PIANO TECHNICIANS

Journal

November 1994 Vol. 37 • #11









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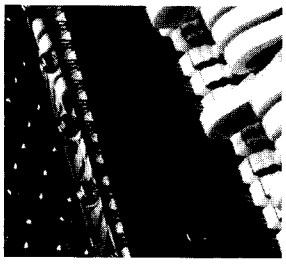

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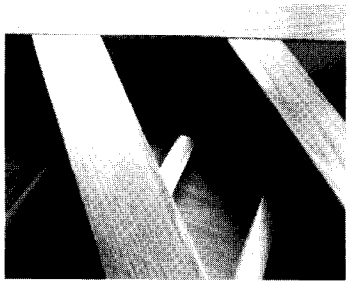

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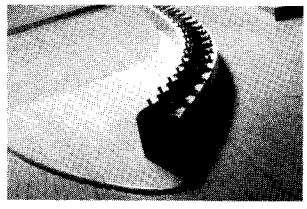

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Opportunity Is Always There

As the seminar began, he took a seat in the back row, several chairs away from everyone else. Dressed in a worn flannel shirt and jeans, the image he projected was less than professional, but he paid close attention to the speaker and I could see that he was taking careful notes.

During the break, when everyone else was meeting and greeting, he kept to himself, sipping his coffee in a corner of the room. It wasn't that he was unfriendly, because he shook my hand warmly when I introduced myself. After we had chatted a bit, I asked if he was a member of the local chapter.

"No," he said, "I don't think they'd want me."

As we talked, things began to make a little more sense. He told me he worked in a poor rural area some distance from the seminar site. In fact, he'd had quite a drive to get there on time. Most of the pianos he serviced were battered old uprights and — I'm just guessing — he probably cut a few corners here and there. He admitted as how he probably didn't have a very good reputation.

I don't know if he'd talked to anyone in the chapter or if he'd tried to join. There may indeed have been more history here than I know. One of the chapter officers told me later that the man in the worn flannel shirt was right about his reputation. And then he changed the subject.

Whatever the chapter thought of him — or he thought of them, for that matter — there were some missed opportunities here. He wanted to learn. He was willing to pay good money, drive some distance and sit in a classroom with people he thought were unfriendly, just to learn. And he had more to learn than just the technical topic that day, things the chapter could have taught him, like ethics, customer relations, and how to maintain a professional image, for example. And maybe, just maybe, they could have learned something from him. You never know.

A recent survey tells us that we're becoming a society of grumpy old men and women. Americans are disillusioned, distrustful and downright ticked off. Government? Forget about it! Politicians? Throw the rascals out, and elect somebody — anybody — who isn't a professional politician. If there's a man for our age, it's probably Kornbinder, but the surgeon general would have to confiscate his swamp jooce.

In these cynical days, it's hard to find anything to believe in. Plain and simple, we don't trust anybody. We're frightened, scared of crime issues, afraid of somehow losing out, terrified of a world none of us seem to completely understand. Self-interest governs everything we do. Where once we became involved in organizations as much from a need to give as for what we might receive, we now have an immediate agenda — when that's satisfied, we might give something back.

If you want an example, the National Piano Foundation's SPELLS program could be a poster child. If you haven't heard, SPELLS — Study of Piano Enhances Learning and Life's Success — is a market development program designed to reach the "unconverted" and place active music participation in a secure place in the mind of the consumer. Think about it: SPELLS is a grassroots program that brings together all the major retailers in a community, as well as teachers' and technicians' groups. These diverse and often antagonistic individuals are required to put aside their differences and work together for one simple goal: helping people in their communities rediscover the magic of making music. Talk about something that was designed to fail! And yet, it's working in many communities across the United States, as you'll read later in this issue.

Larry Goldsmith

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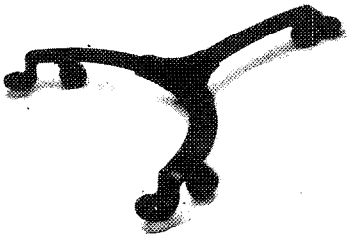

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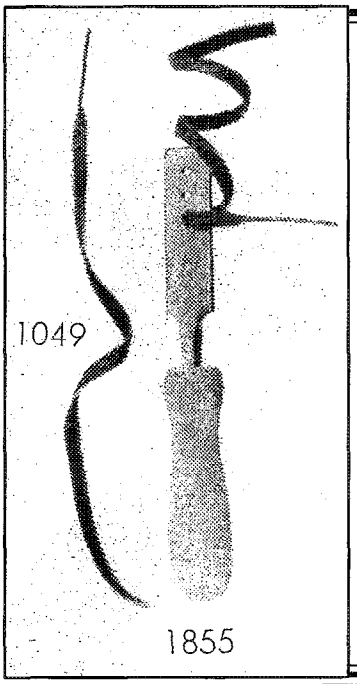

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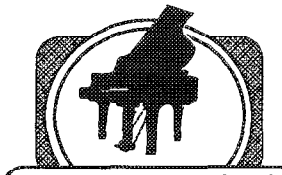

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PIANO TECHNICIANS
Journal
Volume 37 • Number 11 • November 1994

DEPARTMENTS

COVER ART

A few examples of the clip art from PTG's new Business Resource Manual, available through Piano Technicians Guild Home Office.

Marketing: Phase Two

PTG President
Leon Speir, RPT

Marketing! What comes to mind when you hear this word? What does it mean to you? Does it simply mean telling the public that you tune, repair, and service pianos and that you are qualified to perform the work they need? Does it mean advertising your services in the newspaper or yellow pages? Does it mean promotions of your skills to music teachers associations, schools, and churches? Does marketing mean investing money in a media campaign to inform the public of your abilities and that you are available to preform quality piano service? Of course all of this is marketing! We do have a responsibility as technicians to market our skills and our businesses in effective ways if we are to survive as piano technicians.

As an association however, we have an obligation to not only make the public aware of the skills of our members, but we also have a responsibility to generate a demand for those skills. I'm reminded of the days when the hula-hoop was first introduced. Had I first encountered one of these round plastic tubes bent into a circle sitting on a merchant's floor, I am sure I would have wondered, what in the world is this thing and what is it for? Could it be to hold the top of a plastic swimming pool open, or is it for my dog to jump through, or was it designed to hold fabric as it's quilted or embroidered? But because of good marketing, I didn't first encounter the hula-hoop on the sales floor of a store. I first encountered it through a well designed promotional campaign that told me what it was to be used for! A marketing program effectively created a demand for the hula-hoop. I was informed by an advertising campaign that this round plastic thing was to be used in a particular way and it made me want to try it (I didn't succeed, but I did buy one!)

We as an association have the same marketing responsibility to our members! We must inform the public that pianos need tuning and servicing and that it's needed at regular intervals! Our job as an association is to help create a demand for quality piano service. If we are effective in creating the demand, then each one of us can much more effectively market our individual skills. If we constantly hear comments like, "I've owned my piano for over 10 years and I still don't think it needs tuning," then we know we have not effectively done our marketing job as an organization. If instead we often hear, "Oh, yes I heard just the other day that pianos do need regular tuning and service," then we know we have succeeded!

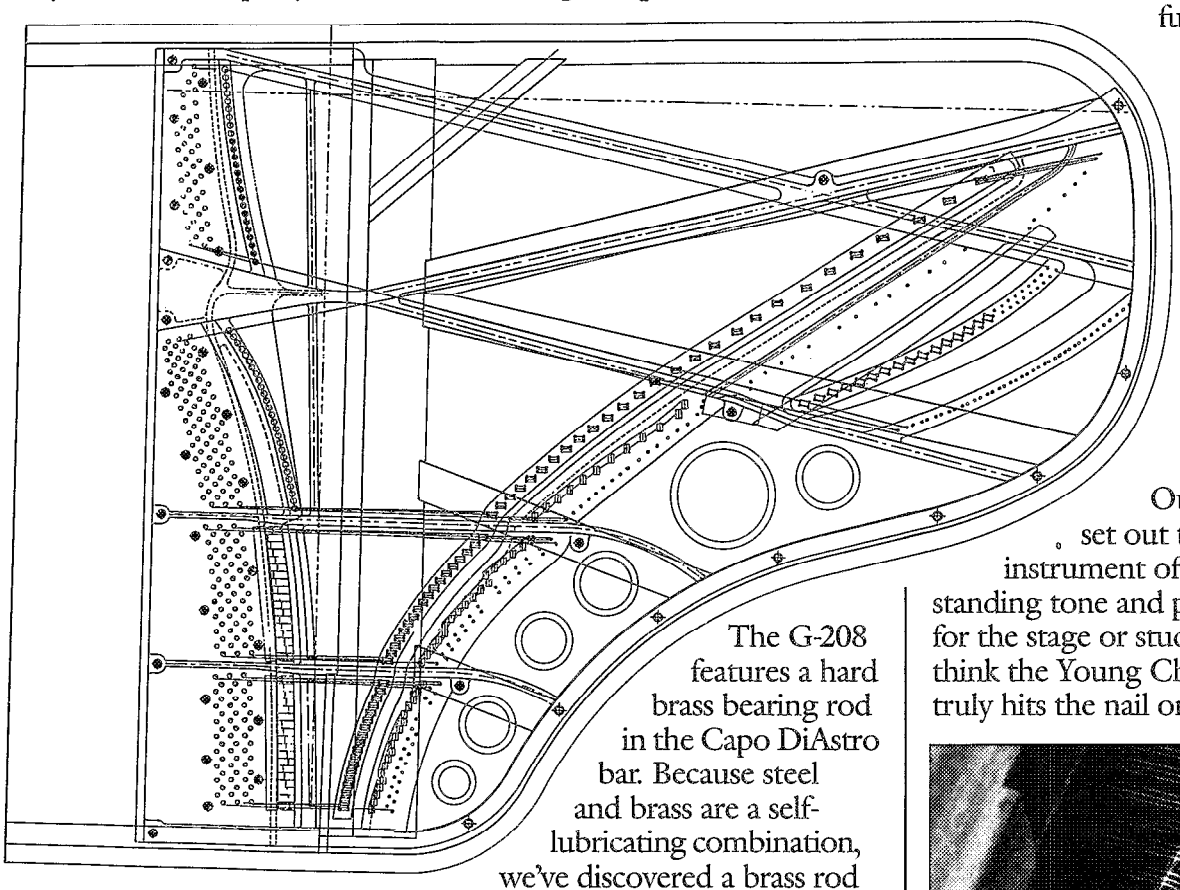
The next phase of our marketing program must be to widely distribute the marketing materials that the first phase has provided. You must work within your chapters to provide informational programs to teachers groups, schools, and to church groups. Get in touch with Bill Spurlock, who chairs our Marketing Committee, for suggestions on creative ways to generate a demand for quality piano service in your area. An informed public will require our services more often!

Leon Speir

A nuts and bolts guide to the new Young Chang G-208.

Our engineers are obsessed with the little things because they recognize the importance of attention to detail. But lately, they've become equally obsessed with big things, and the result is 6'10" long. Our new G-208 grand is a departure for us and represents the smallest and largest of our latest innovations.

The G-208 is a 6'10" grand piano of an entirely new scale design. It features our new "Asymmetrically Crowned" soundboard which places the highest part of the crown in each rib directly under the bridge providing maximum support under the downbearing pressure of the strings. This new soundboard design exhibits improved power, projection and tuning stability, and offers a longer soundboard lifetime. We're so pleased with this new design, we're now incorporating it into all our grand pianos.

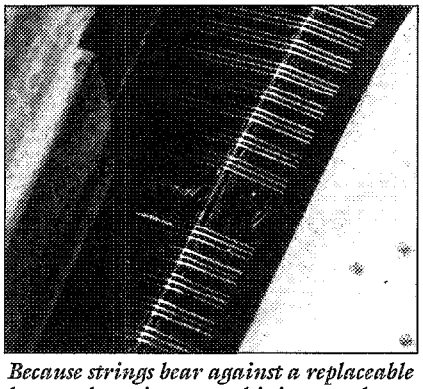


The G-208 features a hard brass bearing rod in the Capo DiAstro bar. Because steel and brass are a self-lubricating combination, we've discovered a brass rod offers better control of strings during tuning. In addition, the brass rod is easily replaced later in the life of the instrument eliminating the need for reshaping of the capo bar.

We also took a close look at our action and developed an all-new action design which improves response without loss of projection or clarity.

Our new double duplex system terminates the strings at the rear of the bridge and near the tuning pins with duplex bars. Both duplex lengths of the strings for each note are then terminated in equal length offering improved sustain, projection and clarity.

Together these innovations create an instrument with a rich, full sound, greatly improved response and a remarkable evenness of tone throughout the entire range of the keyboard. Our engineers set out to design an instrument offering outstanding tone and performance for the stage or studio. And we think the Young Chang G-208 truly hits the nail on the head.



Because strings bear against a replaceable brass rod, tuning control is improved.

For technical information on our new G-208 grand piano, write to us at Young Chang America, Inc., 13336 Alondra Blvd, Cerritos, CA 90701. Or call 310/926-3200, ext. 237.

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Tuning Techniques Need To Be Presented...

I read the *Journal* faithfully, and through the years have found it an important factor in the development of my piano technology skills. However, I have been disappointed in recent years in the treatment of the tuning phase of our profession. It has been somewhat narrow, dealing primarily with a visual tuning technique, giving the impression that this is the only technique available for aural tuning, and ignoring other practical and more efficient aural tuning techniques. Though these aural techniques have been successfully demonstrated for several years at the annual convention they still have not appeared in print in the *Journal.*

It is true that many top tuners including those who write for the *Journal* still feel that the only way to tune octaves is by matching coincident partials. This is because it is scientifically impossible to hear beats between two different fundamentals. Some of us are finally realizing that this restriction does not apply to aural piano tuning because it is impossible to strike a note at the piano and hear only the fundamental. Because partials are involved in any note that is played it is possible to hear beats between two different notes at their pitch level as well as at the pitch level of matching partials. The beats heard at the pitch level are not one set of matching partials beating as was stated in the *Journal* a few months ago (the author has already admitted the error), but beats caused by a blending of all the partials and fundamentals sounding together. Tuning octaves by matching partials is really a visual tuning technique because the electronic tuning device cannot measure beats between two fundamental pitches as the ear can. Because the ear can hear beats between two fundamental pitches at the piano other more practical and more efficient techniques for tuning octaves are available to aural tuners.

Several ideas emerged from the symposium on "Tuning by Eye and by Ear" at the Kansas City convention that I have not seen in print. I think many were surprised to find the panel in complete agreement on most every issue. Perhaps Dr. Sanderson was a trifle modest in his presentation of visual tuning. It may be only an aid to the very finest aural tuning, but I suspect that with the programs now available the Accu-Tuner is capable of producing a better tuning than many of us are doing aurally today. It would be very helpful if an article in the *Journal* could list the strengths of aural and visual tuning, and the techniques that are most appropriate and most successful in each case.

It seems that most articles on tuning now deal with the math involved with matching partials. This information is very interesting and has contributed greatly to our understanding of the whole tuning process, but it also turns off a great many readers. To treat this as the only, or even the best, technique for tuning octaves and other intervals aurally is questionable, when other tuners are using other legitimate techniques with equal or greater success. There is absolutely no evidence that tuning by matching partials produces any better results than other proven techniques.

It doesn't make sense to confuse tuners by listing many conflicting and impractical ideas on tuning, but it would be most helpful if someone could objectively present a more complete and more accurate picture of the whole tuning situation. If the machine is really an aid to better aural tuning as Dr. Sanderson says, then it is imperative that both visual and aural tuners are made aware of the best techniques available and their proper use. Much knowledge and new tuning techniques have been accumulated in recent years, and a proper and thorough presentation of this material in the *Journal* could greatly improve the level of tuning in the Guild and help many associates to become RPTs.

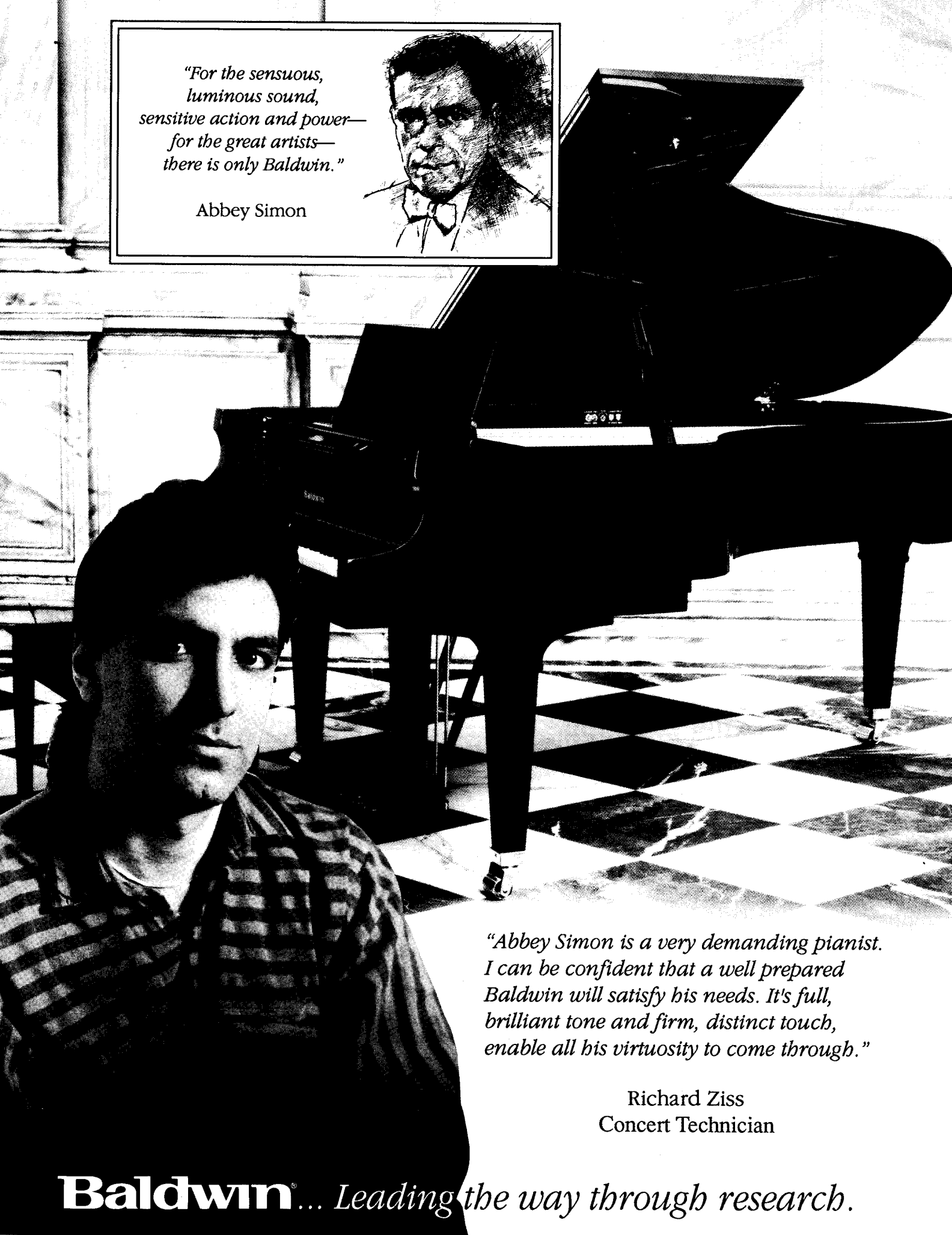
Sincerely,
Virgil E. Smith, RPT & M.Mus.

Still More on the Moor...

A joke or glaring error has been committed in the April 1994 edition of the PTG *Journal.* On page 57 under the article "Foundation Spotlight" concerning the "double manual piano" by Emanuel Moor, the picture shown is actually that of Pleyel Harpsichord #7 built between 1922 and 1923. The photo is actually a factory publicity picture showing the new metal overhead frame structure requested by Wanda Landowska which was added to the "Grand" Harpsichord at this time and used for the Pleyel "Grand" Harpsichord until Pleyel went out of business in the late 1970s or so.

Both of the editions of Michel's books on historical keyboard instruments are full of errors. The 1954 edition shows this harpsichord on page 89. Apparently Michel caught this error because in his later edition of 1963 titled "Historical Pianos, Clavichords & Harpsichords," this picture was eliminated. Instead, on page 186 a picture of the true Moor is shown AND it too was built by Pleyel. The description mentioned in the 1954 edition applied to the picture of the instrument in the 1963 edition. Perhaps you could print the true picture in a later issue to set the record straight! Pleyel did make a lot of experimental pianos which today are rare collectors items.

