PIANO TECHNICIANS

Journal

January 1994

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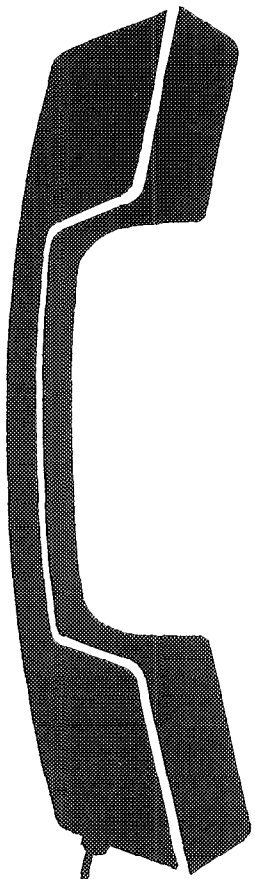

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PIANO TECHNICIANS Journal

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CoverArt

Former PTG President Sid Stone acquired this impressive art object during the Milwaukee Convention. The artist is none other than Golden Hammer creator William (Bill) Smith. As we enter 1994, establish your values and plan your goals; but set your sights high—Fly with the eagle.

Also Inside:

Kawai - The Master Builder Presents:

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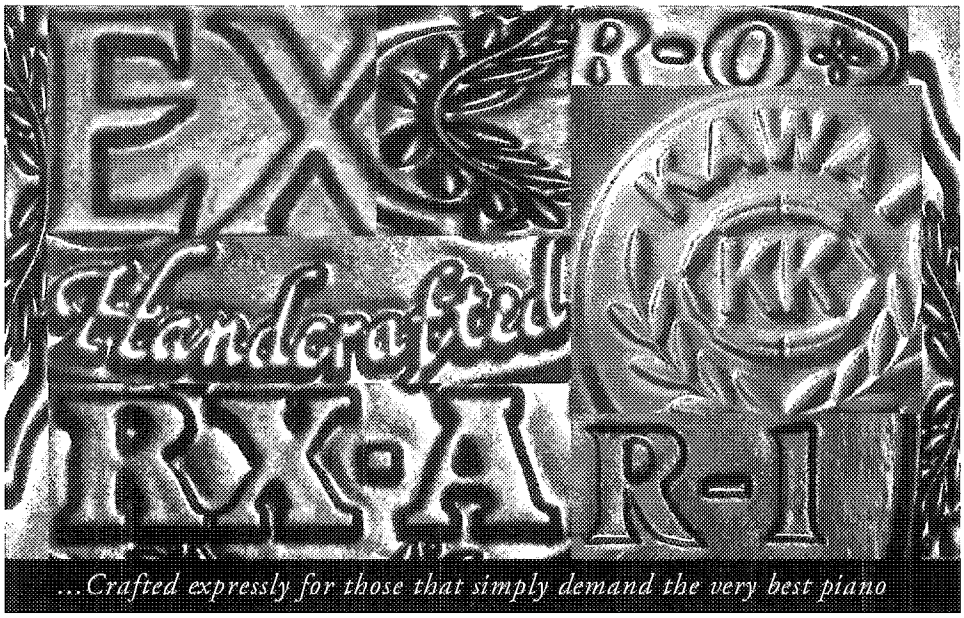

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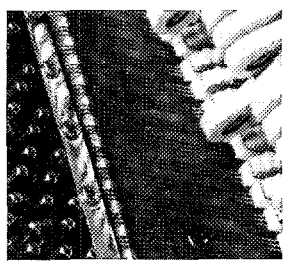

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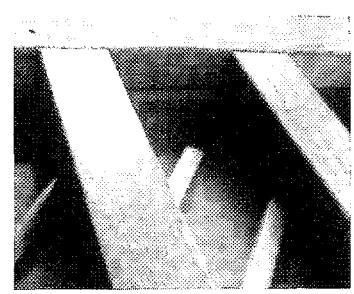

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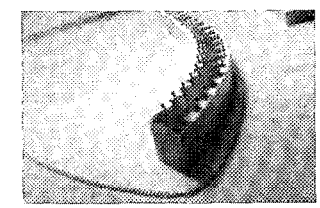

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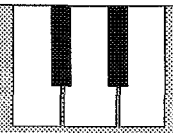
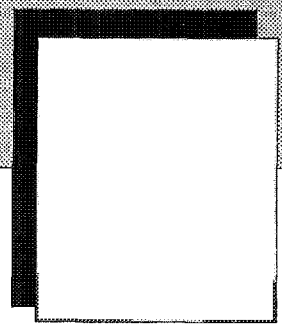


President's Message



Most of us have had mentors in our careers as piano technicians. Some mentoring relationships are fairly formal and well-structured. Those who attended a piano technology school certainly count their teachers as primary influencers. Other technicians have served apprenticeships in piano shops or factories or have become private students of a working piano technician.

