chicago Symphony Orchestra, during 1961

ORCHESTRAS AROUND THE WORLD

Thanks are in order to overseas readers for personnel lists of orchestras outside the continental United States and Canada:

Austria: Friedrich Gabler
Belgium & Luxembourg: Lucien Thévet
Ireland: Gerard Larchet
Israel: Meier Rimon
Netherlands: Klaas Weelink
Scotland: Neil Mantle

For orchestras of France and Switzerland, please see Vol. IV #1; for those of Scandinavia, see Vol. III #2. U.S. and Canadian orchestras listed are those whose managements responded to a request dated April 20, 1975, in time for the May 15 press date for Vol. V #2; requests were sent to all orchestras listed by the American Symphony Orchestra League in their three categories, namely, Major, Metropolitan, and Urban. The rather small number of responses from Canadian orchestras was perhaps due to what seems to have been an erratic on-again-off-again postal strike situation. Readers whose orchestras do not appear in the list are urged to prod their personnel managers!

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Volker Altmann
Roland Baar
Josef Veleba
Johann Fischer

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Ernst Mühlnacher
Hermann Rohrer
Kurt Schwertsik
Othmar Berger
Rudolf Eidler
Hermann Klug

Niederösterreichisches Tonkünstler-Orchester:
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Johann Tluchor
Ralph Isakson
Hannes Sungler
Leopold Ramser
Erich Hackl

Orchester des österreichischen Rundfunks (ORF):
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Wolfgang Svajdy
Adolf Uhl
Hermann Probst
Erhard Seyfried
Josef Tschiggerl
Rudolf Hofmann

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Walter Tomböck
Alfred Hansel
Gregor Widholm
Niko Schynol
Alfred Krejcir
Walter Kriesch
Alois Vomastek

Salzburger Mozarteumorchester:
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Olaf Bauer
Dieter Binniker
Josef Mayr
Helmut Rottensteiner
Johann Ruderstaller

Linzer Brucknerorchester:
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Erich Pum
Wolfgang Bründlinger
Ignaz Gagl
Reinhard Bähr
Karl-Heinz Ertl
Kurt Deutsch
Georg Viehböck

Orchester des Innsbrucker Landestheaters:
Herbert Dutter
Karl Wieder
Thomas Hunt
Josef Lindner
Hans-Peter Probst

Orchester des Landestheaters Klagenfurt:
Csaba Gal
Herbert Foykar
Ernst Rem
Richard Foyer

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Orchestre National de Belgique:
G. Allard
H. Biebaut
E. Wuillot
H. Urbin
R. Rombeaux
J. Maurer

Radio-television Belge - Orchestre Symphonique:
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J. Neusy
H. Lemahieux
G. Miniot

Radio-television Belge - Orchestre Radio:
P. Gonet

Radio-television Belge - Radio Flamande:
A. Vandriessch

Opera de Bruxelles - Théâtre de la Monnaie:
J.M. Carette
M. Carette
J. Denocker

Centre Lyrique de Wallonie:
R. Janssens
B. Owen
I. Blanche
P. Deliège

Orchestre de Liége:
A. Lacroix
M. Bassinne
M. Rodrigue
J. Melin
R. Viatour

Fhilarmonie d' Anvers:
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C. Focan

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Patrick McElwee (**Co-Principal**)
Colin Block
Thomas Briggs
David Carmody

Radio-Television Authority:
Malcolm Willett

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Israel Philharmonic Orchestra - Tel-Aviv:
Yaakov Mishori
Meir Rimon
Ezra Molcho
Josef Rabin
Anatholy Krupnik
Horst Salom

Israel Broadcasting Orchestra - Radio-Jerusalem:
Avramam Amaroni
Avigdor Rais
Lary Kaufman
Joel Margolis
Janet Cardwell

Israel Chamber Orchestra:
Giora Rafaeli
Dani Etrogi

Haifa Symphony Orchestra
Shmuel Simons
Shlomo Arzil
Georg Bukin

Israel National Opera, Tel-Aviv:
Shmuel Pincu
Shlomo Shohat
Jaakov Kling

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Miss. J.M. Studebaker
I.J. Soeteman
M.J. Clarijs
J.A. Prinsen
S. van Brederode
J.P.M. Kohl

Residentie Orchestra - Den Haag
Vicente Zarzo
Wim Roerade
Piet Schijf
Henk Koster
Ab Koster
Jan Buurman
Peter Steinmann

Rotterdams Philharmonic Orchestra - Rotterdam:
Pieter Gouderjaan
Eddy van Leeuwen
Jan Peeters
Nico van Vliet
Bob Stoel
Martin v/d Merwe

Utrechts Symfonie-Orkest - Utrecht:
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Anton Franken
T. Westhof
P. Pannekeet
H. v/d Berg

Het Brabants Orkest - Den Bosch:
S. Pijpers
R. Siebert
T. van Veen
H. van Ingen

Het Gelders Orkest - Arnhem:
A.J.M. Gardien
B. v/d Bosch
P.J.M.F. Houben
D.A. v/d Berge
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Ian Smith
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David Flax
Christopher Griffiths
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Neil Fellows
Neil Mantle

Scottish Chamber Orchestra:
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Adrian McLeish

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Milton Kicklighter

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Ernani Angelucci

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Clinton Gamble
Meyers Hudson
Mack Burditt
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Fred Moore

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Howard Wall

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Joe Thayer

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Michael Thompson (*Asst. Principal*)
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Shirley Perkins
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David Reiswig (*Co-Principal*)
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Dale Weddle

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Ronald Veatch
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Peter Salter
Robert Morrow
Rose Marie Swanson

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H. Robert Reynolds

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Candler Schaffer

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Ike Nail
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Ted Miller
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William Arsers
*Daniel Gingrich
Douglas Stevens

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Ronald Lemon (*Co-Principal*)

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John Davis

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Robert Rensch
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Dennis Abelson
Nancy Stewart
Brady Graham

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Kendall Joyal
Lana L. Joyal

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*Gingrich goes to the Chicago Symphony next season, will be replaced by David R. Whaley.