Sincerely,
Bjarne B. Dahl



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Pitch Raising & Tuning A Blüthner

I recently pitch-raised and tuned an old Blüthner 9' grand which, as you know, has a tunable suspended 4th drone string above some unisons. Although I completed the job in what I consider a reasonable amount of time, I felt that I could have done it much faster had I had more knowledge and experience tuning this type of instrument. The *Journal* index shows the last article written on this subject was in October, 1970.

I had particular problems with the mechanical aspects of the job, such as muting the piano (I used the strip mute), and tuning the 4th string. To tune the 4th string I struck the appropriate note with the left hand, plucked the 4th string with the right, and then quickly transferred the right hand to the tuning hammer to tune it. The problem was that the duration of the 4th string's sound was not long enough to tune it accurately to the unison. It took some trial and error to get the 4th string tuned accurately. Although it didn't occur to me at the time, I probably could have used the sostenuto pedal to sustain a particular note while I plucked the 4th string with my left hand and tuned the string with my right. I didn't know to what frequency the 4th strings were supposed to be tuned, so I took what I thought to be the safest course; I examined the interval between the 4th string and the unison prior to my working on the piano, and then kept that same interval during the final tuning.

My questions are the following:

a) Please discuss a good procedure for muting the piano (strip or otherwise).

b) What procedure do you recommend when tuning the 4th strings? Please include which hands do what, when and where?!

c) To what frequencies are the 4th strings tuned?

d) And one last question: How does one get rid of, or significantly reduce, false beats in the 4th strings?

Jerry Raz

From James Reeder

James Reeder owns and operates a major retail store and restoration facility in Michigan. He specializes in the restoration of quality instruments, from soundboards to refinishing. Jim has been a PTG member for 26 years and is an importer of Blüthner Pianos. Mr. Blüthner and Jim co-own German Piano Imports, LLC.

I wish to thank Jami Henry for the opportunity to be of service in answering the questions submitted by Jerry Raz about Blüthner Pianos and their 4th string Aliquot System.

History

First a brief history about Blüthner pianos. If the year 1853 makes a piano maker famous, then there are quite a few who were famous during that time. Julius Blüthner was one of them, for it was that year when he began making his famous pianos.

Piano makers of the first half of the 19th Century are no less important for they made giant strides in piano development that came in the second half. This "new," young generation of piano makers simply started where the older generation left off. Composers and pianists from Mozart onward, by devoting so much of their energies in composing for the piano, pointed the way in which it was to develop. To this day, piano interest is intact, concert halls are still filled to overflowing.

1888 was the year Julius Blüthner heralded his new 4th String Aliquot System. Warm, rich tone was the demand and his piano exceeded this demand. Blüthner pianos flowed into the United States from eastern and western seaports.

But was the Aliquot System the biggest thing in piano sound? The young generation piano-makers had learned well from the old. Their scale designs were more refined and construction techniques more developed and more accurate. Pianos made without Aliquot Systems were great, but those made with the systems were an astounding success and have become a standard in modern piano making. Blüthner pianos were made with or without the 4th String Aliquot System.

Description

The 4th string is not exactly a "drone" string as Jerry has described because it is not struck or plucked, but activated only from sympathetic tone of the unison. The strings in the lower section are dampened, while the top section remains open.

Tuning the 4th String

The 4th string should be tuned at four foot (4') and eight foot (8') pitch levels. The lower sections, where the brass termination posts are fastened into a small bridge located more central to the sound board are tuned at the 4' pitch level of the corresponding unison, (which is one octave higher). The posts divide the string length in half. This also indicates that the pitch should by tuned one octave higher.

The top section of the 4th string aliquots are tuned at the 8' pitch level. Their termination point are at

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the main bridge, thus the strings are equal lengths to the unison strings (8' equals same pitch as unisons).

Procedure For Tuning the 4th String:

I cannot say there is an exact procedure for tuning the 4th string, except from my experience. I tune the piano disregarding the 4th string, using the same procedures I would for any other piano. Since I do not strip-mute the whole piano, I find little inconvenience and after a time or two, have become very comfortable working around the 4th string. Strip muting the whole piano could lead to a few more frustrations.

Because a new procedure might be involved in tuning the 4th string, adjusting to it may take longer. A plucking method works well. By plucking both the in-tune unison and the 4th string, the tuner can always have the tuning lever in hand.

Depress the damper pedal as needed, where the strings have dampers. With practice this too can be an easy job. In plucking the strings one must remember to adjust his position to the node that will give a reasonably pure tone.

When the 4th string is reasonably close in tune, one should be able to hear the sympathetic sound of the string when the key is struck. This is especially so on the Blüthner pianos made today. So whenever possible, I try to "fine" tune the 4th string audibly, striking the key and listening for the sympathetic vibrating string.

False Beats and Short Duration of Tone

The condition of the instrument in question may contribute to both factors. If there is not a reasonable amount of resonance, the Aliquot System may not contribute much. Even plucking the string could possibly create similar effects. Close examination of the total system gives evidence that it was designed for the purpose of enhancing the treble tones of the instrument. But when deterioration is evident the fix may not be simple. The following list may be a help in restoring and maintaining the Blüthner 4th string Aliquot System:

1. Properly filed hammers, carefully fit to the strings.
2. Properly voiced hammers.
3. Well regulated action.
4. Carefully tuned piano—clean octaves and unisons.
5. Carefully tuned 4th strings at proper pitches.

Q — Can You Tune Less Than A-440?

Can you give me some good ideas on how to determine which pianos should be tuned at less than A-440? Is the size of the plate a good indication? I've heard that pianos with three-quarter plates should be tuned at A-435 or less.

Jerry Raz

A — From Jim Coleman Sr.

Jim Coleman Sr. was instrumental in the development of PTG's standardized tuning exam, and is one of the most popular seminar and institute instructors.

The size of the plate in most cases is irrelevant. More important are conditions of the strings, the age of the piano, the client's ability to pay, the scaling of the piano, etc. If note 88 has a speaking length of over 2 1/8" and the piano is of late 19th century or very early 20th century, it might be a little risky to tune to A-440. That does not mean that it cannot be done successfully. If note 33 has a speaking length of over 39.5", it might also be a little risky. Pianos with half or 3/4 plates are not a problem unless there is pinblock separation from backposts. Many early Kimball and Gulbransen upright pianos having half plates have been tuned quite successfully at A-440. There are some high tension pianos such as tall Knabes, Ivers & Ponds, Emersons, Williamsons, Chickerings, etc. where you may lose a string or two in the process of raising pitch, but even these can be tuned up to pitch if done very carefully. As a practical matter, if I lose 3 or 4 strings during the tuning process, I usually reassess my need to tune at exactly A-440. Piano plates are usually over-designed for strength. I have never declined to raise pitch because of a plate design. If a plate breaks, it is most often due to unusual stress or perhaps a flaw in the casting which could not have been known or guessed beforehand anyway.

T&T

Fitting A New Set Of Hammers

From Fred Tremper, RPT

For the longest time whenever I fit a new set of hammers onto new hammershanks I was never able to remove the stubs from the back of the tails such that they were flush with the tails. I tried sanding them down as I have seen others do, but I always messed things up. I then hit upon the method described below.

Photo 1

First, the stack is flipped such that the hammers can be placed in a heavy vise which holds the hammer firmly in place. The stub can then be easily sawn off with no danger of damage to the flange center pins (see Photo 1). While I am at it the tails can then be grooved with a checking file (see Photo 2).

Photo 2

Photos by C. Gallaher

T&T

Tightening Stripped Screw Holes

From Yvonne Ashmore, RPT

Stripped screw holes in punky plywood keybeds can be easily tightened up by gluing in a flat toothpick with superglue. After it has set a few seconds break off the extra length that is sticking up and go ahead and tighten down the key slip or whatever.

T&T

Two Tips From Chris Day

Key Leverage Ratio Measurement

1 Key leverage ratio is the distance that the hammer travels relative to the distance that the key travels. While this is a relatively constant amount amongst modern pianos, it can vary quite a bit in older pianos. It affects the effort required to play fortissimo amongst other things. The effort to play pianissimo can be reduced by means of key weights. However, the effort to play fortissimo is mainly due to the inertia of the hammers and adding key weights adds to the inertia of the system. Hanging modern high-density hammers on an old high-leverage ratio piano can give you a real tough piano to play.

The leverage ratio is easy to measure with a simple gauge. Cut a 2 inch length of tongue depressor or other wooden stick and glue to the middle a stack of front rail punchings that measures exactly .200". Any key can be depressed exactly .2 inches by placing the gauge on it and pressing it down until the ends of the gauge just contact the neighboring keys.

Make sure that the hammer of the key in question is level with its neighbor then press the key down as above. Measure the distance that the raised hammer is above its neighbor by using a decimal inch ruler. (These are very handy. Get one if you don't already have one.) Now divide this distance by 2 and multiply by ten (easier than multiplying by 5). This is the leverage ratio. Better still, use a 5mm stack of punchings for the gauge, use a metric ruler and multiply the centimeters rise by 2. Both these distances are less than the most conservative onset of aftertouch but are high enough to give a reasonably accurate measurement of hammer rise. For both grands and uprights there must be NO lost motion on the hammers used to take the measurements, they must be off the rest rail.

The test is simple enough that it can be made on several hammers routinely. After awhile the pattern of effects due to leverage ratio will become very evident. The leverage ratio itself can only be adjusted by making substantial geometry adjustments so that it is important to know what compromises must be made for deviant leverage ratios.

For high leverage ratios replacement hammers must be light if the piano is to play well. Key dip will be on the low side or else there will be excessive

aftertouch.

For low leverage ratios, common in modern concert pianos, the key dip will be on the high side if there is to be adequate strike distance and aftertouch. If keydip is small and there is aftertouch, then the strike distance is too small with the consequent loss of power.

In general, abnormal leverage ratios mean that you will have to modify your regulation technique to get the action playing properly. Leverage ratio measurements are in the nature of a warning to the technician that action geometry may not be quite the norm. It also helps to make judgments when selecting and shaping a new set of hammers on an old piano. A full discussion of leverage ratios is for someone else to write, I merely suggest a simple and quick way to obtain them.

Better Capstan Wrenches

2 Can there really be something to say about wrenches? Yes, all of the capstan wrenches that I have bought from piano supply houses have been in some way or another incorrectly designed. Consider the following:

a. Since the capstan wrench is to make an adjustment, not to tighten down a nut, the wrench does not have to be a tight fit. A loose fit is just fine, particularly since the diameters of square capstans are not very consistent.

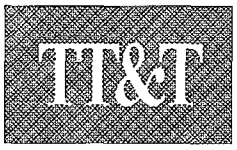
b. The length of the jaw of the wrench should be no longer than the flat of the side of the capstan. Longer than this merely wastes effort sliding the wrench on and off. The jaws should have a small chamfer on the open end to assist in locating it, especially on a square capstan.

c. The side of the jaw need only be about one and a half times the thickness of the wrench for adequate strength. The side, unlike the machinists wrench, should come straight back to the handle. If the wrench thins down behind the head then, when the wrench is turned fully so that the side contacts the neighboring capstan, it will not be possible to remove the wrench by pulling back on it without backing off on the adjustment. This gets frustrating and wastes time. The machinist can usually lift the wrench off the nut. This cannot usually be done on a capstan.

d. The most common error in piano wrenches is the angle of the head to the handle. If there is no angle then, for a square capstan, the wrench must be able to swing through 90 degrees of rotation. This much rotation is sometimes blocked by a support bracket. If, for the same square capstan, the head is angled at 45 degrees as in the commercial wrench, then flipping the wrench over alters the angle by 90 degrees or one full side angle and you are no better off. If, however, the head is angled at half this or 22 1/2 degrees, flipping the wrench over will change the wrench approach by 45 degrees or half a side so that the angle of swing required is half that of the capstan side angle. This gives you the maximum flexibility of use of the wrench by merely flipping the wrench over, not changing ends. For a six-sided capstan, the angle of the head should be 15 degrees, as it is with any machinist's wrench.

e. When using a wrench it is better to use it with the head angled so that the short side is leading the rotation since this makes it easier to extract if there is any cutaway behind the head. If the wrench is long, hold it in the middle so that it balances on the fingers. This is less tiring when adjusting 88 capstans.

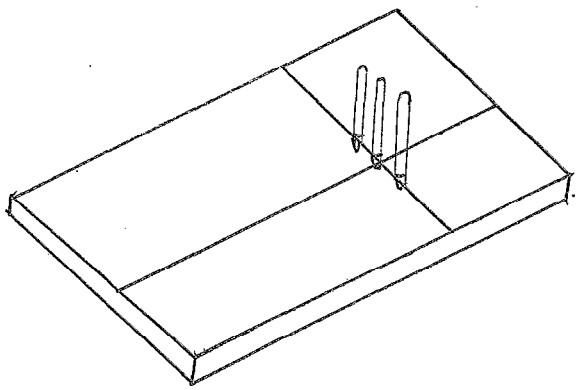
It is well worth the time to reshape your wrenches. It requires only a file and a vise. If the wrench is tempered the temper can be removed by heating the head in a gas flame to dull cherry red and letting it cool naturally. After reshaping the head can be re-tempered by heating as before but then holding the head under running water or dunking in a cup of water. This is rather crude but it works, assuming that the wrench is made of steel as most cheap ones are.



Making Marking Punches For Bridges

From Yvonne Ashmore, RPT

I believe Willis Snyder first suggested making marking punches for bridges out of plexiglass and bridge pins. I've added a new wrinkle to it (at least I think I have, but good ideas have a way of getting reinvented all the time). Scribe two cross hair lines on it and it will help you get the row of pin marks lined up correctly to the unison.



REACHING OUT TO PIANO TEACHERS WITH THE NEW... PTG Business Resource Manual

Bill Spurlock, RPT
Marketing Committee Chairman

"The PTG Business Resource Manual provides 28 prewritten articles on piano subjects."

Piano teachers are important allies in promoting the care and enjoyment of the piano. It's only natural that technicians and teachers should work together in this effort, since we share an economic and artistic interest in the instrument. And just as technicians benefit when a client is receiving proper piano playing instruction, piano teachers benefit when their students practice on well-maintained instruments. PTG members can help teachers in this regard by helping them understand more about piano care. In turn, we position ourselves as knowledgeable professionals and providers of quality piano service.

One of the most effective ways of reaching out to piano teachers is by contributing a regular column to music teacher newsletters or magazines. As with most publications, regular submissions are always welcome, as long as they are well written and serve the needs of the readers. But you're thinking, "I don't have time to write articles!" Relax—the PTG business Resource Manual provides 28 pre-written articles on piano subjects, making it simple for individuals or chapters to contribute authoritative and useful columns.

These articles can be submitted as-is, or edited to suit your preference or the space/content needs of the publication. Articles include such titles as:

- **Positioning a Piano in Your Home**
- **Does a Piano Need Tuning After It's Moved?**
- **Why Do Pianos Need Tuning?**
- **How to Safely Move a Piano Around a Room**
- **If You Have To Put Your Piano In Storage . . .**
- **How Long Will A Piano Last?**
- **How to Sell Your Piano**
- **When Is The Best Time To Get My Piano Tuned?**
- **Does It Hurt My Piano When Kids Pound On It?**
- **How Quiet Should I Be When My Piano Is Being Tuned?**
- **Why Do Some Pianos Have Keys That Feel Heavy and Some That Feel Light?**
- **Why Does My Tuner Play Each Note So Loudly When Tuning My Piano?**
- **The Piano Book**
- **What Does A-440 Mean?**

Placing articles in teacher publications is an excellent way to market both yourself and PTG to piano teachers and, by extension, to their students. Remember that to be successful, marketing must address the *customer's* needs. If perceived as primarily motivated by a desire to sell a product or service, with no obvious benefit to the customer, marketing will fail.

Thus, it's best to avoid adding additional text to a column to advertise your business. Instead, stay focussed on the teachers' needs and let the clarity and usefulness of the information speak for you. A simple subtitle stating something like, "Useful piano information to help you in your teaching, provided by John Doe, Registered Piano Technician of Piano Technicians Guild," along with your correct logo version, should suffice. The article should immediately benefit the readers—by helping them understand their instruments and how proper service can increase their effectiveness and their students' learning.

"On an organizational scale, it should be the goal of all PTG members to market Piano Technicians Guild—& especially the RPT standard—as a professional resource for piano owners"

On an organizational scale, it should be the goal of all PTG members to market Piano Technicians Guild—and especially the RPT standard—as a professional resource for piano owners. These articles, like the other content in the Business Resource Manual, are intended to make this easy. By providing well-written, useful information to piano teachers, you offer respect and cooperation to fellow piano professionals. By always featuring the name Piano Technicians Guild and Registered Piano Technician in the column header, you not only position yourself as a provider of quality piano care, but cast PTG in this role as well.

TT&T Q & A Wanted!

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LESSON PLAN

Technical Lesson #15

Vertical Regulation— Dampers: Alignment and Regulation of Pedal Lift

By Bill Spurlock, RPT
Sacramento Valley Chapter

This monthly lesson plan is designed to provide step-by-step instruction in essential skills. Chapters are encouraged to use this material as the basis for special Associate meetings, or for their regular meeting program, preferably in a hands-on format. This method allows the written information to be transformed into an actual skill for each member participating.

In brief

This lesson will cover damper adjustment for proper alignment and mating to strings, and even lift when using the pedal. Participants will practice techniques for refining the adjustment of existing dampers, rather than the major adjustment that might be required when installing an entire new set of dampers.

Getting started

In order to pursue any serious study of piano technology, one must obtain basic resources. Catalogs from several piano supply houses, both large and small, are essential. Besides offering the necessary supplies, their pictures and item descriptions are valuable sources of information. Piano manufacturers' service manuals are also essential sources of valuable information. Most are available at no cost. Most important to participating in this Lesson Plan series are the PTG Exam Source Books, both the tuning and technical versions. Articles in these books will serve as reference material for the lessons.

Hands-on session setup

To teach this lesson in a hands-on format, you will need one or more direct-blow vertical pianos in good condition. Used pianos in a dealership or practice room pianos at a college are good candidates, since they typically have some room for improvement in their damper adjustment.

Depending upon time and pianos available, this lesson may consist of each participant adjusting a few dampers or an entire set.

Additionally, meeting setup should include:

- Good lighting
- Extra damper regulating tools

Estimated lesson time:

2 hours

Tools & materials participants must bring:

For this lesson, participants should bring a selection of regulating tools, including:

- one straight and one 45-degree offset damper wire adjuster for a universal tool handle
- small wire hook (remove the wire handle from a rubber mute, and bend a small hook in the pointed end. See Figure 4.)
- parallel jaw pliers

Assigned prior reading for participants:

PTG Technical Exam Source Book (PTG Home Office, 816-753-7747), pages III.10, IX.1 - IX.4.

General instructions

There are several adjustments necessary for proper functioning of vertical dampers, as shown in Figures 1-4.

These adjustments are:

1) As viewed from above, the damper head must be rotated square to the strings so the felt rests evenly on the right, center, and left unison strings. This adjustment is made by rotating the damper head on the wire.

2) The damper felt must be aligned side-to-side and parallel to the strings, so all unison strings are contacted. This adjustment involves side-to-side bends in the damper lever wires.

3) As viewed from the side, the surface of the damper felt must be parallel to the strings so it contacts with even pressure over its whole length, not just at the top or bottom. For tenor and treble dampers, this adjustment requires bending the top of the damper wire just below the head to tip the head forward or back. Bass dampers are different—because their wires pass through the sides of the heads, rotating the heads on the wires will adjust top/bottom contact. In addition, because bass damper blocks are short and usually connected to the dampers by soft felt pads, the dampers can flex and self-align to some degree.

4) All dampers must begin to lift simultaneously as the pedal is depressed. This means that the lower ends of all damper levers must lie in a straight line, so the lift rod

Figure 1:
Rotate all dampers square to strings.