On the other hand, many technicians are more self-directed in their study and glean from several mentors at different times. Some complete a correspondence course and then get tutoring in specific skills such as tuning, regulation, and voicing from local technicians. Others utilize the many resources in PTG such as Journal articles, Institute classes, and chapter technicals to supplement their private study, finding guidance from the writings of respected teachers.

PTG has always provided the setting for the sharing of information that is at the core of the mentoring process, and preserving this tradition of openness is essential to our future growth both individually and as an organization. The late Stanley Oliver said it best as we sat together at a PTG banquet over dinner. The discussion around the table centered on the marvelous sharing of knowledge within PTG. Stanley remarked that if two people meet and each exchange dollar bills, they both go away with just what they brought, no richer for the sharing. But, if they both exchange ideas, they each go away with two ideas. Stanley's words of wisdom point out the value of open and unselfish sharing made possible by PTG. This is the value of mentoring; it is not only the student who learns, but the teacher as well.

Mentoring

"PTG has always provided the setting for the sharing of information that is at the core of the mentoring process, and preserving this tradition of openness is essential to our future growth both individually and as an organization."

This year we are working to actively encourage Associate upgrading through the PACE Program. A key ingredient of this program is the cultivation of mentoring at the local level, and the chapter newsletters I see reveal a variety of creative approaches. Some chapters have met with members individually to counsel them and recommend tutors. Others have distributed the workload by identifying qualified mentors in specific skill areas and scheduling group tutorials periodically.

For most people this personal tutoring is essential to the learning process. Consider this popular proverb:

"If you tell me I may listen.
If you show me I may understand.
If you involve me, I will learn."

The essence of mentoring is to guide the learner through all three steps: listen, understand, learn. In PTG we provide the setting for this process to occur in chapters and classes. We furnish many tools useful to mentors and learners: the Journal, the PACE Lessons and Checklist, books and more. We support the piano technology schools and manufacturers' training programs and refer students to them regularly. And by freely sharing knowledge, we show by example how the exchange of information can be mutually beneficial. The result is a fertile environment within PTG where new ideas are exchanged and made better.

If you are an active learner, you will find many mentors in PTG ready to contribute to your growth. Make the most of the learning opportunities today, then experience the satisfaction of teaching others tomorrow. Become part of a cycle of sharing that will ensure the prominence of PTG in piano technology tomorrow.