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David Bircher
Michel Gingras
Thom Gustavson
Maurice Côté

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Erwin Chandler

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George Harple

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George Lessard
Matthew J. Melone

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Robert Spiers
James Cole

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Bruce McLellan
David Angus
Milan Yancich

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Gaylen Hatton (*Principal*)
Jeffrey Williams
Allen Herr
Michael Sanchez

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Priscilla McAfee (*Principal*)
Lawrence Barnhart

San Antonio Symphony:
Harvey Garber (*Principal*)
Steve Kraemer
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Elizabeth Powell
James Haskins
David Low

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George Cable
Kurt Snyder
Bonnie Rogers

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Herman Dorfman (*Co-Principal*)
William Sabatini (*Asst. Principal*)
James Callahan
Ralph P. Hotz
Jeremy Merrill

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Sinclair Lott (*Principal*)
Josef Kruger
Teresa Smith
Paul Jacobs
Debbie Mayfield
Chris Van Steenbergen
Charles Roberts

Santa Rosa Symphony:
Guy Connolly (*Principal*)
Henry Brom
Stephen Elrick
Jeffrey Dickey

Savannah Symphony:
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Gary C. Banks (*Associate First*)
Julie Ann Brandon
Carolyn Siefferman

Seattle Symphony:
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David Forbes (*Asst. Principal*)
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Elna Haynes
Annette B. Case

Shreveport Symphony:
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Albert Jack

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Colvin Bear
Duetta Pierce

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Richard M. Reed
Robert Sprinkle

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Sharon Meurer (*Assistant*)
Burton Hardin
Nancy Watkins (*Co-Principal*)
Bruce Thompson

Toronto Symphony:
Eugene Rittich (*Co-Principal*)
Fredrick Rizner (*Co-Principal*)
Scott Wilson
Richard Cohen
Brad Warnaar
Barbara Bloomer

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Marie Csete
James Richter
Lloyd Snyder
Richard Martz

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Ginger Weichman
Nancy Buxton
Michael Fee
Floyd Sturgeon

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Lynn Larsen
Edward Allen
Richard Fletcher
James Thatcher

Utica Symphony:
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Mary Newman
Carolyn Moonan

Vancouver Symphony:
Martin Hackleman (*Principal*)
Brian G'Froere
Dianne Dunn
Bruce Dunn
Paul Torvick

Vermont Symphony:
Rebecca Hatfield
William Karstens
Mary Lou Whittig
Chapin Kaynor

Westchester County Symphony:
Gregory Squires (*Principal*)
Julie Landsman
Anne Slayden
Joe Rinello
Randy Bartlett

Wheeling Symphony:
Forrest Standley (*Principal*)
Diane Ogilvie
David Knapp
Susan Standley
Alex Stanek

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Deborah Wheeler
John Wheeler
Lukie B. Hewitt
Richard Tarr

Beloit Symphony
Lorin McKelvy
David Borrows
Dean Butterfield
Hale Hokansen

Festival Casals
Luis Arroyo (*Principal*)
Hiram Román
Jesús M. Arroyo

Chicago Symphony Orchestra
Dale Clevenger
Thomas Howell
Frank Brouk
Richard Oldberg
Joseph Mourek
Norman Schweikert

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Henry Sigismonti(*Co-Principal*)
William Lane (*Co-Principal*)
Ralph Pyle
George Price
Hyman Markowitz
Robert Watt

Minnesota Orchestra
Robert Elworthy (*Principal*)
Bruce Rardin (*Assistant Principal*)
Frank Winsor (*Second*)
Charles McDonald (*Assoc. Prin., Third*)
David Kamminga (*Fourth*)

Montreal Symphony Orchestra
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Alice K.-Mendelsohn
Joseph Masella
Giulio Masella

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Edward L. Burnham
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Eileen Gress

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Lawrence Foster, Jr.
John Shulson

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Alan Paterson
Edgar Aunins
Roger Carver
George Harple

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Jon Born
Tina Kurz
Steven Ovitisky
Lurne Davis

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Paul Brown
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Pamela Halverson
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Vallejo Symphony
Henry Brom (*Principal*)
Glen Swarts
Thomas Winter
Carl Bangs

Ventura County Symphony
Tom Tucker (*Principal*)
Carol Alexander
David Glasser
Louis Korell

RECORDINGS

— Christopher Leuba
Contributing Editor

Thanks to Antonio Iervolino, of New York City for the following information.

CBS Estereo 5488 (Argentine)
Güelfo Nalli
F.A. Hoffmeister, Quintet in E flat
for Horn and Strings

PHILIPS 65 99 226 (Argentine)
Güelfo Nalli
(with Camerata Bariloche)
W.A. Mozart, Quintet for Horn
and Strings, K. 407

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* Carl Geyer, Horn Maker

* Max Hess, Boston Symphony

* Anton Horner, Philadelphia Orchestra

Wendell Hoss, Chicago Symphony,
Los Angeles Symphony

* Reginald Morley-Pegge, Author, London

* Max Pottag, Chicago Symphony

Lorenzo Sansone, New York Symphony,
Horn Maker

Willem A. Valkenier, Boston Symphony

* *Deceased*