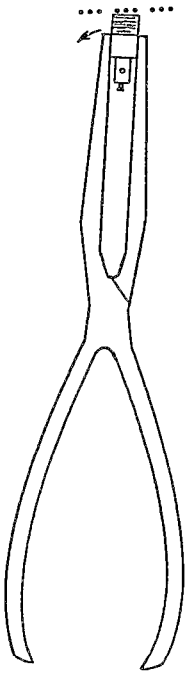
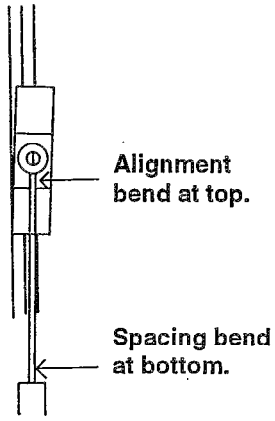
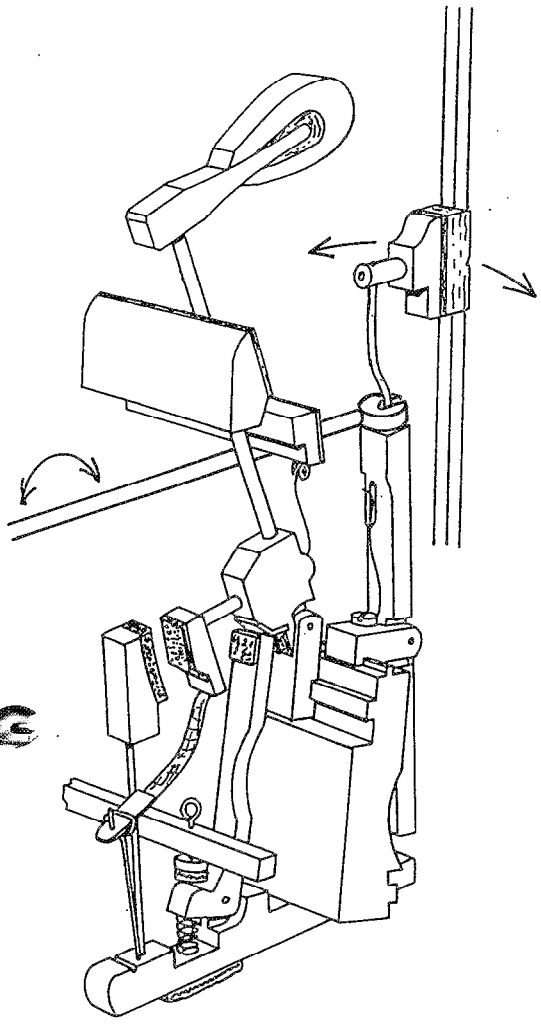


Figure 2:
Aligning dampers side-to-side and parallel to unison strings.



Straight damper wire bender.



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LESSON PLAN

will engage all damper levers simultaneously. (The lower ends of the levers are not visible during adjustment, so we watch for even lifting of the heads while tapping the pedal to see where adjustment is needed. However, it is important to realize that what you're really doing here is putting the lower ends of the levers in line.) This adjustment is made by bending the bottom of the damper wire, just where it enters the lever.

The problem

Adjustments #1 & 2 are simple and straightforward to make. However, adjustments #3 & 4 are more challenging because each can affect the other. That is, bending the top of the damper wire to adjust for parallel mating of the felt and strings also moves the damper lever slightly, affecting evenness of lift. And lower wire bends to adjust for even lift can change the angle of the head slightly. Thus these two adjustments have to be done as a pair, until each is so close that a further slight adjustment to one does not significantly affect the other.

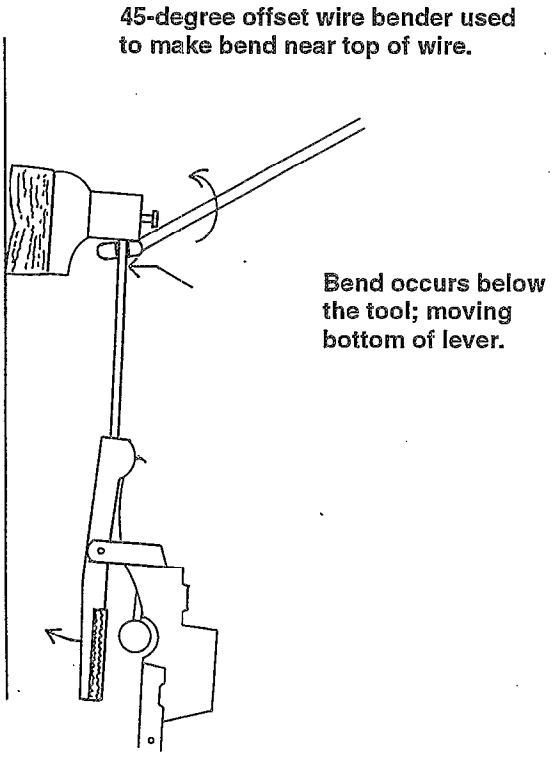
This problem is worst if the 45-degree offset wire bending tool is used in the traditional way—twisting the tool handle to bend the wire—for adjustment #3 because the actual bend occurs *below* the tool, and the lower in the wire the bend occurs, the more adjustment #4 is affected. In addition, the 45-degree tool tends to introduce sideways bends as well, disturbing the previous side-to-side alignment. This is especially so in the bass, where the wires lean sharply toward the treble.

The solution

By using a wire-bending tool only to hold the damper wire stationary just below the head, then bending the head forward or backward with the fingers, the bend occurs as high as possible, right where the wire enters the head. Done this way, adjustment #3 has little or no effect upon damper timing. It also does not upset side-to-side alignment.

Once all dampers are adjusted to mate parallel to the strings, even lift with the pedal (adjustment #4) is most easily done using the fingers and a wire hook or screwdriver as shown in Figure 4. Since the tool is inserted straight into the action, access and visibility are much better than when fishing the 45-degree tool in from the side. Side-to-side alignment is also preserved. If damper timing is only slightly uneven, only minor bending will be required. This will usually not be enough to upset adjustment #3.

Figure 3A:
Traditional method of adjusting damper felt mating to strings.



45-degree offset damper wire bender.

Figure #B:
Improved method.

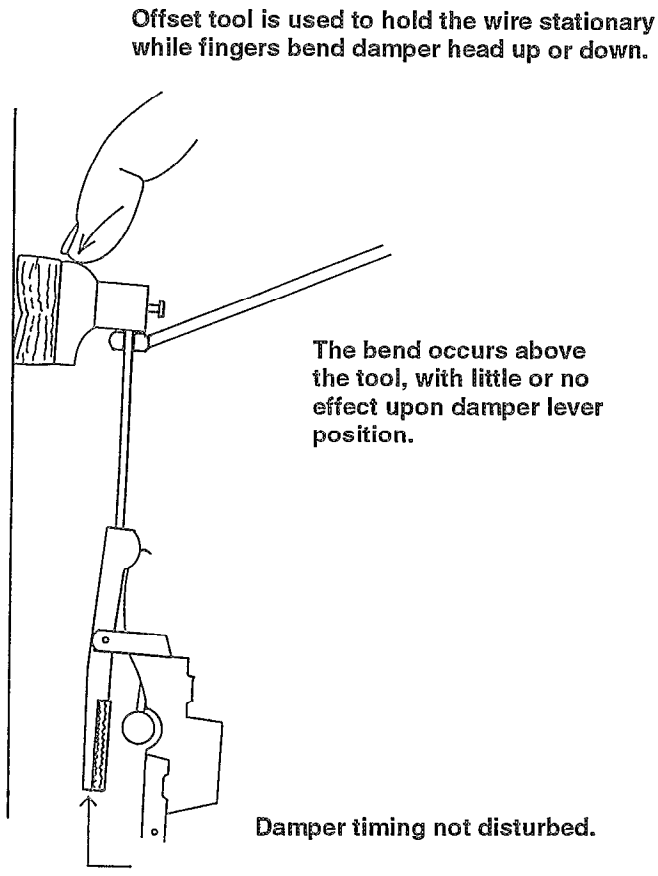


Figure 1: Using parallel jaw pliers, correct any damper heads not facing square to the strings as viewed from above.

Figure 2: Using a straight damper wire bender, align dampers to strings. Place the tool at the base of the damper wire to center the damper head over the unison strings. Then place the tool just under the head to align it parallel to the strings. (Note: This adjustment is best left alone on older dampers which may have become distorted from sitting off-center for some time. Realigning is only possible with newer, soft damper felt that is still reasonably flat across its face.)

Figure 3A: The offset damper wire bender is usually used to bend the top of the damper wire to adjust for parallel mating of damper felt to strings (even contact top and bottom). However, this method causes the bend to occur below the tool, affecting damper timing as much as it changes tilt of the damper head. In addition, the 45-degree offset tool can upset side-to-side alignment.

Figure 3B: A more efficient method of adjusting damper felt mating to the strings is to use the offset tool only to hold the wire stationary, then bend the head downward or upward with the fingers to adjust the head angle. This method bends the wire *above* the tool, just where it enters the head, with little or no affect upon damper timing.

Quality pianos in good working condition will probably not require this adjustment. Any dampers not contacting evenly top and bottom can be identified visually in two ways. First, pull back neighboring dampers and look from the side while slowly depressing and releasing the key of the suspect damper. Watch as the damper lifts on and off its strings to see if it touches evenly top and bottom or if it touches one end at a time. Second, with the action removed, inspect the flat dampers for string marks of even depth at both ends of the felt.

Figure 4:
Adjusting dampers for even lift with the pedal.

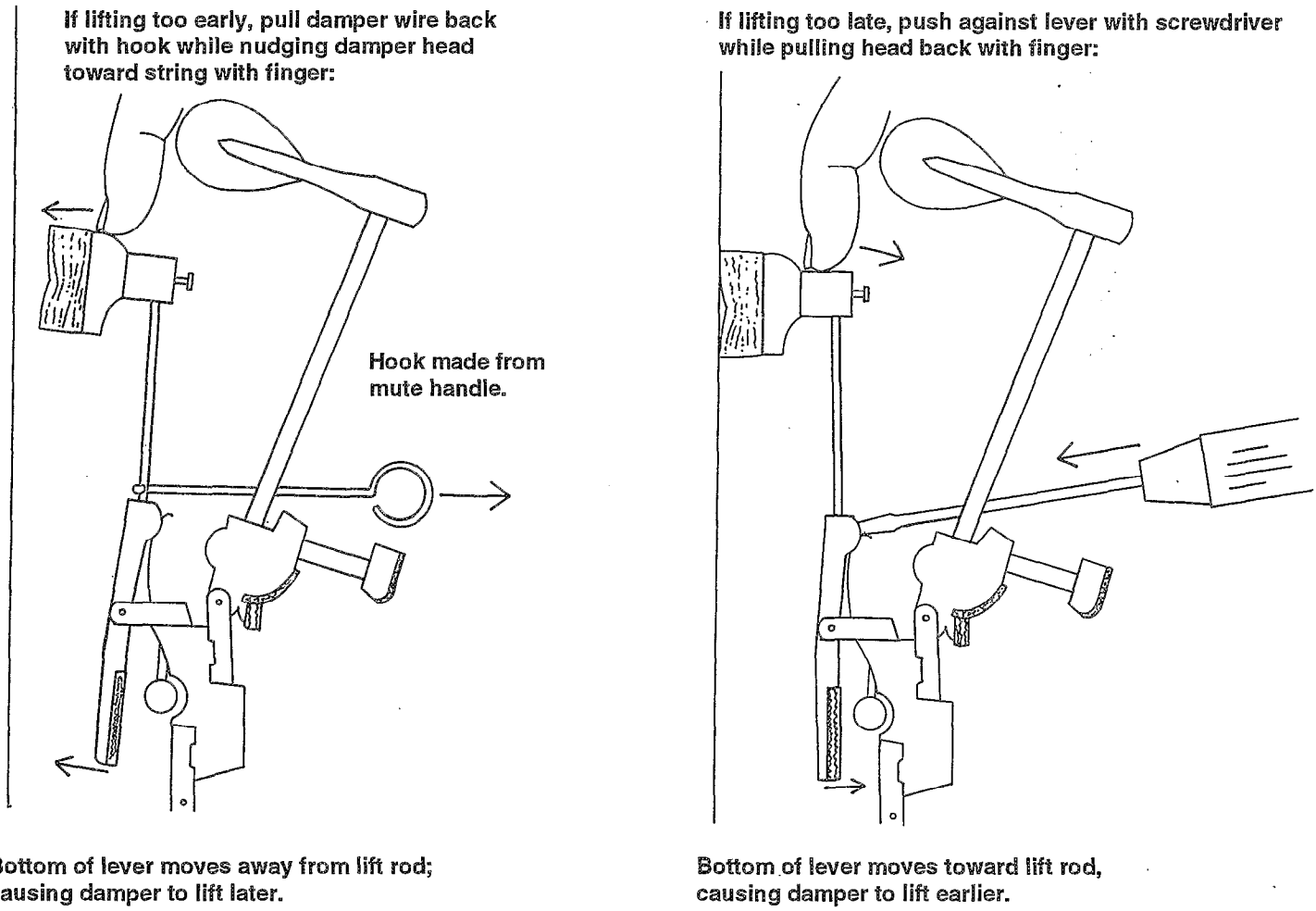


Figure 4: All dampers should begin to lift simultaneously as the pedal is depressed. As previously discussed, this uniform lifting occurs when the lower ends of all damper levers are in line, so the lift rod contacts all at the same time. This adjustment is usually done by fishing the offset wire bender at a 45-degree angle through the hammer shanks and butt springs to grab the lower end of the damper wire and make the bend. Although this method will work, it is cumbersome and often upsets the side-to-side alignment of the dampers. The method shown here is more efficient. A simple hook or screwdriver is used to reach straight into the action to push or pull the lower end of the wire while one finger is used to push or pull the damper head in or out. Visibility and tool access are much better, and side-to-side alignment is not affected. The adjustment is very controllable and accomplished with less trial and error than when using a wire-bending tool.

To identify early-lifting dampers, depress the pedal until you see the first dampers start to move. Oscillating the pedal slightly at this point will reveal others. Slow down these early dampers as shown in the left of Figure 4. Then, oscillating the pedal again, look for dampers that do not move when most others are winking. Speed up these dampers by adjusting as shown in the right drawing. Continue adjusting until all dampers begin to lift simultaneously as the pedal is slowly depressed, as though they were all one continuous damper.

Conclusion

Dampers require exacting adjustment to work well. They are sometimes more difficult to regulate than other action adjustments because they are not as accessible as others. However with practice, the right tools, and an organized approach, damper work can be easily mastered.

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LESSON PLAN

Tuning Lesson #15

The Baldassin—Sanderson Temperament

By Michael Travis, RPT
Washington, D.C. Chapter

This monthly lesson plan series is designed to provide supervised practice of tuning skills as a supplement to independent study and practice. Chapters are encouraged to use this material as the basis for special Associate meetings, or for their regular meeting program. Each lesson is designed to take about one hour, with about four participants. Participants are assumed to have essential reference materials and tuning tools (see PACE checklist) and access to a well-scaled large upright or grand piano for independent practice

In brief

One of the problems in learning to tune pianos, beyond the basic ones of controlling the tuning hammer and getting strings to stay where you put them, is understanding how to achieve an equal temperament octave in the midrange efficiently and consistently on the wide variety of pianos we have to deal with. Most written procedures for setting a temperament (using the term "temperament" from now on as it is commonly understood to denote "equal temperament"), involve some degree of backtracking and rechecking. For example, one of the most difficult and least efficient temperament sequences for beginners to learn is the "circle of fifths." Everything seems to be going fine until you get to that last fifth, which is beating terribly, and you are obligated to backtrack and try to figure out where you went wrong.

Temperament sequences in which you first set a series of ascending contiguous thirds within an octave are better, though if you choose the wrong octave size you could still have some problems extending the temperament, especially across the dreaded bass break. However, it is possible to use a sequence that allows the piano to tell you early on what octave width will work best, and what compromises you will have to live with, by working with the wider intervals first. This was part of the thinking behind the "Two-Octave Temperament" Dr. Albert Sanderson was teaching in the early 1980's. (See assigned reading).

RPTs Rick Baldassin and Al Sanderson have since then jointly created a logical, two-octave temperament system that minimizes backtracking, and for the last few years have been teaching it at regional seminars and conventions. They generously agreed to its use in the PACE program, and suggested how to divide the procedure into lessons. Step-by-step instructions for tuning this temperament, appearing in this and the next two lessons, closely follow a recent class handout.

This lesson begins a series of three on the **Baldassin-Sanderson Temperament**. In this lesson, participants will learn how to divide the double octave, A2-A4, into six equal parts, which are the six ascending contiguous major thirds starting at A2 and ending at A4. Participants will share the work, each contributing to the final result, as we follow steps 1-11 (Part 1) of the Baldassin-Sanderson Temperament procedure, outlined below.

In the lessons to follow, we will move inside the double octave/thirds framework, learning first how to divide the F3-F4 octave into six equal parts, and finally into the twelve equal parts of equal temperament. To preserve continuity and save set-up time, PACE providers may wish to offer all three lessons to the same group on the same day. Alternately, you may use a Sanderson Accu-Tuner (SAT) to save your group's work for subsequent recall (see instructions below), and allow extra time for set-up of the next two lessons.

Chapter meeting set-up

These lessons are most conveniently taught to a small group of four or five. Each group should have its own piano and RPT instructor. Each piano should be in a quiet environment for close listening. Avoid using pianos that present serious obstacles to tuning, such as deeply grooved or misaligned hammers, string termination noises, etc.

Tools & materials participants must bring

Tuning hammer, A-440 pitch source and mutes. The instructor should have the use of a Sanderson Accu-Tuner for recording results of this lesson for use in subsequent lessons.

Home study assignment for participants

1. Read *The PTG Tuning Examination: A Source Book*: "Evaluating Temperament Sequences," by Carl Root, pp 97-106; (3/81 *PTJ*).

2. Read *The PTG Tuning Examination: A Source Book*: "A Two-Octave Temperament," by A. E. Sanderson, pp 95-6; (4/83 *PTJ*).

3. Read Michael Kimbell's article in the 5/94 *PTJ*, "The Magic Circle of Fifths," where on pages 36-37 there is a brief analysis of the Baldassin-Sanderson Temperament.

4. Take advantage of any opportunity to attend a Baldassin-Sanderson Temperament class.

5. Practice tuning 4:5 ratio contiguous thirds (for example, F3-A3 vs. A3-C#4). Use a metronome to establish a tempo, and subdivide the ticks by four and by five

to produce the ratio of beats. Refer to PACE tuning lesson #12 for more hints on using the metronome to count beats. Also, practice tuning 4:2 and 6:3 octaves (lessons #s 8 and 9, respectively) both pure and 1/2 bps wide, and 4:1 double octaves (lesson #14) both pure and 1-1 1/2 bps wide.

General instructions

This lesson will follow steps 1-11 of the Baldassin-Sanderson Temperament procedure. At the conclusion of the lesson, the group should have tuned and checked the series of rising contiguous thirds from A2-C#3 through F4-A4 with unisons. PACE instructors may require participants to tune unisons as they go, or instead insert a strip mute in A2-A4 and tune all the unisons afterward. Either procedure should produce satisfactory results provided the piano is at pitch and reasonably in tune to begin with. The final checks should be with unisons pulled in.

We will be dealing with seven notes, and several of these more than once in the course of this lesson. The instructor may wish to write the note names on slips of paper and then have a random drawing among the participants to divide up the work. In any case, everyone should have something to do, and any means for dividing the work is Okay. The notes in order and status are: A4 (final), A3 (initial), A2 (initial), A2 (final), A3 (final), F3 (initial), F4 (initial), C#4 (final), F4 (final), F3 (final), C#3 (final).

The Baldassin-Sanderson Temperament: Part 1

1. Tune A4 to 440 Hz. Test with note F2 (F2-A4=F2-fork).

2. Tune A3 to A4 as a 4:2 octave about 1/2 beat wide (M3<M10).

3. Tune A2 to A3 as a 6:3 octave about 1/2 beat wide (m3<M6).

4. Test the A2-A4 double octave. It should not be more than 1 1/2beats wide (M3<M17). If the double octave is too wide, reduce the width of the double octave by raising the pitch of A2, and tune A3 between A4 and A2, making the two octaves sound as good as possible.

5. Tune F3 to A3 at a nominal 7 bps. This is simply a guess at the proper beat speed at this point.

6. Tune F4 to F3 as a 4:2 octave, about 1/2 beat wide (M3<M10).

7. Tune C#4 to A3 so that there is a 4:5 ratio between FA-AC# and AC#-C#F (ascending series of thirds). There will be only one place where both pairs of thirds will have the same ratio. This is the correct setting for C#4, whether the guess (step 5) for the FA third was correct, or not.

8. Test C#4-F4 vs. F4-A4 to see if the ratio is 4:5. If not, retune F4 to C#4 and A4 until the ratio is 4:5. Now F4 is in the right place.