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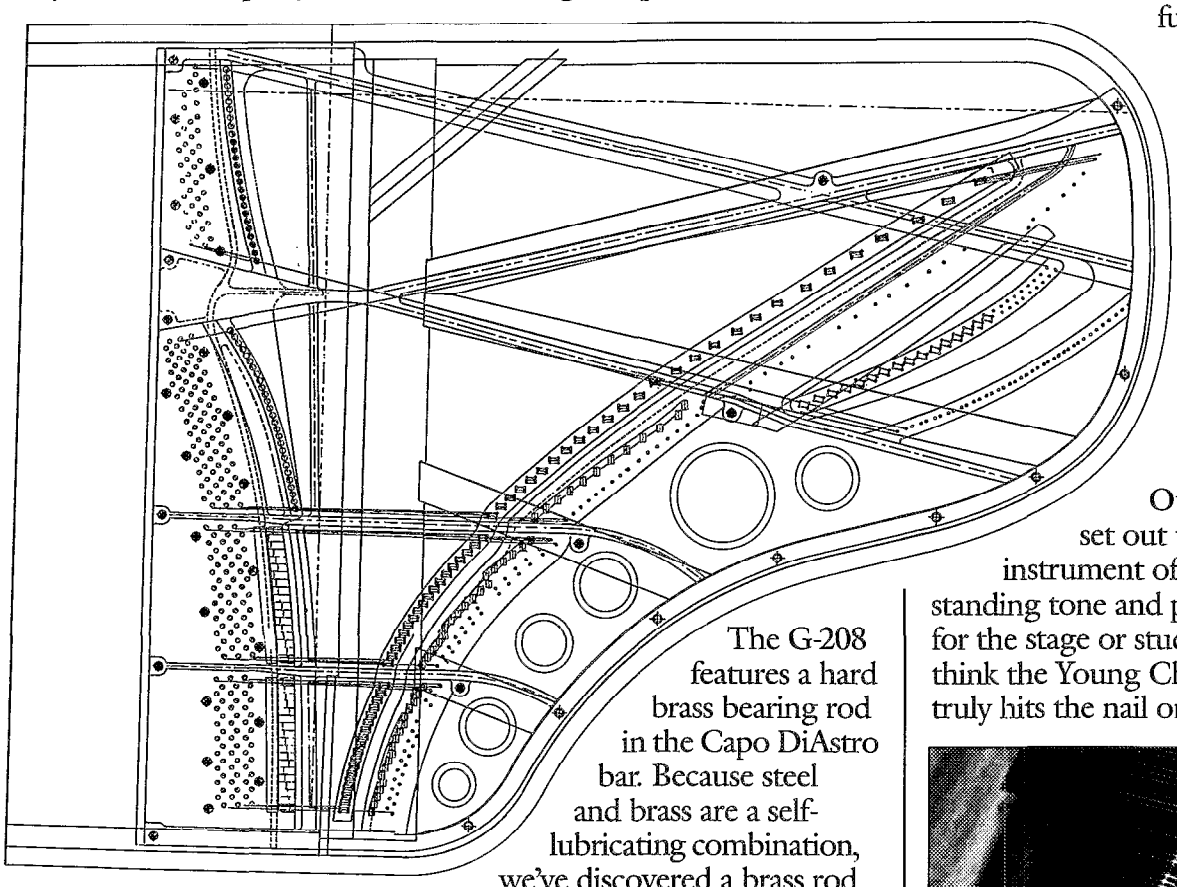

The G-208 features a hard brass bearing rod in the Capo DiAstro bar. Because steel and brass are a self-lubricating combination, we've discovered a brass rod offers better control of strings during tuning. In addition, the brass rod is easily replaced later in the life of the instrument eliminating the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

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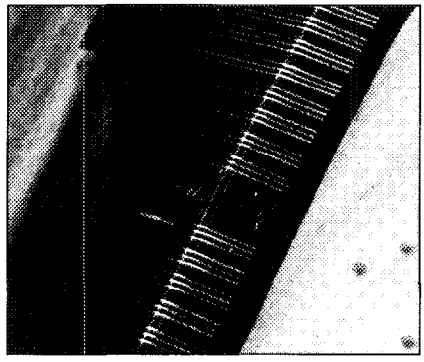

Because strings bear against a replaceable brass rod, tuning control is improved.

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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The *PACE* Academy: *Get Your "Hands-On" Some Training*

Steve Brady, RPT
Institute Director

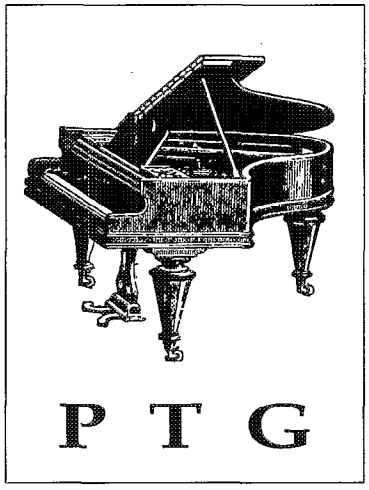
Imagine this: you have arrived at the Hyatt Regency Hotel in Kansas City for the 1994 PTG National Convention and Technical Institute. On the first day of classes, you decide to wander around and peek into the classrooms to see what's going on. As you look into the first classroom, you see an audience of about 12 to 15 technicians busily regulating action models as an instructor circulates among them, offering suggestions and assistance. In the next room, a similar audience is splicing and replacing strings on jigs which look remarkably like the ones used in the PTG technical exam. Other rooms contain students repairing hammer shanks and rebushing keys and flanges, all under close supervision.

What is going on here? What happened to the classes seating 50 to 150 people, classes on action geometry and pinblock replacement and concert piano preparation? Well, actually, they're in another part of the hotel, just like always. But the wing you've walked down is a special area devoted to a special kind of instruction.

The PACE Academy is one of several new concepts planned for the Kansas City Institute. Simply put, the PACE Academy is a place where piano technicians can obtain structured training and instruction. Much of this structured education will be presented in a "hands-on" format, permitting the formation of actual skills. The few non-hands-on classes in the Academy will be structured and focused on definite objectives, like preparing the students to take and pass the PTG written exam, or to become familiar with octave tuning techniques necessary to pass the PTG tuning exam.

Does this mean that PTG is getting into the business of providing basic training to a new generation of tuners? Of course not. To train a person to tune, for instance, is far beyond the scope of what we can do. But we can provide the opportunities for a person who already has some training to hone his or her skills and move toward attaining the PTG standards.

Expanding Horizons



Cultivating Artisans

In addition to this kind of help for those preparing to take the exams, the PACE Academy will include hands-on classes for more advanced technicians. Hands-on classes on bridge capping, hammer hanging, and voicing are just some of these.

To avoid mob scenes around the Academy classrooms, all of the hands-on classes will be pre-registered. By this I mean that when you receive the official convention brochure with the registration materials, the class schedule will be included in the brochure. Also included will be a phone number for you to call to register for the hands-on classes. When you call this number, the Home Office Staff will be able to tell you which sections have room left. If there is room in the classes you are interested in, you will be offered a place in the classes, and be billed a small surcharge to help defray the added costs of equipment and materials used in these special classes. The staff will also give you a due date for paying your fees. If your registration fee and surcharges are paid by this date, your place in the selected hands-on classes will be assured. If not, your place will be released and made available to others.

In the coming months, I will be describing the structure of the PACE Academy—and the other parts of the Institute—in more detail. Start planning now to register early and get your hands on some great education!

NOTE: The graphic above will be used in the coming months to promote the 1994 Convention and Technical Institute. The official slogan of this year's convention, *Expanding Horizons, Cultivating Artisans,* was chosen for its depiction of growth & education for RPTs and Associates. Look for this symbol. When you see it, know that important Convention and Institute information is at hand.

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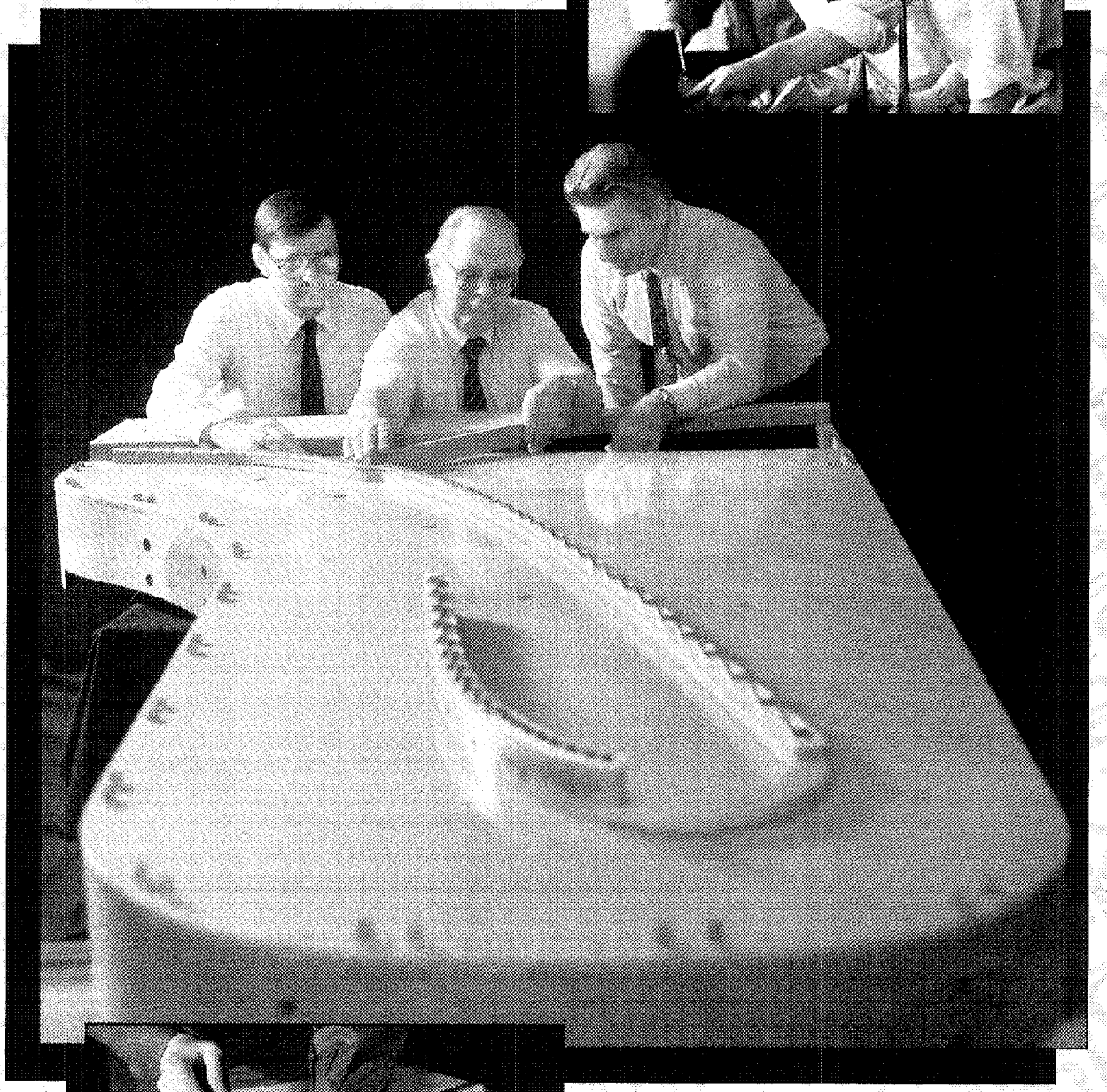