9. Tune F3 to F4 as a 4:2+ octave, about 1/2 beat wide (M3<M10) and so that the F3-A3 vs. A3-C#4 thirds are in the ratio of 4:5.

10. Tune C#3 to C#4 as a 6:3+ octave, about 1/2 beat wide (m3<M6), and AC#-C#F thirds are in the 4:5 ratio.

11. Test the progression of contiguous M3s A2-C#3-F3-A3-C#4-F4-A4.

The Double Octave has been divided into six equal parts.

Some points to remember:

1. The widest acceptable A2-A4 double octave (up to 1 1/2 bps) will usually yield the best-sounding tuning. The piano will tell you how wide A2-A4 can be while maintaining good single octaves A2-A3 and A3-A4.

2. At step 5, the beat speed of the F3-A3 third is not critical; 7 bps is only a good initial guess, which you will change if it doesn't turn out to work exactly for your piano. The procedure does not specify final beat rates for this or any other interval, since these will vary from one piano to another. It is the relationships of beat speeds among the thirds rather than their absolute beat speeds that are most important.

With unisons pulled in, recheck the following:

1. A4 at A-440.

2. Three good octaves, A2-A3, F3-F4 and A3-A4, with similar-sounding M3-M10 tests on the upper two.

3. Contiguous M3s from A2-C#3 to F4-A4, beating in ascending 4:5 ratios.

4. Ascending M10s A2-C#4, C#3-F4 and F3-A4 which echo the beats of the three lower contiguous M3s, and also beat in an ascending 4:5 ratio.

If stopping at this point, it will be convenient to measure and store all tuned notes on a SAT memory page before leaving the piano, to facilitate set-up for the next lesson on the same piano, which starts where you end here. Someone familiar with the SAT should do this. First measure any deviation of the center string of A4 from A-440, then enter that value as a pitch offset, and finally measure and store the center strings of all tuned notes on their fourth partials. Before the next lesson begins, use the SAT memory page to help restore the tuning as it stood at the end of this lesson. You may also wish to keep a written record of results in case you have to use a different SAT for the next lesson.

Now we are ready to proceed with the next lesson, part 2 of the Baldassin-Sanderson Temperament.

Note: *Do you find these lesson plans valuable? Do you have specific suggestions for changes or clarification? Please direct any comments or suggestions to the author c/o the* **Journal**.

INHARMONICITY & THE TEMPERAMENT

ARTICLE • 4

Inharmonicity Curves

Daniel Levitan, RPT
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In the two previous articles in this series we have examined the effects of inharmonicity on the beat rates of isolated intervals and the effects of changing octave size on temperament beat rates. In this article we will look into the question of what happens to temperament beat rates when inharmonicity varies within the temperament.

Octaves in the temperament area of small pianos often have quite pronounced levels of secondary inharmonicity, making it impossible for us to tune them pure at all their levels at the same time. In large pianos, however, we often find octaves in the temperament area which exhibit little or no secondary inharmonicity. Since all piano wire has primary inharmonicity, this lack of secondary inharmonicity in the octaves of larger pianos can only be possible if the primary inharmonicity of the component notes of the octaves somehow combine to create low levels of secondary inharmonicity.

To understand how this can be, we should first look at the arrangement of the coincident partials of an octave. In an octave, every partial of the upper note coincides with a partial of the lower note which is twice as high in the harmonic series. Partial #1 of the upper note coincides with partial #2 of the lower; partial #2 of the upper coincides with partial #4 of the lower; and so on.

When the octave is pure at all its levels, all its coincident partials match exactly. If neither of its component notes has any primary inharmonicity, then no partials deviate from their theoretical frequencies, and all the coincident partials can match exactly. If the upper note has some level of primary inharmonicity, then for the octave to remain pure at all its levels the inharmonicity of the partials of the lower note must somehow match the inharmonicity of those partials of the upper note with which they are coincident. This will be the case only if the primary inharmonicity of the lower note is less than that of the upper note to the precise degree that its partials go sharp as they ascend the harmonic series at half the rate of the partials of the upper note. In other words, the degree of inharmonic sharpness of partial #2 in the lower note must match that of partial #1 in the upper note; the inharmonic sharpness of partial #4 in the lower must match that of partial #2 in the upper note; and so on. Then the octave will be able to be tuned pure at all its levels, and its secondary inharmonicity will remain zero, even though both its component notes have primary inharmonicity.

In a large piano, the scale is usually laid out in just this way, so that lower levels of primary inharmonicity in the lower notes of octaves in the tempermant area combine with higher levels of primary inharmonicity in the upper notes to result in little or no secondary inharmonicity. This is why a large piano can have minimal secondary inharmonicity in octaves in the temperament area despite having steel strings with a normal level of primary inharmonicity.

Notice that an octave with no secondary inharmonicity gives us no information about the primary inharmonicity of its component notes. The primary inharmonicity of the upper note of the octave may be minimal, or it may be extreme; there will always be a level of primary inharmonicity for the lower note that will eliminate secondary inharmonicity from the octave.

The primary inharmonicity of the component notes of all the other intervals of the temperament can be similarly matched to result in no secondary inharmonicity in the interval. In the fifth, for example, the coincident partials of the lower note are one and a half times as high in the harmonic series as those of the upper note. Partial #3 of the lower note coincides with partial #2 of the upper note, partial #6 of the lower note coincides with partial #4 of the upper note, and so on. If the upper note has primary inharmonicity, for these partials to match exactly at all their levels the partials of the lower note must sharpen as they climb the harmonic series at two thirds the rate of those of the upper note. Again, the primary inharmonicity of the lower note must be less than that of the upper, but to a smaller degree than in the octave.

For each temperament interval there is a specific ratio of primary inharmonicity between its component notes which eliminates secondary inharmonicity from the interval. The smaller the interval, the smaller the necessary degree of difference in primary inharmonicity between the notes of the interval. For the unison, the smallest interval, the difference, as we saw in article 2 of this series, is zero. When both notes of a unison have the same primary inharmonicity, no matter how great, there is no secondary inharmonicity in the unison. In a large, well-scaled piano, primary inharmonicity decreases at a constant, well-chosen rate along the scale, eliminating most of the secondary inharmonicity from most of the intervals.

What would happen if the primary inharmonicity of the lower note of an octave were to drop even farther, below the level needed to

eliminate secondary inharmonicity? In that case the octave once again could not be pure at all its levels simultaneously, because the coincident partials of the lower note would fail to go sharp enough to match the levels of the upper note. This disparity would increase as the partials climbed the harmonic series. Such an octave would need to be increasingly narrowed to bring successively higher coincident partial levels into tune. In other words, a 4:2 octave in this case would be wider than a 6:3 octave. This is exactly the opposite of the usual condition of octaves in real pianos, but it is not at all an impossible condition, and octaves like this, with negative secondary inharmonicity, do in fact exist in real pianos. Usually such octaves can be found in the high bass, just below the temperament. The lower note of the octave is usually a wound string (wound strings in the upper bass typically have less primary inharmonicity than their plain wire neighbors) and the upper note is usually a relatively short, thick, low tension, and highly inharmonic plain wire string. I believe we tuners often overlook these unusual octaves because we tend to rely on at most one octave test in the bass, commonly the 6:3, and don't compare that test to a 4:2 or 8:4 test.

Notice that negative secondary inharmonicity, although it is unusual, is quite possible in the piano, and does not imply the presence of negative primary inharmonicity. Negative primary inharmonicity, in which a string's partials would be flat of their theoretical pitches, must be extremely rare, if it is possible at all, in the piano. All piano strings are similar enough to each other that we must assume that they are all inharmonic for the same physical reasons, and are therefore all inharmonic in the same positive direction. Only the influence of the bridge or soundboard could conceivably alter this situation, and then only to a very slight degree.

The positive primary inharmonicity of a tempered steel string is thought to result from a lack of flexibility in the string which shortens the effective length of its vibrating segments. According to this theory, anything that reduces the flexibility of a string increases its inharmonicity. All three of the physical factors that influence the pitch of tempered steel string—tension, diameter, and length—can therefore also affect inharmonicity. Higher tension decreases inharmonicity, probably because tension helps the string overcome its natural stiffness. Increasing the ratio of diameter to length, whether by thickening the string or by shortening it, stiffens the string and increases its inharmonicity.

Of these three factors, we might guess that length has the greatest influence on the level of primary inharmonicity in a string, based on the observation that the one thing that all pianos with high inharmonicity have in common is their small size and correspondingly short string length. (This is borne out by the inharmonicity equation, which states that inharmonicity is proportional to the square of the diameter and the inverse square of the frequency, but the inverse fourth power of the length.)

The curve of the treble bridge of a concert grand piano in the temperament area shows how string length, and consequently primary inharmonicity, ordinarily changes along the scale in such a way as to minimize secondary inharmonicity. The bridge in such a piano curves steadily away from the upper bridge, increasing the length of the strings at an exponential rate. This dramatically increasing string length maintains a falling level of primary inharmonicity and a low level of secondary inharmonicity as the scale descends.

A small piano doesn't have enough room to allow its bridge to curve steadily away from the upper bridge in this way. The curve must be altered to fit the piano, and the way in which it is altered ultimately determines how the primary, and consequently the secondary, inharmonicity changes within the temperament.

One possible way to modify the bridge would be to retain the shape of its curve but alter its slope. Very few scale designers seem to take this approach. More commonly, one finds that the treble bridge makes a straight line from somewhere in the soprano area to its lower termination; or, at the other extreme, that it curves away from the upper bridge up to a point and then reverses direction and curves back again, making an S shape. Quite often the bridge forms a curve that lies somewhere between these two extremes.

No bridge design for a small piano can eliminate secondary inharmonicity, but these different bridge curves do distribute secondary inharmonicity in different ways. The merits of the various curves are not our concern. Considerations of tension and diameter, as well as ease of manufacture and so forth, certainly influence a scale designer's choice of bridge curve just as much as levels of secondary inharmonicity do. As tuners, we are simply presented with a fait accompli; the secondary inharmonicity is there where the scale designer has put it; and our job is to work with that inharmonicity and produce the best tuning we can.

A glance at the curve of the treble bridge in the temperament section can quickly give us a rough idea of how secondary inharmonicity is distributed along the temperament before we begin to tune. (Remember when examining the bridge to look only at the string length. Sometimes the bridge is broad and its overall curve may be different from the curve of the string termination notches. If the treble bridge is inaccessible, its curve is often faintly echoed in the curve of the upper bridge, especially in higher quality instruments.) In the case of a bridge which doubles back on itself to make an S shape, more of the compromise is saved for the lower end of the bridge than in a bridge which forms a straight line. In the former case secondary inharmonicity will be more concentrated in the lower part of the temperament. In the latter, secondary inharmonicity may be higher overall,

but it will tend to be more evenly distributed across the temperament. In these straight-line bridges the temperament octave itself tends to be much more inharmonic than in those instruments with an S shaped bridge, and so the main practical influence on the beat rates of the temperament intervals is often more the degree of expansion or contraction of the octave than the levels of secondary inharmonicity in the lower temperament. Bridge curves that fall between the two extremes distribute the secondary inharmonicity in ways that also lie between the two extremes.

How will these various distributions of secondary inharmonicity affect the beat rates of the temperament? Keep in mind that our goal in tuning an equal temperament is to divide an octave into twelve equal parts; therefore, once we have decided upon the size of the temperament octave, we have also effectively determined what the pitches of the fundamentals of the intervening semitones should be, regardless of the distribution of secondary inharmonicity within the octave. The beat rates of the intervals formed by these fixed fundamentals will then vary with different distributions of secondary inharmonicity.

We know from our examination of isolated intervals that increasing the secondary inharmonicity of an interval while holding the pitch of the fundamentals of its component notes constant makes the interval appear to narrow. Therefore, higher levels of secondary inharmonicity in the lower section of the temperament will tend to slow down the wide intervals—the fourths, major thirds, and major sixths—and speed up the narrow ones—3:2 fifths, 6:4 fifths, and minor thirds. These modifications will overlay and alter the familiar progession of decreasing beat rate speeds as intervals descend the temperament. Increasing levels of secondary inharmonicity as the intervals descend exaggerate this progression for the wide intervals and reduce it for the narrow ones. In extreme cases narrow intervals will show almost no progression at all, while the progression of the wide intervals will be quite rapid.

There is a difference in the degree to which secondary inharmonicity alters the progression of each interval. The progression of the 3:2 fifths, 4:3 fourths, 5:4 major thirds, and 6:5 minor thirds will tend to be altered to a lesser degree than those of the 6:4 fifths and the 5:3 major sixths. The progression of the major sixths can be very rapid, and we should not be surprised to find the 6:4 fifths, and at times even the 3:2 fifths, so narrowed that they reverse progression and speed up towards the bottom of the temperament.

This brings us to—

Rule of Thumb #6: The greater the reverse curve of the bridge in the temperament area, the more rapid will be the progression of wide intervals, and the slower will be the progression of narrow intervals, as the intervals descend the temperament. The rates of progression of the major sixths and the 6:4 fifths will tend to be altered to a greater extent than those of the 3:2 fifths, fourths, and thirds.

Bass strings in the lower notes of the temperament alter this picture. Bass strings in the temperament area usually have less primary inharmonicity than their plain wire neighbors, and they therefore tend to reduce the secondary inharmonicity of those intervals in which they form the lower note. When both notes of an interval are produced by bass strings, the interval, having similar levels of primary inharmonicity in both its component notes, will see its secondary inharmonicity rise again. The changing beat rates of the temperament intervals as they descend over the bass strings will follow these falling and rising levels of secondary inharmonicity, superimposed, as before, on the theoretical progression of beat rates. This is our last rule of thumb—

Rule of Thumb #7: Temperament intervals whose lower note is a bass string and upper note is a plain wire string have reduced levels of secondary inharmonicity.

Over the course of the last three articles we have taken two basic facts about primary inharmonicity—that it makes the partials of a piano string climb sharp, and that the partials go increasingly sharp as they ascend the harmonic series—and by following the implications of these facts we have seen how the beat rates of temperament intervals alter under conditions of high secondary inharmonicity. So far, however, we have relied on a strictly qualitative approach. In next month's article, we will go over the same ground we have already covered, but this time in mathematical terms in order to confirm, quantify, and extend our previous conclusions.

BEHOLD

THE UPRIGHT

By Don Valley, RPT
Western Carolinas Chapter

As we have progressed from the bottom up, the upcoming area in our ascent is the keyboard. In the previous writing the foundation for the keyboard was prepared. Now, the little see-saws themselves.

Keys—demand meticulous responsibility in order to insure as much uniformity as possible from one piano type to another.This builds kinesthetic memory in the process of the pianist's technical development and, thus, predictable musical responses.

Due to the extent of material to be covered on this subject, it will be necessary to present the subject in two parts. You will recall that most keyboards are now topped with a marvelous space-age plastic. Ivory is still preferred but is cost-prohibitive in most circumstances. Importing raw ivory into the US is not only illegal, the selection of it is almost taboo when one considers the elephant an endangered species. So, in order to live with laws made necessary by unconscionable abusers of a once respected harvesting of ivory, those who have been performing well within the limits of legal boundaries must choose a substitute for new ivory coverings for the piano keyboard.

Because of the moisture tolerance of ivory, plastic is less than desirable because it is intolerant and causes puddles of moisture to build up under the pianist's fingers. Of course, this affects precise control to some extent and also a feeling likened to having wet socks inside your shoes. This is the reason experimentation has taken place to find a good substitute. Some plastics have been created with a type of porosity; yet, the element of absorbency is lacking as well as surface adhesion. A very fine-appearing bone substitute has been developed. I believe I am correct in my understanding that Don Bunch of North Carolina was the creator of that concept. The primary reaction to those tops has been their thickness, making them appear bulky even though beautiful. The end result is that we are getting used to the good plastics. Manufacturers are supplying their new pianos with plastics. Plastics hold up well. The plastics are beautiful and, for the most part, fill the bill very adequately. Now, with that little bit of background on key coverings, let's go on to the over-all condition of the keyboard.

Repetition will serve to bring the conclusion that prior to attacking any part of repair work the parts must be cleaned. Cleaning is really for reasons of the technician's cleanliness and health as well as providing the ability to assess the real condition of those parts you are working with. I do not like to breathe odors from mold and mildew or any other type of sediment or collection. I also take my own minivac to a person's home for doing any cleaning job requiring this type of pickup. The reason: after having used many vacuum cleaners belonging to the client, I could determine immediately the presence of pets in the home just by the exhaust from these machines. Even though I have no allergic reactions of any kinds, I did not wish to instigate any either.

With the piano "stripped down" (all removable case parts taken off), and prior to the keys being removed from the frame, take that vacuum cleaner first with the dusting brush and remove any surface dirt from the key tops and surrounding areas. This is to uncover the raw wood and determine just how much real cleaning must take place. Also, since the keys must be numbered prior to removal, you can see the condition of those stamped into the key stick by the manufacturer. I find it is most always necessary to renumber the keys because those stamped 8s look like 3s. Sixes look like 3s. Nines look like 8s and so on. With the top surface vacuumed, the next step is to sandblast the entire key, except for those ivory or plastic keytops and the top of the capstan. Since you will blast the top of the wood first, place a penciled number on the bottom of one of the sides. My sandblaster was sized to accommodate a complete action. So I place my penciled set of keys on a key tray and set the whole unit in the box. It takes about five minutes to clean the top wood surface of the key sticks. Now you can remove the set of keys from the box and stamp the numbers on their tops just in front of the key button. In the event any keys have gotten out of place by accident, you have that penciled number still there because you have only cleaned the tops up to this point.

A very convenient and economical numbering device is the rotating stamp with two or three bands. It is available in any office supply store. Use it with one of the micropore stamp pads for a very good looking result. Of course, you will start with the first bass key as number one and proceed consecutively through 88 (in most

instances). Now you are ready to take the keys, one at a time, and sandblast both sides and the bottom.

With the keys as clean as possible, we will take our established direction "from the bottom up" and give attention to the two areas of the key bottom—the front rail bushings and the balance rail hole. In most circumstances you will determine the front rail bushings must be replaced. If there is any doubt whatsoever, replace them. With several methods today making the process quick and accurate, it does not make good sense not to perform this task. Check the condition of the existing bushings for wear. This visual check will tell you right away if the bushings are cupped in to the sides appearing to wrap around the front rail pin. You can feel them to see if they are hard. If they appear to be good, place a few back onto the keyframe and check for side play and wobble. The wobble comes from key button wear; side play comes from wear at the front rail.

This bushing process is perhaps the most discernible improvement to the pianist as it pertains to touch response. That free, unsloppy, straightforward movement of the key gives a sense of control to the fingers.

The determination is to replace the front-rail bushings. The first step here is to remove the old ones. Following are several techniques:

1. If the bushings are noticeably very brittle they may be picked out with a blade.

2. The whistling Teakettle: Remove the whistler!! With kettle on a portable hot-plate and the steam exiting steadily, hold the bushing mortise over the steam close to its source for a few seconds and remove the bushings. Be careful here to not leave it over the steam too long as it can affect other glue joints in its path.

3. Soaking: Clamp your keys in one such as that made for key work by Bill Spurlock. This is for ease in handling, so all can be treated as a single unit and for expediting the procedure. With the keys bottom-side-up, having a solution of water and white vinegar 7:1 and 2 or 3 drops of Basic H (a Shackley product), use an applicator to soak the bushings. The applicator I like most is a large (veterinary style) hypodermic needle. I can control the dispensing better than with an eye dropper. The Basic H "makes water wetter" thereby causing the solution to penetrate easily. Without it, the solution will often bead up on hardened cloth. Applying the solution hot will also cause it to penetrate easily (if you can stand steaming vinegar water). Once you have finished the application over the entire set of bushings, you can usually go back to where you began and lift the bushings out.

4. Variation on Soaking: This, along with process #1, can be done in the field. With a wood burning tool, such as the bushing remover acquired through the supply houses, and having it controlled with a rheostat, apply some solution to the bushing cloth. Insert the slightly hot tip, keeping it there for a few seconds. Remove the bushing. With not very much moisture in the bushing cloth, you can proceed at once to insert the new bushing cloth.

There is a great advantage to using moisture, whether it be in the form of steam or soaking. It serves to expand and revitalize the old dried wood around the mortise. Therefore, I suggest allowing processes 2 and 3 to dry overnight for purposes of resizing and thorough drying. You may find the bushing cloth is not original and may find the opening expanded by excessive pressure from either over-easing, hard use, or multiple applications of bushing cloth. This is where the advantage of moisture comes in. By allowing it to dry completely, you will be able to better determine the proper thickness of bushing cloth, thereby eliminating the need to spend much, if any, time of key easing.

For reasons of expediency, assuming you may have determined the need to replace the balance rail bushings, use your chosen procedure to remove those old bushings while you have the keys in process. If you will replace the entire button, this is not necessary, of course.

The second area of attention on the bottom of the key is the balance rail hole. The first question is: does it fit? Check every one for "oval" shape; this is the reason for "pulley" keys—keys you can grip while on the frame and they will move fore and aft according to the amount of extension of that round hole. Sometimes you may find this hole to be the source of a little squeak. To get rid of this little nuisance, take a pencil lead and mark the opening generously. A soft #2 does a great job. I have one of those big pencils like the first-graders are given. The lead is much larger in cicumference and almost the perfect size to put up in that hole. Rotate it a couple times and the job is finished.

Occasionally a complete set of these keys have to be re-holed, but usually a few or a section. Manufacturers treated this point of the key in various ways. Most generally, the key stick is drilled and formed for allowing movement of the key around the balance rail pin. Two other types are also prevalent: one being the shoe of about 1/8" thick added to the underside of the stick and the other being the insertion of that shoe into a mortise in the bottom of the stick, keeping it perfectly flat. The reason for this addition is to have a harder wood at this point of use than the actual key stick is made from so as to provide greater durability, thus preventing the creation of the problem.

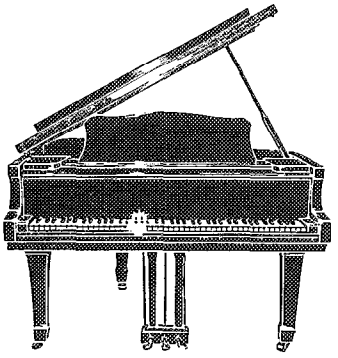
If the looseness at the balance rail is not too great, it can be repaired much more easily than going through replacements. The looseness is the result of fiber compression and, sometimes, drying. The procedure here is to soak the balance rail hole with water set the keys back onto the frame. If any punching are already there, place a thick cardboard punching on top so the moisture will not

affect those underneath. Let this dry completely. Remove the keys and extra cardboard punching. You will find the holes fit perfectly. The only remaining treatment might be to lead the holes (pencil lead is graphite) and /or a very slight easing in the event of resistance.

In The Field:

Occasionally one or two keys demonstrate fore-and-aft motion. This is usually because something has hit the front of the key, jamming it back against the pin, thus elongating the hole in the key. This procedure fits wood into the bottom of the key. With the key removed and turned upside-down, place a reference mark across the key two inches back from the center of the hole or, with adjoining keys held together, pencil a line across these keys along the center of the hole. Also, a reference line must be drawn along the length of the key stick in line with the center of the hole because many are not directly centered in the key. You are simply making a cross line reference. I keep tongue depressors in my supply kit for this procedure. My key tools include a coarse file and a Japanese-type pull saw. Cut a length of wood about 1.5". Place it on the bottom of the key, equally over the hole. Scribe with a razor knife the end positions. Mark with razor knife along the sides the depth of the wood. This is the amount you will remove. With the pull saw, cut inside the end lines to the depth you just marked along the sides. Using the coarse file, file away the outlined area. Fit the piece of wood into position, not being concerned with the overhang on the sides at this point. However, now use the cross lines you have referenced and draw on the new piece to locate the center of the hole. Remove the piece, place it on a block of wood and drill the hole. This insures a good hole on both sides and one you can strip loose grain away from. Mating it to the reference marks on the key, glue with wood glue. Titebond and similar products set enough under clamping pressure in 30 minutes to continue work. So, clamp firmly and let dry while you continue to tune or whatever you are doing. Once the glue is set, use the pull saw to remove most of the extra on the sides. Trim down with a file or sandpaper flush with the sides as well as any unevenness on the bottom. Place it back onto the frame and fit it as necessary.

With the fore-aft motion of the key corrected, next month we will progress into re-pairs of the mortises and broken keys as well as the virtues of replacing key buttons.



Everyday Piano Prepping

Part 1: The Evaluation Checklist

By Nick Gravagne • Contributing Editor

Practical grand piano prepping, what we might call Everyday Piano Prepping, is a concept which balances the needs of the "everyday piano" with the limits of the customer's budget. What are the absolute "musts" of the job, and what items can be ignored or put off to a future date? In the evaluation stage the technician needs to be able to "read" a piano quickly with the aid of a checklist (supplied in this article).

Many grand piano customers would gladly agree to at least one or two full days of your work if you could clearly explain WHY the work is necessary, and exactly what the cost will be. Prepared Customer Forms specifically geared to prepping will not only convince your customer that you are routinely engaged in this kind of work, but will also generate confidence in your skill and professionalism. Although these articles and suggested forms are designed with the grand piano and customer in mind they are, with a little modification, equally valid for all pianos.

Philosophy

The following concepts might serve as an overall guide to approaching not only everyday prepping work, but ongoing piano service as well.

Concept #1:
A little bit of something is better than a whole lot of nothing.

Or:
A little bit of piano work on a regular basis is better than a whole lot of piano work on a never-never basis.

Concept #2:
Start with the big tasks and work down to the small tasks.

Or:
Although the idea of practical prepping borrows many high level piano prepping procedures, the emphasis focuses on choosing those procedures which make the biggest change in the least amount of time.

Evaluation Phase

The work begins with an efficient evaluation of the piano's mechanical and tonal condition. This is followed by a systemized approach to customer communication.

General Suggestions Regarding Customer Communication:

When evaluating the piano take a neutral position. Evaluate objectively. Pretend you are Mr. Spock, or Commander Data. Give them the facts. When talking with the customer it is of extreme value to compare the current condition of the piano to a when-it-was-new condition. With this as a basis for discussion you can feel free to make objective statements such as:

"When the hammers were new they were fully rounded; now they are grooved and cut."

"When the piano was new the strings were pressing on a fully crowned soundboard; now the strings aren't pressing as hard due to a less than full crown in the board."

Once the hard, raw facts are out of the way, *then* you can begin talking about what MUST be done, what *may* be done, and what can *wait* until some future date.

Do not fail to factor in the customer's needs, expectations, and financial ability.

Value of Working With Evaluation Checklist

1) to assure that you, the technician, haven't missed anything.

2) to assist you in working out a job strategy that makes sense both in terms of time required and realistic pricing.

3) to supply you and your customer with a professional looking document regarding the condition of the piano and work and parts required to successfully complete the job.

4) to supply all professional and interested parties with a public Record of your findings.

Remember: The Checklist is also designed to isolate those pianos which are candidates for in-home or on-site work. Some pianos will have to go to the shop, while others will be a mix of in-home and in-shop (action, for example) strategies.

Also Remember: The Checklist is *not* necessarily a regulation-type outline of things to do when actually working on the piano. Rather, it is a technician's tool to be used in determining the pros and cons of the piano's condition.

That is, ***the piano's limits and possibilities must be known before any work and pricing strategy can be determined, or before any expectations of outcome can be intelligently discussed with the customer.***

If possible, tune the piano as part of the evaluation stage. Depending on your experience, this is not always practical or even-necessary. Spot- tuning or section tuning will usually suffice. A suggested Evaluation Checklist follows. Notice the right hand columns of OK [] Pass [] Fail [] and Shop-Fix []. Be objective and mark these boxes with a red pen. Obviously, except for bringing the action into the shop for a rough-in regulation and hammer surfacing, items marked Shop-Fix cancel the possibility of performing an everyday prepping, on-site job.

(YOUR PROFESSIONAL HEADING HERE)
PIANO EVALUATION CHECKLIST

Date
Client's Name Address Phone
Piano Make, Model, Serial #, Age of Piano

	OK	Pass	Fail	Shop-fix
1) How does the piano look?				
Harp	[]	[]	[]	[]
Case	[]	[]	[]	[]
Keytops	[]	[]	[]	[]
Clean?	[]	[]	[]	[]
Case parts fit	[]	[]	[]	[]
Legs	[]	[]	[]	[]
2) Condition of Belly:				
Soundboard cracks	[]	[]	[]	[]
Rib separation	[]	[]	[]	[]
Bridge cracks	[]	[]	[]	[]
Soundboard crown	[]	[]	[]	[]
Downbearing	[]	[]	[]	[]
Plate	[]	[]	[]	[]
Rim	[]	[]	[]	[]
Other	[]	[]	[]	[]
3) How does it sound?				
Bass	[]	[]	[]	[]
Tenor	[]	[]	[]	[]
Treble	[]	[]	[]	[]
Notes 80 - 88	[]	[]	[]	[]
Pitch @ A440?	[]	[]	[]	[]
4) Damper shut off?	[]	[]	[]	[]
5) Treble string pluck test	[]	[]	[]	[]
6) Pinblock/strings				
Tuning pins tight?	[]	[]	[]	[]
Strings:				
Rust, spills, etc.	[]	[]	[]	[]
Coils	[]	[]	[]	[]
Spacing	[]	[]	[]	[]
Broken/replaced	[]	[]	[]	[]
Dead bass	[]	[]	[]	[]
Rendering	[]	[]	[]	[]
Other	[]	[]	[]	[]
7) Noises:				
General buzzing, etc.	[]	[]	[]	[]
Agraffe buzz	[]	[]	[]	[]
Capo bar noise	[]	[]	[]	[]
Buzzing bass strings	[]	[]	[]	[]
Other	[]	[]	[]	[]
8) False Beats:				
Treble sections	[]	[]	[]	[]
Tenor	[]	[]	[]	[]
Bass	[]	[]	[]	[]
Bridge pins tight?	[]	[]	[]	[]
Bridge notching	[]	[]	[]	[]
9) Pedals:				
Lost motion (sustain)	[]	[]	[]	[]
Shift	[]	[]	[]	[]
Sostenuto	[]	[]	[]	[]
Loose?	[]	[]	[]	[]
Noises	[]	[]	[]	[]
General	[]	[]	[]	[]

	OK	Pass	Fail	Shop-fix
10) Feel of action (heavy, etc.)	[]	[]	[]	[]
Feel of keys:				
Wobble (needs bushings)	[]	[]	[]	[]
Pulley (balance hole trouble)	[]	[]	[]	[]
Other	[]	[]	[]	[]
11) Aftertouch	[]	[]	[]	[]
(Quick look at following)				
Dip, let-off, drop, back checking				
12) Hammer spacing to strings	[]	[]	[]	[]
13) Repetition spring strength	[]	[]	[]	[]
14) Damper timing	[]	[]	[]	[]
15) Damper upstop setting:				
Two dampers per section	[]	[]	[]	[]
Compared to sustain lift	[]	[]	[]	[]
Remove Keyslip & Fallboard				
16) Key level (straightedge)	[]	[]	[]	[]
17) Front rail knocking	[]	[]	[]	[]
18) Glide bolt knocking	[]	[]	[]	[]
Remove Action to Bench or Table or Piano Lid				
19) Action easy to remove?	[]	[]	[]	[]
20) Hammer condition	[]	[]	[]	[]
21) Hammer heads loose?	[]	[]	[]	[]
22) Hammer angles (burn-in, etc.)	[]	[]	[]	[]
23) Shank flange centers	[]	[]	[]	[]
24) Shanks travel	[]	[]	[]	[]
25) Knuckles	[]	[]	[]	[]
26) Jacks OK, or broken	[]	[]	[]	[]
27) Moth/felt/wood deterioration	[]	[]	[]	[]
28) Verdigris, Steinway sludge, stickiness	[]	[]	[]	[]
29) Action parts alignment				
Serious or Minor	[]	[]	[]	[]
30) Keypins, rust/corrosion	[]	[]	[]	[]
31) Damper lift felt	[]	[]	[]	[]
Back at Piano				
32) Damper undersystem:				
Tray	[]	[]	[]	[]
Underlevers	[]	[]	[]	[]
Wires/screws	[]	[]	[]	[]
Misc. springs	[]	[]	[]	[]
Noises	[]	[]	[]	[]
Other	[]	[]	[]	[]
36) Bench	[]	[]	[]	[]
37) Dampp Chaser recommended	[] No			
	[] Wait and see			
	[] Partial system			

If possible, humidity reading at time of inspection:_____%.

To use the Checklist in a practical way it isn't necessary to go down the list one box at a time. I begin by checking the most obvious items in a more or less random fashion, then fill in the appropriate boxes. Then I look to see what items I have missed, check them out, and complete the list. Room in the margins can be used for additional notes and unusual findings. You may want to add or subtract from the list, but we caution you not to add to it such that the final form is more than one page.

In order to present an efficient and professional image have your Checklist forms made by a copy store. Ours are two part forms, a white top page which gets left with the customer, and a yellow page for our records. Have them made with NCR paper so that carbon paper is unnecessary, and make sure that the copy store people understand that all the items must fit on one page! We have found these forms to be very effective and handy. Our customers are impressed with the approach and paperwork which leave them with the impression that this kind of evaluation and prepping work are a routine part of our services.

Next month, we'll follow up with customer communications based on the Evaluation Checklist, along with a suggested list for on-going piano maintenance.

The Historical Temperaments: An Introduction

Owen Jorgensen, RPT
Northern Michigan Chapter

The system of tuning used almost universally today on keyboard instruments is equal temperament. It is now known that equal temperament was not fully developed and applied in common practice until the year 1917 (1917 is not a misprint).[1] The equal temperament practiced today is a mathematical science, whereas the tuning of the past was an art based on the aesthetics of music. Modern piano technicians tune in equal temperament in order to satisfy the atonal ideals of twentieth-century composers and theoreticians. Only the 20th-century style of piano music sounds most effective when it is performed in equal temperament. All other music sounds best in the appropriate authentic temperaments that were in use when the music was composed. When performing 19th-century piano music in any of the historical temperaments that were once in common practice, the results are that the expressive qualities of the music are greatly enhanced compared to the effects gained from performing in equal temperament.

In the historical temperaments, the differences between the effects of the major and minor modes are increased when playing among the black keys; that is, the emotional feeling of a major key becomes more major because of wider major thirds, major sixths, and major tenths, while the sound of a minor key becomes more minor because of narrower minor thirds, minor sixths, and minor tenths. Another advantage is that the more rapid beat frequencies from the thirds, sixths, and tenths among the black keys cause melodic tones to sing with more powerful resonances, while the fourths and fifths involving black keys being tuned pure or close to pure add more clarity to the vertical sonorities. These acoustic qualities cause melodies composed in more than three sharps or flats to become more expressive. For these reasons, composers like Chopin instinctively applied many sharps and flats in their compositions.

When performing 18th-century music in any common historical temperament, the music becomes more harmonious because of the more purely tuned thirds and sixths in the natural diatonic keys (the white keys of the modern piano). Also, contrasting effects during modulations become more pronounced, and the differences between the "characters of the keys"[2] then become clearly heard. The 18th-century quest for harmoniousness is why composers like Mozart placed very few sharps or flats in the tonic key signatures of their compositions.

Definitions and Equal Temperament

During the 17th-century and before, the diminished and augmented intervals from the basic C major tuning were considered out-of-tune and they were, therefore, rarely used except for special dramatic effects. At that time, the temperament system was called "the common keyboard tuning" to differentiate from the quasi-equal tempered systems applied on most fretted instruments. Near the beginning of the 18th-century, common temperament practice had changed so that the old diminished sixth G-sharp E-flat, an extremely out-of-tune interval known as "the wolf," was tuned as either a completely pure or very close to pure fifth. In this new temperament practice, musicians were able to compose and perform in all 24 major and minor tonalities without encountering any intervals considered too out-of-tune to use. This new system became known as the "new tuning" during the 18th-century. During the 19th-century this "new tuning" was generally called "equal temperament" even though the semitones were not the same sizes as they are in today's scientifically formed mathematically exact equal temperament. The 19th-century tuning was erroneously called equal temperament simply because in it one could perform in all the major and minor keys without hearing any badly out-of-tune sounds. In modern text-books, the historical temperaments have been categorized by the new terms just intonation tuning, Pythagorean tuning, meantone temperament, modified meantone temperament, well temperament, Victorian temperament, etc.

Choosing an Historical Temperament for Performance

The question is often asked concerning which specific temperament should be used for performing the music of a particular classical composer. It is well documented that before the 20th-century no two tuners tuned exactly alike, and further, that a tuner did not always tune the same way each time. Technically, this means that there were as many temperament varieties in the past as there were tuners. To compound the problem, the most famous composers such as Bach, Mozart, Beethoven, etc., did not take the time to record on paper their temperament or tuning practices. Historically, the task of writing down temperament instructions was left to

various musicians, instrument makers and repairers, music theorists, physicists, astronomers, and mathematicians. To answer the above question, one must understand the philosophy of temperament as it was applied in the past.

From the temperament instructions recorded in history, it is obvious that universally accepted traditions were practiced since the 16th-century whereby the diminished fourths, as an example, were used as the largest major thirds, and the smallest major thirds were placed in the diatonic natural keys of the keyboard instruments. There also were traditions for the other intervals. Tuning judgments were guided by aesthetic taste. Bach, as an example, may have had changing moods whereby on one day he may have preferred tremendous color contrasts between the smallest and largest thirds for a particular piece, but the next day while composing a less dramatic piece he may have retuned his clavier so that there was a minimum of difference between the sizes of the thirds. More clearly, it was a matter of taste as to how much contrast there should be between the sizes of an interval of a kind as long as the various intervals were placed in the scale according to the established tradition. The instruments used by the composers also affected their quality judgments. Composers in the 20th-century no longer consider color contrasts, and they leave the quality of interval sounds completely in the hands of professional piano technicians who have tuned only in equal temperament since 1917.

The choice concerning which temperament one should use for performing the music of a particular keyboard composer can nevertheless be determined. In general, the so-called meantone temperament along with its varieties was most common in keyboard practice from the 15th-century through around 1691. From roughly 1691 to 1722, modified meantone temperament was common. After 1722, many varieties of well temperament were practiced until the 20th-century. A sub-variety of well temperament called Victorian Temperament was most commonly practiced during the lifetime of Queen Victoria (1819-1901). The terms "meantone" temperament and "well" temperament were invented in relatively modern times in order to make the classifications of temperaments easier to study in textbooks. In history, there was much overlapping of the various temperament classifications in practice. As an example, the meantone temperament did not suddenly die out in 1722; varieties of it still existed in isolated places at the beginning of the 20th-century.

Suppose, as an example, that one decides to determine the temperament that would be most authentically appropriate for performing Mozart. It can be seen from the above information that a form of well temperament was most likely used by Mozart. The first step is to tune your piano in a well temperament from a textbook such as "The Representative Eighteenth-Century Well Temperament of 1799" published by Thomas Young who was an almost exact contemporary of Beethoven.[3] This is an excellent starting point. Young was an important scientist, and his temperament was a summation and final perfection of the finest temperament ideals of Andreas Werckmeister, Johann Neidhardt, Francesco Vallotti, Jean-Jacques Rousseau, George Frederick Handel, Johann Philipp Kirnberger, and most 18th-century writers. For supporting the rules of tonality and harmonic balance, Young's representative temperament is the most perfect and refined temperament ever published. If practical considerations should dictate that only one historical temperament can be chosen for performances, then the representative temperament by Young should be used. It remains the best form for conveying the intended sounds of all 18th- and 19th-century music in general. Do not confuse the representative temperament with several other temperaments that Young published.

Next, practice Mozart sonatas on your piano long enough to get used to the new sounds. While doing this, concentrate on comparing the qualities between the major thirds CE and F-sharp A-sharp (or G-flat B-flat) as they are performed in the context of the vertical harmonies in the sonatas. According to your personal taste developed over many years of studying and practicing Mozart, you may find that the color contrast between the above-mentioned thirds is either too little or too great. If it is too great, retune the piano in a milder form of well temperament whereby the major third CE is tuned to be a little larger. If the color contrasts are too subdued, retune the piano in a well temperament whereby the major third CE is either completely pure in just intonation or close to pure with very few beats. If this still is not colorful enough, retune the piano again in modified meantone temperament. Tuning instructions for all the latter are available.[4]

Ultimately through experimentation you will find a temperament that makes Mozart suddenly gain intense new life. The chords on the white keys will be very harmonious, the color contrasts heard during modulations will be striking, and the general expression will be more dramatic. The characteristic qualities of your personal piano will have influenced your decision, but the amount of experience that you have had performing Mozart along with the amount of respect for your interpretations of Mozart that you have gained from audiences determine how closely your aesthetic temperament tastes would compare with Mozart's if he were alive and performing on your piano today. This is how the temperament for a particular composer such as Mozart can be determined. The procedure outlined for finding an authentic Mozart temperament works also for finding the proper tuning system for any 19th-century composer.

The "Characters of the Keys" and Instruments Determined Key Usages

Historically, the changes in the sizes of the intervals of a kind were the acoustical bases for the creation of the "characters of the keys." In contrast to this, the modern equal temperament does not provide any basis for the "characters of the keys" because equal temperament follows the rules of complete atonality only. In equal temperament, all intervals of a kind are of equal sizes. The varieties of tonality effects in the past were the reasons why composers instinctively composed in particular keys other than C major or A minor. In the past, modulations or transpositions produced strong color contrasts which are impossible when performing the music in equal temperament.

The "characters of the keys" being a reality on keyboards in the past had a direct bearing on the choices of key signatures used by composers. In the historical temperaments, classical music written in C major, D minor, E minor, F major, G major, and A minor is harmonious. Music written in A-flat major, D-flat major, G-flat major, F-sharp major, and B major sounds deep with richness and warmth in the lower register of the piano and sounds with sparkle and brilliance in the upper register keys. Music written in F minor, B-flat minor, and E-flat minor is extremely expressive because of the very small minor thirds in these keys. In comparing the tonic key signature usages by Mozart with that of Chopin, it is obvious that there was a great change in key signature customs between the 18th- and 19th-centuries.

During the eighteenth century, the harpsichord was a leading keyboard instrument. In this, the upper harmonics of the tones are very strong, rich, and easy to hear. The beatings or out-of-tune waverings caused by tempered intervals are the loudest or strongest among the upper harmonics. On harpsichords, fast beating tempered intervals can be offensive because the beats are very prominent or too easy to hear; therefore, since the tuning tradition determined that the diatonic natural keys were to be tuned as close to just intonation as possible thereby reducing the beatings, composers from the 18th-century and before concentrated heavily on writing in simple keys like C, F, or G major. Even the progressive Mozart used only a small number of flats and sharps in the tonic key signatures of his keyboard compositions. This does not mean that he never composed in the complex keys; 18th-century composers often modulated into keys using all the sharps and flats for special dramatic effects in the development sections of their sonatas.

Since music sounded more harmonious in the historical temperaments in the diatonic natural keys or white keys of the piano, why then did Chopin compose so infrequently in C major? One reason lies in the instrument, and it is why one should perform in the historical temperaments today. Near the beginning of the 19th-century, the piano surpassed the harpsichord in popularity. Unlike the harpsichords or clavichords with their strong, easy to hear upper harmonics, pianos have extremely loud fundamental tones that nevertheless are comparatively weak in their upper harmonics. Fast beats from tempered intervals played on pianos are therefore not as offensive because of this relative weakness. Early 19th-century composers discovered that the fast beating intervals among the black keys of the fortepianos in the historical temperaments were not objectionable, and these greatly enhanced the singing qualities of the melodic tones. Further, they realized that the just intonation type sounds on the white keys were bland on pianos. This, along with the fact that melody was more expressive among the black keys, assured that passionate composers like Chopin composed usually using as many sharps and flats as possible. The change in tonic key usages from Mozart's time to Chopin's was thus influenced by the supremacy of the piano. The modern concert grand piano continues to be weak in upper harmonic content compared to the power of its fundamental tones; therefore, it continues to be beneficial to perform 19th-century piano music on modern pianos tuned in historical temperaments. This practice does not harm modern pianos. The pitch-frequency differences between the tones of equal temperament and the common historical temperaments are not great enough to consider.

The Theory of the Historical Temperaments

Regardless of the changes that the many varieties of temperament went through in history, pre-20-century tuning was nevertheless based on universally accepted principles of tonality. Traditionally, the tones of the chromatic scale were tuned by a series of fifths (or a circle of fifths and octaves) from a beginning tone (most often C) as follows:

E*b*, B*b*, F, C, G, D, A, E, B, F#, C#, G-#

This system evolved to accommodate the keyboard design which developed empirically in the keys or tonalities of C major and A minor. Since the tuning was not equal temperament in which the enharmonic equivalents are the same pitches, choices had to be made as to whether the raised keys (black keys on the modern piano) should be tuned as flats or as sharps. In the above example, B-flat was tuned as a B-flat and not an A-sharp. The tuning was done by fifths, and tuning from F down to B-flat created a fifth whereas tuning from F down to A-sharp would have created a diminished sixth. Diminished sixths were not the same sizes as fifths in the historical temperaments. The diminished sixth A-sharp F was considered out-of-tune as a fifth. The results of the above tuning system were that

the C major chromatic scale was tuned to the following pitches:

C, C#, D, E*b*, E, F, F#, G, G-#, A, B*b*, B, etc.

When pieces were composed and performed in keys other than C major or A minor, the raised key pitches were used also as D-flat, D-sharp, G-flat, A-flat, and A-sharp. Also, pitches such as F were used as E-sharp, G double flat, D triple sharp, etc. In other words, the pitches on keyboards were tuned according to the C major chromatic scale, but these pitches were used also for all the enharmonic equivalents even though the tuning was not done specifically for these equivalents.

The results of this were that the pitches as they were actually tuned produced in each octave one diminished sixth, one augmented third, two augmented sixths, two diminished thirds, three augmented seconds, three diminished sevenths, four diminished fourths, and four augmented fifths in addition to the regular thirds, fourths, fifths, and sixths. Traditionally, the diminished sixth was G-sharp E-flat; the augmented third was E-flat G-sharp; the two augmented sixths were B-flat G-sharp and E-flat C-sharp; the two diminished thirds were G-sharp B-flat and C-sharp E-flat; the three augmented seconds were F G-sharp, B-flat C-sharp, and E-flat F-sharp; the three diminished sevenths were G-sharp F, C-sharp B-flat, and F-sharp E-flat; the four diminished fourths were G-sharp C, C-sharp F, F-sharp B-flat, and B E-flat; and the four augmented fifths were C G-sharp, F C-sharp, B-flat F-sharp, and E-flat B. The significance of this is that in the historical temperaments (except for Medieval Pythagorean tuning), the augmented seconds were smaller than the regular minor thirds, the diminished fourths were larger than the regular major thirds, the augmented fifths were smaller than the regular minor sixths, and the diminished sevenths were larger than the regular major sixths.

Using the major third F-sharp A-sharp as an example, this was tuned as the diminished fourth F-sharp B-flat, but it was used as a major third and printed in the music as either the major third F-sharp A-sharp or G-flat B-flat. In the common historical temperaments, the diminished fourth F-sharp B-flat was tuned to be larger than a regular major third; therefore, the musical effects of either F-sharp A-sharp or G-flat B-flat were different from the effects of major thirds such as FA or GB. This was the reason why music performed in F-sharp or G-flat major sounded so different compared to when it was transposed into F or G major. Thus, the "character" of the key of F-sharp or G-flat major was not the same as that of F or G major.

In historical temperaments as practiced, there were as many as twelve different sizes of minor thirds and twelve different sizes of major thirds per octave. In these systems, the diminished fourths as tuned were used as the largest major thirds, and the diatonic major thirds on the white keys of the piano were tuned as the smallest major thirds. The remaining major thirds were tuned so that their sizes increased gradually and evenly from the smallest to the largest when they were played in a dominant to tonic relationship order. Also, they decreased evenly from the largest back to the smallest. Of musical importance is the fact that the major thirds and major sixths of a particular key or tonality were tuned to be larger in direct proportion to however many sharps or flats there were in the tonic key signature. The minor thirds had reverse qualities in that the augmented seconds were the smallest, and the diatonic white key minor thirds were the largest. The in-between sizes of the minor thirds and minor sixths also were graduated evenly according to the key signatures.

Major thirds determine the qualities of chord colorings more than any other interval. The accompanying example below is the major thirds progressing from small to large and then back to small again.

The thirds increase in sizes

The smallest	in this direction	The largest
CE,	FA, B*b* D, E*b* G, G# C, C# F, (A*b* C),(D*b* F),	F-# B*b* (G*b* B*b*)

The thirds decrease in sizes

The largest	in this direction	The smallest
F# B*b*, (F# A#),	BE*b*, EG-#, AC#, DF#, GB, (BD#)	CE

Because the sizes of the various intervals change gradually when performing in root movements a fourth or fifth apart, a common musical practice, the contrasting color effects do not jar or offend the ear. In this way, the tuning practices of the past followed the rules of tonality whereby classical music progresses in basic root movements in fourths or fifths much of the time.

Notes

1. Owen Jorgensen, *Tuning: Containing the Perfection of Eighteenth-Century Temperament, the Lost Art of Nineteenth-Century Temperament, and the Science of Equal Temperament* (East Lansing: Michigan State University Press, 1991), xxi, 1-7, 692-717.
2. For a thorough study of the characters of the keys, read Rita Steblin's book, *A History of Key Characteristics in the Eighteenth and Early Nineteenth Centuries* (Ann Arbor: UMI Research Press, 1983).
3. Jorgensen, *Tuning*, 251-55, 260-65.
4. Ibid., 266-271.

Techno-*Stuff*

By Richard Anderson, RPT
Feature Writer
Chicago Chapter

One of the most important aspects of any tuning is unison stability. You know you've mastered tuning and hammer technique when you can visit a piano you tuned several months ago and find all the unisons in tune. We don't have any control over how the soundboard is going to move with the weather, and we don't have any control over the scale or the condition of the piano, but we can make sure that the unisons stay put.

As important as hammer technique and stability are, that's often the last aspect of tuning we're taught, and certainly the hardest to master. I was well past that famous one thousand tuning mark before I could get reliably stable unisons on most all pianos, and even farther along before I had a notion of how pianos acted and what was necessary for stable tuning.

For the next few issues I'll share my concept of how pianos behave during tuning, and what I visualize doing in my hammer technique. Add what I say to your own experience, compare it to your internal BS meter, and formulate your own perception of what's happening to help you develop your hammer technique.

First some concepts and terminology.

Pin Position is the rotational position of the pin in the pinblock. Is the becket pointing at the tail or the treble? Changing the pin position involves turning the entire pin in the block and having the pin happy to be there, and not wishing to be in some other position.

Friction is the force generated by the wire passing over and under the counterbearing points (agraff, capo bar, and front string rest), that resists the smooth flow of the wire across those points. Friction is both our friend and enemy in tuning.

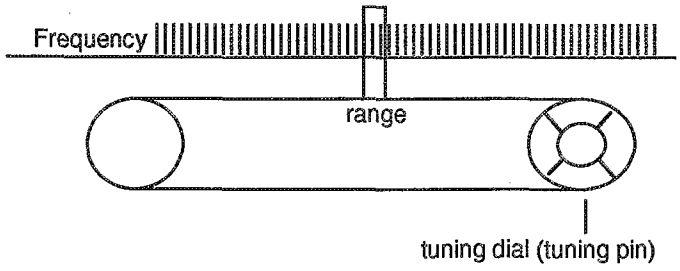
Tension of the wire in the speaking length, front duplex, and front waste end, will vary between regments with the amount of friction in the counterbearing points. This tendency of the piano to hide extra tension in the non-speaking lengths is what allows us to fine tune the tension of the speaking length without changing the pin position. But this is also what causes unisons to go out of tune eventually.

Range of frequency is the available frequencies in the speaking length for each pin position. It is a function of the friction inherent in the piano and the resulting differences in tension of the wire segments, and how hard you lean on the pin.

In other words, for each pin position, there is a range of frequencies that can be obtained in the speaking length by manipulating the tension differential in the front duplex and waste end.

For an analogy, think of the tuning dial of an old radio. For each position of the dial, the radio would receive a certain range of frequencies as determined by that radio's circuitry. The object was to turn the dial (think tuning pin) until the radio tuned in and locked onto the frequency you wanted.

In the following months we'll look at how the range changes over time as the piano moves toward entropy, and discuss hammer technique and it's application to various types and condition of pianos.



PTG Review
Dedicated To PTG News • Interests & Organizational Activities
PIANO TECHNICIANS GUILD

CHAPTER MATTERS

By Keith Bowman, RPT
Chairman • Chapter Services Committee

This month, I would like to talk about the chapter award system that the Chapter Services Committee administers. Just as we honor the outstanding contributions of individual PTG members through various awards and citations, so do we recognize the achievements of outstanding chapters.

Of course, neither individuals nor chapters achieve, simply to pepper a wall with plaques and diplomas. Yes, there is some motivation in knowing your hard work may be recognized, but I look at the award more as a by-product, rather than an objective to be reached.

So, what are the real reasons for chapter awards? First, chapter morale. When the members of a chapter set goals and focus on reaching them, the pride that comes from working together is only enhanced when that work is recognized by others. An award sends a positive signal to each member of a chapter that their personal contribution counts. When there is high morale in a chapter, there is greater participation. With greater participation comes greater strength and more diverse resources.

Another important reason for chapter recognition awards is the recognition or publicity that comes with it. Here, I'm talking about benefits to other chapters. Like an effective advertisement, publicizing the outstanding chapters and detailing their work and activities can be a good example for less active chapters, who may consider planning for activities or events they hadn't attempted before. This is why the September Journal did a modest profile of award-winning chapters. We hope to do more in the future.

You may be wondering about the award criteria the Chapter Services Committee is using. As in previous years, holding fund-raising or publicity events, teacher outreach, chapter seminars, Associate training and testing, technical programs, creative planning for business meetings, and other such activities are all factors. But one criterion that stands slightly above the rest is chapter participation. Every chapter should be trying to get 100% member participation in its activities. Difficult or impossible to achieve? Perhaps, but I believe that the level of participation is the best indicator of the health of a particular chapter.

Sometimes it is just easier to do a job yourself rather than delegate it. A common scenario in many chapters is to have a small handful of members doing most of the work. It can be hard to draw in new people for a project, requiring discipline to sit back and let others take on new responsibilities. But isn't that what leadership is all about? So, when it comes time for Chapter Services Committee to nominate chapters for recognition and achievement awards, you can expect us to be looking not only at activities you've been engaged in, but also looking at how many of your members have been participating.

NEWSLETTERNEWS

Since I have been talking about chapter participation in this issue, I decided to share some gleanings from the chapter newsletters (thanks) I've started receiving.

Nothing draws people together quicker than good food. And at the end of summer that means picnics. These are sometimes accompanied by volleyball or horseshoes and usually include stimulating recaps of the July convention. Probably almost half of PTG's chapters have picnics in August or September. Just from the newsletters I've been reading, the following chapters held picnics: Columbus, Connecticut, Detroit-Windsor, Indianapolis, Oklahoma, Philadelphia, Puget Sound, Salt Lake, Tucson, Washington, D.C.

The *PACE* Lessons have been very popular and anyone who was at the Kansas City Convention knows that the *PACE* Academy was very successful.

• On October 9, the Montana Chapter held a special tuning tutorial for Associates and three 45 minute sessions based on *PACE* Technical Lessons, all organized by Ward Guthrie, RPT.

• Starting in September, the Chicago Chapter began *PACE* lessons starting the Tuning and Technical

Lessons 1, presented by Nick Kircher, RPT.

• The September meeting of the Buffalo Chapter featured *PACE* Technical Lesson #3, by Jim Mosier, RPT.

• The Atlanta Chapter's September meeting included *PACE* #6 Tuning and Technical Lessons, taught by Giao Bui and Harry Wilson, respectively.

• Sacramento Valley presented *PACE* Technical Lesson #6 in September.

If you have gotten into a rut with technicals, a guest speaker can revive slack attendance with a fresh face. Perhaps you can reciprocate technical instructors with neighboring chapters or get a manufacturer-sponsored representative in for a presentation. Don't assume that you can't get someone if you haven't asked!

• For the benefit of the Seattle Chapter, on October 9, Sherman-Clay Steinway sponsored a luncheon and presentation featuring Franz Mohr of Steinway & Sons.

• On August 9, Kent Webb of Baldwin Piano presented a program for the St. Louis Chapter.

• The Golden Gate Chapter also will enjoy the technical wisdom of Kent Webb during on all-day seminar on November 19.

• Courtesy of Steinway & Sons, Scott Jones came to the Connecticut Chapter for a technical program on September 21.

• Danny Boone, RPT, of Waco, Texas, traveled to the Oklahoma Chapter as guest technical speaker on September 17.

• CERVP Bob Russell did a workshop on practical appraisals for the Madison Chapter on October 15.

• In September, the Reading-Lancaster Chapter hosted "A Day With Renner" featuring Renner Hammer Specialist Peter C. Bourassa.

These are just a few of the many areas that can increase attendance at chapter functions. Next month, I will continue to focus on member participation and other chapter matters. Please keep those newsletters rolling in—I promise to read them!

EVENTS CALENDAR

All seminars, conferences, conventions and events listed here are approved PTG activities.

Chapters and regions wishing to have their function listed must complete a seminar request form. To obtain one of these forms, contact PTG Home Office or your Regional Vice President.

Once approval is given and your request form reaches Home Office, your event will be listed through the month in which it is to take place.

Deadline to be included in the Events Calendar is at least 45 days before the publication date, however, once the request is approved, it will automatically be included in the next available issue.

November 3-6
North Carolina Regional Conference
Radisson Hotel/High Point, NC
Contact: Evelyn Smith
1041 S. Aycock Street
Greensboro, NC 27403
919-230-1783

November 19
Grand Action Regulation
Golden Gate Chapter
Piedmont, CA
Contact: Sid Stone
2419 St. Helena Drive #2
Hayward, CA 94542

January 6-7
Arizona State Convention
Arizona State University
Contact: Rick Florence
602-965-6760
602-926-4328

February 18-19
California State Convention
Torrance Marriott Hotel
Contact: Teri Meredyth
1666 W. 126th Street
Harbor City, CA 90710
310-326-6447

March 21-23
Pacific Northwest Conference
Vancouver, B.C.
Contact: Paul Brown
749 West 66th Avenue
Vancouver, B.C. V6P 2R4
604-321-7357

March 30 - April 2
Pennsylvania State Convention
Ramada Inn-Wilkes-Barre, PA
Contact: Earl Orcutt,
141 Fort Street
Forty Fort, PA 18704
717-287-0940

April 21-23
Florida State Seminar
Orlando, FL
Contact: Robert Carr
320 West Rich Avenue
Deland, FL 32720-4120
904-736-0551

April 27-30
NEECSO
White River Junction, UT
Contact: Ed Hilbert
40 Pleasant Street
Bristol, UT 05443

July 19-23
PTG 38th Annual Convention & Technical Institute
Hyatt Regency/Albuquerque, NM
Contact: PTG Home Office
816-753-7747

Death • Taxes & Dues

Colette Collier, RPT
PTG Secretary-Treasurer

There are some certainties in life and PTG. Every year, about the same time, dues invoices appear in our mailboxes. For some, it is just a planned expense—they write the check and forget about it. For others, it is a reminder that if they had just set aside $15 per month since this time last year, they could avoid a lot of hassle and join the first group. Some see this as a bit of wayward financial planning: ("If I pay this bill at the last possible moment, think of all the interest I will make on my $138!")Some forget, some procrastinate, some ignore, some...

When the bill is staring you in the face, it's easy to forget that we're all in this together. We all affect the operations of the organization by how we choose to handle our dues payment. When the dues payment comes in promptly, it relieves the staff of extra work sending out more invoices. It relieves the RVPs and chapter officers of the distasteful task of following up on those who have not paid. It relieves the officers of the worry over the total budget, and how many members we should plan for the coming year. It relieves the stress on the *Journal* mailing, since those who have paid are actually the only ones who have paid for the January *Journal*! And that few cents in interest that you make doesn't mean as much to you as the combination of all of that interest in the PTG bank account! Just as your $138 means more when combined with the $138 of 3800 other people, your prompt payment can add up to a greater benefit when shared by all.

In order to encourage earlier dues payments this year, the PTG Board has authorized a trial program. All members whose dues are paid in full by December 1 will receive a $5 coupon toward the purchase of any PTG business aids or other products of $20 or more. It's a way of letting you know your efforts are appreciated. If you've wanted to buy some brochures, or perhaps you don't mind taking $5 off the price of a Tuning or Technical Source Book, or the new Business Resource Manual, then now is the time. The coupon will be good until June 1, 1995.

So write the check and get it in before December 1. Then kick back your heels and think about how you're going to spend that extra $5.00. We'll all benefit.

COUNCIL AGENDA ITEMS DUE TO COMMITTEE BY DECEMBER 31, 1994

Chapters and PTG committees are reminded that December 31 is the absolute deadline for our receipt of any and all proposals for changes in the PTG Bylaws and Regulations if they are to be on the Council's agenda in Albuquerque next July. They should be sent to me at 269 Snake Hill Road, Glocester, RI 01857.

There are several reasons why the Guild Bylaws require this deadline. One is that it precedes the midyear PTG board meeting in January and allows the Board to have, at that time, valuable feedback as to when changes are being proposed. Another is that the Bylaws Committee faces a mid-March deadline for its final report for the Council agenda book and needs time to consider all proposals, sometimes having necessary dialogue with the sponsoring chapter or committee, and to develop its position or recommendation on each—and, finally, to get its report into readable, understandable form by that deadline.

If the Bylaws Committee can be of any assistance with proposal development or wording, feel free to contact us...the sooner the better!

Wade Johnson,
Bylaws Committee Chair

DEADLINES FOR AWARDS NOMINATIONS DUE TO COMMITTEE CHAIR BY DECEMBER 31, 1994

The Award Nominations Committee is accepting nominations for awards to be given at the 1995 PTG Convention and Technical Institute. All nominations must be received on or before the December 31, 1994 deadline. Please submit your nominations to Award Nominations Committee Chairman, Ben McKlveen.

TUNING AND TESTING EXAM OFFERED

Tuning and Technical Exams
University of Puget Sound
Music Building
January 14, 1995
Contact: Jim Snyder
206-863-0068

PTG SHORT TAKES

EXAMINATION & TEST STANDARDS COMMITTEE

Mitch Kiel, RPT

Movin' On Up

Pouring over the *Journal's* pages and sitting in convention classrooms, Associates are hard at work acquiring the skills to pass the RPT exams.

"But how does it feel to take the exam? Isn't it a bit scary?" you may ask.

Sure. Even long-time RPTs taking the exam to become CTEs or re-test their skills get nervous.

But it's not the end of the world if you don't pass the first time. Statistics indicate that about 50% of the Associates taking either the tuning or technical exam pass on their first try. If you're worried about what your chapter members might think if you take the RPT exams and don't pass, it's comforting to remember there are hundreds — maybe even thousands — of RPTs out there who have taken the exams several times.

To help you understand how it feels to take the exam, and to share with you some perspectives on the risk of failure and the joy of success, Beverly Kim, RPT, Puget Sound Chapter, and Alex Hernandez, RPT, Seattle Chapter, both of whom became RPTs within the past year, talked with Movin 'On Up about their recent experiences with the RPT exam.

Alex Hernandez started his training in January 1993 with Steve Brady, RPT, piano technician at the University of Washington. Alex tuned his first complete piano on July 7, 1993, passed the written exam in March 1994, failed the tuning exam in March 1994, passed the tuning exam on his second try in June 1994, and passed the technical test shortly thereafter in Sacramento in July 1994.

From the very start, Steve had established the expectation that Alex would take the RPT exams. Therefore, Alex always regarded his early practicing not as isolated drills but as warm-ups for his eventual exam. His goal from the very beginning was to acquire the speed and quality needed to pass the RPT exam, and he used those RPT standards as targets even though he hadn't yet acquired the skill and experience to attain them. "All my training tunings I imagined as the real test," he said. Thus Alex wisely was able to turn inevitable novice frustration into long-range motivation.

His first try at the tuning exam was in Seattle in March 1994 at the University of Washington. The exam piano was an older Steinway model B grand piano. The UW School of Music was where he spent the previous fifteen months learning piano technology, and had actually tuned the exam piano two times.

As Alex was tuning the exam's first few sections — pitch, temperament and midrange — he was nervous but he became more calm and confident as he worked his way into the bass and treble octaves. He was glad his many years as a performing musician had taught him about handling pressure. After a while, Alex glanced up at the clock and felt a rush of panic. Only fifteen minutes left! His time was almost up! "The last five minutes were really scary, because I didn't know if I had enough time to finish." He huffed and puffed and rushed through the rest of the piano, hoping he'd not blown it as his time ran out and the examiners walked into the room.

Well, he hadn't. In fact, as the examinees measured and scored his tuning, Alex was surprised with how high his scores were. He was elated and much relieved.

Then came the final section in the aural tuning exam — a half hour to tune two octaves of unisons.

His unison score was disappointing — he didn't pass that section, and therefore, didn't pass the exam. "I dropped my guard. I let down my concentration. It really taught me a lesson. You have to keep your focus and intensity level up throughout the entire exam, or you won't pass."

But his examiners made him feel good, telling him he had done remarkably well on the other sections, and that he now knew what to practice in order to do even better next time. "I could have become an island. But the examiners were absolutely excellent. They encouraged me to keep practicing and to try again. They gave me a good reality check."

So, a few months later, Alex took the exam again. This time, his anxiety level was lower and he was able to focus his concentration throughout the entire exam. "The second time I knew what to expect, and knew beforehand I would pass it. And I did. but it was funny. The first time I took the exam, I was pretty satisfied with my temperament and octaves. But the second time, my scores were higher, but so were my expectations, and I wasn't really satisfied with my tuning. I knew I could have improved it a whole lot more."

Beverly Kim had a different experience, even though it also took her two attempts before she passed the tuning exam. Like Alex, she trained with Steve Brady, and the RPT standards were made clear from the beginning. So she always had a goal to shoot for.

Beverly is very organized and hard-working, and throughout her training kept her extensive notes and self-copied

Journal reprints in a notebook, indexed by topic. "we all cope in different ways. The way I cope is to plan, plan, and plan."

She arrived at her first tuning exam in January 1993 with a sheet of paper with a schedule of how she wanted to utilize the hour and a half, as suggested by Mike Travis in the Tuning Exam Source Book. Beverly had worked very hard practicing her tuning, on her own and with Steve, and had asked to have her tuning evaluated by several of her chapter's RPTs. She felt nervous but ready. During the exam everything went as she had planned, and she finished her third pass as the examiners walked in the door.

Beverly chose to stay in the room during the scoring. The examiners were not completely familiar with the SAT and its internal scoring program, so the scoring procedure took a long time. Beverly's initial nervousness grew. But the examiners, after some backtracking, remembered the correct procedures and continued to score her exam. (it's important to emphasize that no errors were made in the scoring procedures; it just took longer than it should have.)

As the scoring progressed, one of the examiners told Beverly the bad news — she wasn't going to pass. She left the room to gather herself, and, because the hour was late and she had an appointment that afternoon, decided to leave without tuning the unisons.

Her second tuning exam was much more pleasant, and the result more satisfactory — she passed with flying colors and the scoring procedure ran smoothly and quickly. The examiners, some of whom were also at her first exam, had learned from that experience and improved their examiner skills.

The technical exam was also a challenge for both Beverly and Alex. Beverly had attended many conventions, as well as chapter technicals and her chapter's Associate Day (an all-day hands-on exam preparation class). And she had practiced her exam skills at home. "I practiced for the technical exam alot especially with a clock set to the exam time limits — I found that suggestion in the Technical Exam Source Book. When I took my technical exam, there were two other examinees who had not practiced with a clock, and they told me the time limits got them rattled."

Alex agrees that time limits are what makes the technical exam tough, "especially the vertical regulation section. I seemed to have plenty of time in the other parts of the technical test, but there's just barely enough time to complete vertical regulation."

What lessons did Beverly and Alex learn about taking the RPT exams that might be useful for Associates to know before taking the exams?

Beverly says it's crucial to get acquainted with the RPT standards, so you know what's expected for the exams. "There are many ways to learn what you need to know: find an apprenticeship, read the Tuning and Technical Exam Source Books, use SATs, attend chapter meetings and Associate Days and have someone listen to your tuning and inspect your regulations. The best time to get feedback is early, when your ego or your paycheck is not at stake. PTG is an amazing institution — every person I've asked for help has done so, and everyone has been very generous with their time."

Alex says, "Find a mentor. Everyone needs a technician who's passed the exam to touch base with. There's no shame in my game — when I needed help, I asked."

And how did you feel when you finally passed? "Euphoric!" Beverly said. "I felt a real sense of accomplishment and a big boost in my confidence. I worked really hard and I really earned it, but I know I have much more to learn. The RPT exams are a minimum standard, after all."

"But you can't cross home plate without getting to first base," said Alex. "I learned that I should have had a game plan for my tuning exam. And I'm glad I practiced for the technical exam. An early failure in the repair section would have affected my outlook for the rest of that test. *(Ed. In the technical test, only those sections failed need be re-taken.)* As an RPT, I get more respect from my peers. And customers are reassured when I tell them about being an RPT and about PTG. It paves the way towards building trust, and gives me more credibility when I suggest their piano needs further work."

Beverly said, "Now I'm in a better position to help new Associates prepare for the exams. And I'm really motivated to give energy back to PTG and the people who helped me so much." She is now very active in her chapter, as coordinator of the Puget Sound chapter's P*ACE* program, and at the national level, having created the new Written Exam Study Guide.

The experiences of Beverly and Alex should send a message to all you Associates out there: study and learn all you can from the myriad of resources available, then go ahead and take the exams. Passing is good, but so is not passing, if you learn from it. You'll be a winner just by accepting the challenge, and you'll be a double winner (or triple or quadruple or...) each time you take them until you pass!

Correction:

In the September Movin' On Up column it was incorrectly stated that PTG Bylaws require master tunings to be done aurally.

In fact, electronic tuning devices may be used during master tunings, and often are (including by the author of that unfortunate phrase). The tuning examination Manual (not PTG Bylaws) says: "Each member of the master tuning committee should listen to the tuning using various intervals to find places for improvement." Also: "The electronic measuring equipment cannot be used as a standard to judge the master tuning, but it can be used to make small changes."

What was so clumsily stated in the September column should have instead made clear that the ear is required to be the final arbiter for master tunings. ETDs are not prohibited from master tunings; to the contrary, they can be a big help in making master tuning sessions more efficient and the result more accurate. In fact, that's the central message of the entire September column.

Thanks to those of you who pointed out this error. Thanks also to those who responded to other items in the column. The ETS committee will try to respond to all of you; either here or personally. So keep those cards and letters coming. Sorry for any confusion or temperature-raising caused by this error.

SPELLS—

Finding Ways To Make A Difference

By Larry Goldsmith

Everyone who travels knows the value and excitement of seeking new landscapes. However, the real challenge comes when you stay home and try to see with new eyes.

That was the message from the National Piano Foundation's Brenda Dillon during an industry roundtable discussion at last July's convention. The roundtable, titled "Where Do We Go From Here? The State Of The Piano Industry," was presented to a standing-room-only crowd as Dillon, Lloyd Meyer of Mason & Hamlin Companies/Renner USA, PTG Trade Relations Committee Chair Jack Wyatt and PTG President Fern Henry kept the discussion moving.

In many ways, the question was answered with another question. The piano industry is in a state of instability right now, and its future depends on what we do to preserve it, panelists said. One of the bright spots now is the SPELLS program, sponsored by the Piano Manufacturers Association International, according to Dillon, because it emphasizes local solutions to the problem of declining piano participation.

SPELLS — Study of Piano Enhances Learning and Life's Success — is a market development program designed to increase active piano participation. It began in 1991 as a test-market program in three cities. It expanded to 18 cities over the next two years, and now is spreading to many other areas.

The program came into existence, Dillon said, because there was a dire need for promoting piano playing to the American public:

- 241,000 new pianos shipped in 1978, while only some 90,000 shipped in 1993.
- The total number of retail storefronts has decreased by 13.3 percent in the last four years, according to *Musical Merchandise Review* magazine.
- According to a National Piano Foundation Gallup poll, 51 percent of Americans had pianos in their homes when they were growing up. Only 20 percent own pianos now.
- The number of Americans whose first participation in music came from private lessons has declined in recent decades from 54 percent to 26 percent, according to a 1994 American Music Council Gallup Poll.
- The purchase of a piano is no longer in the top 10 of discretionary purchases. In a San Francisco study, for example, it ranked 41st.

Since the SPELLS program began, there have been some successes. Effective coalitions of retailers, teachers and technicians have been able to bring needed visibility to piano music-making in several cities. SPELLS retailers report healthy increases in sales, rentals and lesson referrals when comparing 1993 and 1992 figures. In a comparison of August 1993-June 1994 figures with those from the same period a year earlier, shipments of pianos to SPELLS sites surpassed non-SPELLS sites. SPELLS sites experienced a three percent increase in verticals and a 48 percent increase in grands, while the national average showed a three percent decrease in verticals and a one percent increase in grands.

And there have been other bright spots, Dillon said. A variety of creative but not necessarily expensive promotional projects have brought music communities together in many SPELLS sites. This lowering of barriers has made the experience of purchasing a piano less miserable for consumers. In Milwaukee, for example, retailers developed a code of ethics for their sales consultants

In many cases, technicians have been vital to the success of SPELLS programs by bringing retailers together, Dillon said. "PMAI is extremely grateful to PTG's leadership and to the technicians who have supported this concept," she said.

The most challenging aspect of the SPELLS program has been overcoming hostility among members of the piano community — understanding that our competition isn't each other, but the other purchases parents are making for their children, like computers, Nintendos, designer clothing, etc. Then there's the misery index of the piano purchase experience — according to consumer research, it's one of the worst.

Self-serving attitudes on the part of retailers, technicians and teachers contribute to the problem — retailers who dominate their market area, technicians who find more than enough pianos to service, and teachers who have waiting lists don't see a problem. Unfortunately, these attitudes don't account for the fact that a city would be lucky if even one in 10 of its residents participated in any kind of music. Most indicate that their figure is closer to one in 50 or one in 100. SPELLS is a long-term solution, rather than a quick fix.

There's good news, however. "Human beings yearn to express themselves musically, and the piano is ideal for satisfying that yearning. Our market is huge. We aren't limited to specific ages, economic groups, races, or ability considerations. Enormous numbers of people want to play the product those of us in this room manufacture, service and teach," she said.

"Our challenge is to connect our product with that yearning. I'm confident that no one yearns to play a piano because of the wood in the soundboard. No one yearns to play a piano to learn how to demonstrate correct hand position. And it's probably rare that someone yearns to play a piano to learn folk dances from the 17th century aristocratic European courts."

Unfortunately, that's what we as experts focus on rather than the consumer's powerful need to make music, she said. Seeing with new eyes may mean minimizing our ego needs to be experts and focusing on the real reasons human beings want to play the product we make our living with.

"We have a powerful story to tell, and the SPELLS Program is all about telling that story. We can't assume that promoting playing the piano will get done even if those of us in this room are too busy," she said. "We're all too busy."

"Whose job is it to promote active piano participation? It's the job of everyone who has a vested interest in the number of people who play piano. The average city in the U.S. has 110 individuals who make their livings by selling, servicing and teaching piano. If all 110 of us seriously incorporated market development into our daily routine and viewed it as a process rather than a rare event, we can make a difference."

Dillon closed with a favored Chinese proverb: "The best time to plant a tree was 20 years ago. The second-best time is today."

New Members In August

REGION 1

041-MAINE

ARTHUR D. CHICKERING
80 LAWN AVENUE
ROCKLAND, ME 04841

060-MONTREAL, QC

DUNG NGO
1815 CR. TOURANGEAU
BROSSARD, QC J4Y 2R4
CANADA

REGION 2

296-WESTERN CAROLINAS, NC

LARRY K. ATKINS
P. O. BOX 1312
WEAVERVILLE, NC 28787

331-SOUTH FLORIDA

MAJID MOHAJER-POUR
2701 RIVERSIDE DR., #312
CORAL SPRINGS, FL 33065

REGION 3

701-NEW ORLEANS, LA

RICHARD R. STREETS
39153 MILLER ROAD
SLIDELL, LA 70461

761-FORT WORTH, TX

THERON ICE
P. O. BOX 170833
ARLINGTON, TX 76003

791-NORTHWEST TEXAS

CINDY C. WALKER
1312 E. SILVER
HOBBS, NM 88240

REGION 4

489-LANSING, MI

CHRIS W. GRAPENTINE
5034 APPLEWOOD DR.
LANSING, MI 48917

REGION 5

511-SIOUXLAND, IA
RANDY J. BAUMAN
4701 STONE AVENUE, I-1
SIOUX CITY, IA 51106

581-MINN-KOTA, ND

PERRY W. HASTINGS
21 DRAKE BOULEVARD
WINNIPEG, MB R2J 1J3
CANADA

683-NEBRASKA

KEVIN E. STOCK
9405 BURT, #15
OMAHA, NE 68114

REGION 6

901-LOS ANGELES, CA

KENT K. CHU
4840 GOLDENWEST AVE.
TEMPLE CITY, CA 91780

JOHN TUDOR
4923 SANTA ANITA AVE.
TEMPLE CITY, CA 91780

905-SOUTH BAY, CA

RICHARD A. WELLER
204 16TH ST., APT. B
MANHATTAN BEACH, CA 90266

REGION 7

594-MONTANA

JULIE A. DUNN
P. O. BOX 725
CULBERTSON, MT 59218

LOUIS SPENCER-SMITH
107 W. PARK ST., #115
LIVINGSTON, MT 59047

841-SALT LAKE CITY, UT

J. BRIAN BALLARD
4315 S. 3200 W.
WEST VALLEY CITY, UT 84119
846-UTAH VALLEY

GRADY GARRARD
63 EAST 1535 NORTH
OREM, UT 84057

981-SEATTLE, WA

JACK L. ANDREWS
1076 JORDAN ROAD
BURLINGTON, WA 98233

Passages

Reclassification to RPT

REGION 1

064-CONNECTICUT

DAVID T. GEISLER
45 BRET DRIVE
MERIDEN, CT 06450

REGION 2

212-BALTIMORE, MD

PAUL C. YARISH
408 CALVIN AVENUE
BALTIMORE, MD 21218

PTG Marketing Tools

Brochures:

- How Should I Take Care Of My Piano?
- How Often Should My Piano Be Serviced?
- Special Care and Maintenance Of The Teaching Piano.

50/$20, 100/$35, 500/$150

Technical Bulletins:

- Pitch Raising
- Regulation
- Humidity Control
- Voicing
- Finish Care
- Rebuilding

50/$12, 100/$20, 500/$90

Educational Materials

- PTG Technical Exam Source Book
- PTG Tuning Exam Source book

$29 each

Merchandise

- Journal Binders

1/$6.50, 2/$12

- Membership Lapel Pin *

$5.00

- Coffee Mug

1/$4.00, 4/$13.00, 6/$22.00

- Pedestal Mug-10 Oz. clear

$1/$5.00, 4/$16.00, 6/$22.00

We have sample packets for $3.00 each. *Packet includes one each of the six technical bulletins and three brochures. RPTs may also request a sample of each of the six reminder cards.*

**RPTs Only*

To place your order for any of these items call 816-753-7747

Reminder cards or Business cards also available from PTG

PTG Foundation
Mission Statement

"The Piano Technicians Guild Foundation is formed to support the goals of PTG by preserving and displaying historical materials and providing scholarships and grants for piano performance, study and research."

PTG Foundation Scholarship Awarded

'I would like to thank the Piano Technicians Guild Foundation for selecting me as the recipient of their 1994 Continuing Education Scholarship.

'I have begun working on a program of Russian piano music with artist-teacher Adelina Krivosheina. I am also coaching with Faina Bryanskaya, a member of the faculty at the Longy School of Music, Cambridge, Mass. I hope to present a recital in the spring of 1995.

'Thank you again for the scholarship. It is a great help to me in continuing my study.'

Yours sincerely,
Rhonda Ballou

The winner of the Piano Technicians Guild Foundation's 1994 MTNA scholarship is Rhonda Ballou of Delmar, NY. The $750 scholarship is given annually to a Nationally Certified member of Music Teachers National Association to allow that individual to continue his or her musical studies The 1994 award was announced by PTG Foundation Secretary-Treasurer Colette Collier, RPT, at the annual MTNA Awards Banquet at the organization's convention in Washington, DC, last March.

Ballou, a nationally certified teacher since 1975 received bachelor's and master's degrees in piano performance from the University of Michigan. In addition to teaching piano privately in Delmar since 1970, she has an extensive career as a pianist and organist, and has been very involved in the New York State Music Teachers Association and in local musical activities. Prior to her studies at Michigan, she trained with Joseph Espositio Jr. in Pittsburgh, PA, also a nationally certified teacher.

AUXILIARY
EXCHANGE

Dedicated To Auxiliary News and Interests

Holiday Gifts From the Scholarship Store

Most of you are probably getting ready for the Thanksgiving holidays...all of the cooking and all of the preparation for a wonderful time with family and friends. What a great time of year! Thanksgiving is my favorite holiday of the entire year. It is a time for sharing, reminiscing and for being grateful for how fortunate we are...for all of the things that we have and do, and a time for being with family and loved ones...all without the pressures of gift giving. We can just be ourselves and enjoy the time together. I am most thankful for whoever invented Thanksgiving Day.

This year Claudia and I are renting a cabin in Lake Tahoe and have invited a number of our family members to meet us there for several days. This will be a new event for us—one that we are looking forward to very much, especially spending time with the grandkids.

November is also a big month for our catalog sales effort, our scholarship store. Please show the advertisement on the page to your right to your spouse, and encourage him/her to purchase holiday gifts for their clients and friends through this store. Why not order some gifts for your own shopping list, too? Our prices, as you will see, are very competitive, yet proceeds go directly to benefit the Piano Technician Guild and the music industry. Any order received by the end of November will be shipped in time for the holiday season. Orders will be filled and shipped out immediately upon receipt. We are not a large operation, but we are efficient. so while you are thinking of this right now, take this page to your spouse and encourage him/her, in the strongest way possible, to order your holiday gifts for your clients and friends through our scholarship store; then add on your own orders. Our success depends on you. Satisfaction is guaranteed.

I have appointed Ginger Bryant as Chair and Julie Berry as Co-Chair for this year's Scholarship Committee. Piano competition ends in November, so we will know the winners by the time you are reading this article. Hopefully the winners will come and play for us at the convention. Thanks for your help Ginger and Julie!

Now for a little Convention '95 update. I just got back from the Planning Committee meeting in Albuquerque, New Mexico. Oh, what a place that is! The weather was absolutely delicious. Albuquerque sits 5,280 feet above sea level, a true high desert area. The days were quite warm, but also dry and comfortable; the evenings were cool to chilly. Speaking of chili, these people love chili. Chili of all types, red chili, green chili, yellow chili, you name it... there is chili everywhere! There are three distinct cultures in the area. Hispanic, Native American and the White Man (Person)—all interacting in a beautiful way. Albuquerque has a number of museums and an old town shopping area that you will find delightful.

Special thanks for the help of Debbie Johnson, Sue Speir and my wife, Claudia, who all helped set up this year's fantastic tour. They really went out of their way to make this tour special for all of us. Muchas gracious!

Our tour this year will take us to the nearby town of Santa Fe. Santa Fe was voted the number one, "most favored destination" in the world by all travelers, according to the travel agents association. Santa Fe sits at an elevation of 7,000 feet and is only 50 miles north of Albuquerque. Santa Fe is a wonderful place to visit. There are many shops and art galleries where you can find nice art or jewelry pieces for just a few dollars—or spectacular pieces for tens of thousands of dollars—and everything inbetween...truly something for everyone! The local Native Americans sit in the town's square and put their wares out on blankets for your shopping ease. Restaurants are plentiful and the food is delicious.

After a short stop in the gold mining town of Madrid, we will be in Santa Fe for a short walking tour to the hotel where we will have our banquet. There will then be free time for the rest of the afternoon—something that many of you have requested time and time again. Santa Fe is absolutely the best place to be loose, shopping on your own, at your own pace and in your own choice of stores and museums.

Saturday it will be back to Albuquerque for another day of free time. Or possibly classes, PTG permitting. Also, the tour company will gladly arrange for transportation and mini-tours. The number of things to do in Albuquerque are almost infinite. You can take a hot air balloon ride or take the tram to the 10,000 foot mark (crossing all four of the seasons on the way to the top). You can go to the various museums and art galleries, to Old Town for more shopping, or take side trips to nearby Native American pueblos, bingo parlors, and caves with petroglyph paintings from centuries ago, and on and on and on. The pleasure will certainly be yours.

As I said, we are also working to get you a number of classes for those of you who would like to learn more about business in general, sales, marketing, shop safety, piano history and background so you can better help your spouse in the family business, should you so desire. There will be something for everyone and children are most welcome.

This truly can be a family experience: the beginning or the culmination of a family vacation. The Grand Canyon is within reasonable driving distance, as are Durango and Mesa Verde, Colorado, and the Four Corners. Start planning now for a time of absolute delight. You are going to love Albuquerque.

Now grab that catalogue page to your right, give it to your spouse, and fill out the order from now, while you are thinking about it. Get your holiday shopping done early this year. Thank you for your support.

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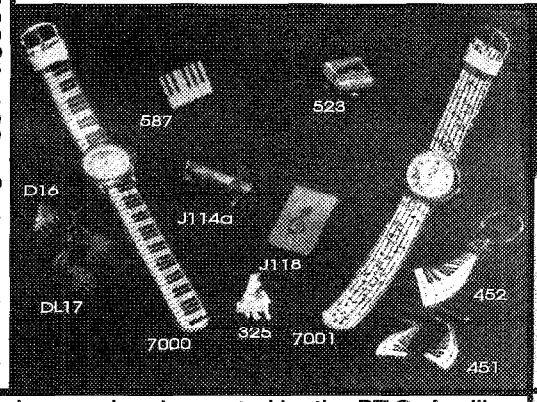

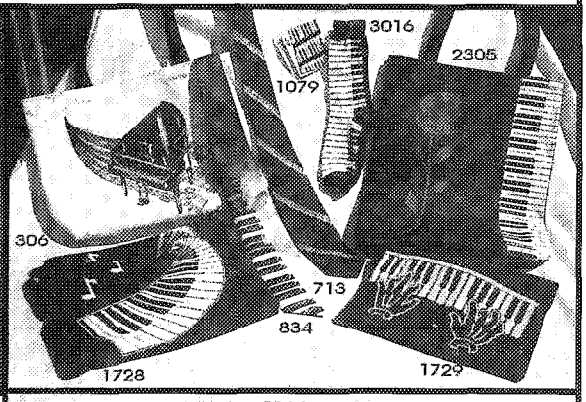

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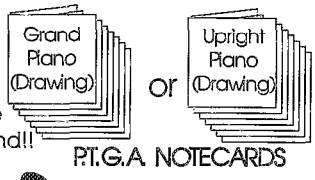

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FILE H

...For History

....From Carman Gentile
Redwood Chapter

Photo 1

Behold the George Steck Upright #13999! According to the Pierce Atlas, it was manufactured about 1887 and for its age has a combination of interesting features.

It uses no hammer return springs, the strings are fully agraffed [photo 2], it has a postless back and utilizes a bass sostenudo.

The sostenudo mechanism is of particular interest. It consists of a wood piece suspended under the bass section by hangers which are similar to the hangers on the hammer rest rail. Attached to the back of the bar is a thin lip covered with felt. When the bar is raised via the middle pedal, the felt-covered lip overlaps metal spoons which project from the bottom of the bass damper levers. [photo 3]

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Photo 3

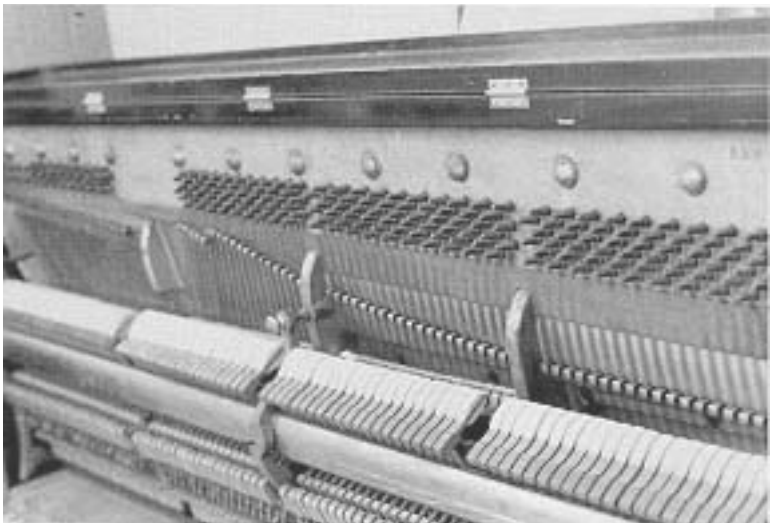

Photo 2

Photo 4

The mechanism works as follows: when one or more keys are depressed and the dampers lift, the bottom of the damper levers move back and their metal spoons project back from the action. When the sostenudo pedial is depressed, the felt covered lip raises to trap the projecting spoons and hold the dampers off the strings. The dampers remain off the strings until the middle pedal is released. [photo 4]. I have never seen a sostenudo like this one, particularly in an old upright.

Photo 5

This is also the oldest piano I've ever seen constructed with a postless back [photo 5]. When viewed from the front, the piano appears to have a plate which ends at the bottom of the pinblock. Actually the plate is bent at a right angle and extends back under the pinblock, and bends up again to support the back of the block. This continuous metal plate is reinforced in back by thirteen vertical struts. The pinblock bolts pass from the front [photo 2] all the way through the plate in the back and are fastened with square nuts.

The image of the unobstructed soundboard is striking.

North Bennet Street School Hosts November Open House

On Friday, November 4, and Saturday, November 5, 1994, North Bennet Street School will open its doors to the public for a rare glimpse of work in progress within its craftsmanship training programs. With full-time programs in Bookbinding, Cabinet & Furniture Making, Carpentry, Preservation Carpentry, Jewelry Making & Repair, Locksmithing, Piano Technology, and Violin Making & Restoration, the school models its classes after traditional apprenticeship training.

Visitors to the North Bennet Street Open House will observe work in progress and have the opportunity to talk directly with students and instructors. This behind-the-scenes look at an education in craftsmanship will interest people in the trades as well as those exploring new career options.

North Bennet Street School has operated since 1881 in the North End of Boston, increasingly well-known not only throughout the country, but around the world. One of the first schools in the United States to specialize in vocational education, the school has built a solid reputation for fostering graduates with a commitment to the highest standards of hand craftsmanship.

Ongoing demand for a part-time adaption of the school's hands-on educational techniques has led to the creation of the Short Workshop Program. Classes are now offered at North Bennet Street on Saturdays, in the evenings, and during the summer. Workshop offerings change each term and include specialized topics from the school's full-time curricula.

The Open House will run Friday, November 4 from 10 am to 2 pm and Saturday, November 5 from 10 am to 3 pm. North Bennet Street School is located at 39 North Bennet Street in the North End of Boston. The school is accessible for people in wheelchairs. Parking is available at area garages. Admission to the Open House is free.

INDUSTRY NEWS

Piano industry news? The *Journal* will accept your information for consideration in one of our future issues. Send your info to: PTJ, 3930 Washington, Kansas City, MO 64111

Research Findings Show Music Can Enhance Key Component Of Human Intelligence

LOS ANGELES-Music lessons, and even simply listening to music, can enhance spatial reasoning performance, according to research presented at the 102nd Annual Convention of the American Psychological Association. The new findings were presented by psychologist Frances Rauscher, Ph.D. and neuroscientist Gordon Shaw, Ph.D., representing a research team from the University of California at Irvine.

Dr. Rauscher and Dr. Shaw's studies confirm, and substantially extend their earlier research which demonstrated an unmistakable causal link between music and spatial intelligence. This further research will have considerable potential to reverse the commonly-held view of music education as essentially irrelevant to intellectual development.

The researchers note that well-developed spatial intelligence is the ability to perceive the visual world accurately, to form mental images of physical objects, and to recognize variations of objects. The researchers theorize that spatial reasoning abilities are crucial for such higher brain functions as music, complex mathematics, and chess. As many of the problems in which scientists and engineers engage in cannot be described in verbal form, progress in science may, in fact, be closely linked to the development of certain spatial skills.

Dr. Rauscher and Dr. Shaw's results show that the spatial reasoning performance of 19 preschool children who received eight months of music lessons, far exceeded the spatial reasoning performance of a demographically comparable group of 15 preschool children who did not receive music lessons.

Moreover, scores on a puzzle task, designed to measure spatial reasoning ability, increased significantly during the course of the period they received the music lessons. This experiment was designed to follow up on results generated by a preliminary pilot study completed by the researchers in 1993.

The second experiment, presented at the meeting by Dr. Rauscher and Dr. Shaw, expanded on their widely-reported study published by *Nature* in October 1993, which found that listening to 10 minutes of Mozart's Piano Sonata K 448 increased spatial IQ scores in college students, relative to silence or relaxation instructions. The new findings replicated the effect, and found an increase in spatial skills after subjects listened to 10 minutes of either a composition by Philip Glass or a highly rhythmic dance piece, suggesting that hypnotic musical structures will not enhance spatial skills.

Dr. Rauscher and Dr. Shaw suggest that these two complimentary studies have serious educational and scientific implications. "We are in the process of designing further studies directed toward strengthening the enhancing effect of music training on spatial reasoning that we found for the preschoolers. We hope our research will help convince public school administrators of how crucial music instruction is to all children, " they explained. Dr. Rauscher and Dr. Shaw also plan experiments which will begin to examine the neuronal mechanisms responsible for the casual link between music and spatial intelligence.

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DISPLAY AD INDEX

PianoDiscussions™

Fall '94 Software Issue

News From The World Of PianoDisc

Peter Nero records for PianoDisc

Famed Steinway jazz artist Peter Nero recently visited PianoDisc's recording facilities in Sacramento to perform a variety of his favorites for an upcoming PianoDisc Music Library release.

Peter Nero has built an impressive reputation as a composer, symphony conductor and arranger, in addition to his career as a virtuoso pianist. Record industry accolades include ten Grammy nominations and two Grammy awards, a million–selling gold "single" and album, *Summer of '42* and a citation from Cashbox Magazine as "The world's Number One instrumentalist". A whirlwind of unlimited energy, he conducts over 100 symphony performances a year, and is Pops Music Director and Conductor for orchestras in Florida, Oklahoma and his native Philadelphia. "Peter's musical virtuosity and drive make him the sort of artist well suited for the PianoDisc Music Library Artist Series", says Steve Merritt, Talent Booking.

The PianoDiskette, which will feature such favorites as "Stormy Weather" and "When I Fall In Love", as well as a spectacular medley from "Phantom of the Opera", is scheduled for release in October.

New Music Releases

Here are several recent releases from the PianoDisc Music Library

Artist Series

PD 1003 *Floyd Cramer (Country)*
PD 3016 *Andreas Klein (Classical)*
PD 3017 *Laura Spitzer (Classical)*
PD 6004 *Jessica Williams (Jazz)*

Musical Memories

PD 2204 *Gershwin Collection*

Candlelight & Wine

PD 2407 *Unforgettable*
PD 12402 *I'll Be Seeing You*

Classical

PD 3017 *The Great Composers: W.A. Mozart*

Jazz

PD 16004 *Trio Paradiso—Live!*
PD 16005 *Fascinating Rhythm (Gershwin)*

Christmas

PD 9006 *Contemporary Christmas Classics*

Extended Play

PD 9207 *Holiday Harmonies (Christmas)*

Coming Soon

PD 5009 *Artist Series: Butch Thompson*
PD 6005 *Artist Series: Peter Nero*
PD 5010 *Jelly Roll Morton & Fats Waller*

PianoDisc

4111 North Freeway Blvd.• Sacramento, CA 95834
Phone: (916) 567-9999 • Fax: (916) 567-1941

New PianoDisc music diskettes available this fall

A live jazz trio, a Steinway Artist recital and two different Gershwin releases top the list of PianoDisc Music Library additions for Fall, 1994. Also on tap are Artist Series performances by Nashville giant Floyd Cramer and "A Prairie Home Companion" stride artist Butch Thompson (see right).

The Steinway Artist Series continues to grow with the addition of West Coast favorite Laura Spitzer's PianoDisc Grand Opening Recital diskette. Ms. Spitzer's fiery performances of the Chopin "Heroic" Polonaise and of Mily Balakirev's daunting "Islamey" were highlights of PianoDisc's Grand Opening festivities last fall, and this release offers a glimpse into the excitement of that day. The diskette includes works by Mozart, Chopin, Joplin and Gershwin performed during the Grand Opening recital.

Gershwin is also the focus of two other new releases, one for piano solo and the other with Symphony accompaniment. These diskettes feature some of Gershwin's finest musical compositions, performed by some of PianoDisc's finest artists.

One trio of artists, Trio Paradiso, have made a unique contribution to the PianoDisc Music Library with their new release, "Trio Paradiso—Live!". Music for this release was all performed live in the PianoDisc Recording Studios using MIDI instruments–a piano equipped with PianoDisc's TFT strip, a set of MIDI drums and a MIDI bass. The result is a live performance that rivals any ever recorded for player piano. So watch for it!

Butch Thompson performs early jazz for PianoDisc

Remember "A Prairie Home Companion"? It was that delightful homespun radio show that aired live every weekend from the World Theater in St. Paul, Minnesota. Audiences were delighted every week with Garrison Keillor's "News from Lake Wobegon" narratives, and thrilled to the early jazz stylings of the Butch Thompson Trio. The show was a marvel of understatement and elegance.

Well, "A Prairie Home Companion" is gone now (except for reruns and occasional reunion shows), but Butch Thompson is still going strong. With performance commitments across the country and around the world, Mr. Thompson's music has been heard by millions around the globe. "PianoDisc is grateful for the opportunity to capture his performance", says Steve Merritt, Talent Booking. "Butch is world famous for his Jelly Roll Morton interpretations and for his dazzling stride technique. These recordings will be unique and historic".

Mr. Thompson's performances are tentatively scheduled for release in October.

Floyd Cramer joins PianoDisc Artist Series

Famed country artist Floyd Cramer recently completed two days of recordings for the PianoDisc Music Library. Mr. Cramer recorded one full hour of solo piano which will be released soon in the PianoDisc Music Library Artist Series, both as a 3.5" diskette (compatible with all PianoDisc control boxes) and in PianoDisc's new PianoCD™ format. Also, Mr. Cramer recorded several songs which he performed with a 18 piece orchestra and 8 voice backup chorus, and these perfomances will be released in the PianoCD™ format, as well as on two spectacular PianoVideo™ tapes.

All of Mr. Cramer's PianoDisc performances will be available in the fall.

Tech Gazette

Yamaha Service November, 1994

Yamaha's Silent Piano™ Causes Media Frenzy!

Some unusually vibrant energy was generated recently at the New York City launch of Yamaha's new Silent Series™ piano. A major press conference for the innovative piano from Yamaha, the world's largest musical instrument manufacturer, was held appropriately enough at Macy's Herald Square, one of the largest department stores in the country. Within a week of the launch, a veritable firestorm of publicity and news coverage reached tens of millions of people worldwide.

The media came from far and wide to hear the "Silent Piano," representing nations as far flung as South America with stories of praise running internationally in Japan and Europe. Conference attendees included Associated Press, CNN, *The New York Times*, Reuter's Television, CBS Radio's "Osgood File", WNBC-TV, and Cultura Television from Brazil.

Within just a few days, CNN featured in-depth segments on no less than six of its news programs, which also played on several local network affiliates. Pre-conference coverage included Bloomberg Radio News and *The Los Angeles Times*; and a follow-up story in *Newsweek* called the Silent Series "the new hot musical instrument." Even radio commentator Paul Harvey told his 23 million listeners how he "read with interest about the new practice piano created by Yamaha."

A New York Times article discussed the many advantages of owning a Silent Piano, especially for the 35 to 40 percent of the piano students who are adults. The article cited that a Silent Piano means more practice time for those who can't play when children are sleeping and called it a "magical moment" for parents. A Manhattan piano teacher also was quoted as saying, "The idea is delightful."

Jazz pianist Andy Laverne was called upon to demonstrate the Yamaha Silent Series Piano at the New York press conference. The front panel of the piano was left off, revealing the hammer and strings, and reinforcing the fact that this was a true acoustic piano, but one that also can be played in total silence. Remarkably, the action and feel of the instrument remain the same when the piano is in the silent mode, but everything played can be heard only through headphones, creating a private playing and listening environment. Laverne donned the headphones, engaged Yamaha's patented QuieTOUCH™ system, and quietly played his way into musical history.

Terry Lewis, vice president and general manager of Yamaha's Keyboard Division, said, "We expected the launch to be a special event, but we never expected it to become a musical phenomenon. Our new product is generating considerable interest, and we hope to do particularly well with the Silent Piano.

According to the Asian *Wall Street Journal*, the Silent Series piano has been extremely well received in Japan, where sales have exceeded forecasts by 40 percent. Yamaha Corporation expects the Silent Piano to continue to chalk up strong sales in the U.S. market as well. In fact, a recent Yamaha study found that 33 percent of the customers who bought Silent Pianos would not have bought a piano if it were not for the silencing feature—a sign that the product may be creating a whole new market.

YAMAHA