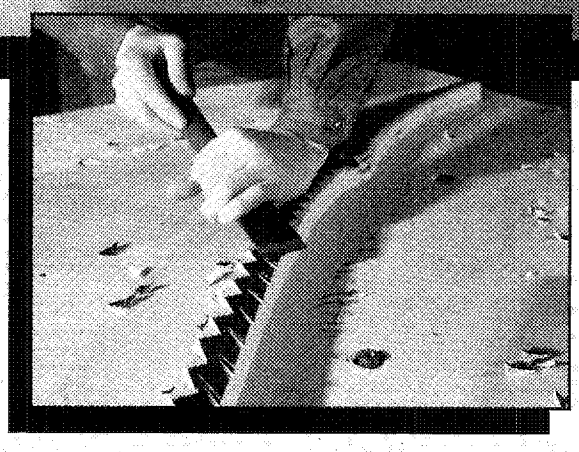

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Something Old, New, Borrowed...Argh!

Jim Harvey, RPT
Editor

Happy New Year! Sorry about that title. It was added after the column was written, and seemed to fit, corny as it sounds. You'll see why as we start the new year (in fact as this issue unfolds).

While waiting for new inbound traffic (y'all hurry), I decided to mimic the television specials — those that squeeze the past year into an hour or so. Instead of reviewing last year, I wanted to go back to this date *ten* years ago, and present some "Best Of" selections from 1984 issues, and of those, extract small items from Forum articles. I aborted the project, especially on the bite-sized material. I realized that, although the subjects of then and now are similar, the methods for dealing with many of those subjects has changed dramatically.

Some of the information is outdated; some is totally wrong. This was not intentional, but neither is it surprising. Recall medical information that was "revolutionary" from the same era: whether concerning certain foods, drugs, or lifestyles. First something is good for us; later it's bad; still later no one is really sure either way.

Please understand that these comments are not intended to be disrespectful. The fact is, there are hundreds of pages of worthwhile information in past issues; they are a virtual gold mine for the lucky person who has a collection of prior issues, the time to peruse them, and the ability to discern what is still valid by today's standards. On the other hand, for an experienced or entry-level technician to globally accept yesterday's information as today's gospel is a *potential* source of trouble, and is one of the reasons I abandoned my idea.

Like it or not, there exists a finite number of subjects under the umbrella of piano technology. Although a profound statement it is not, if we accept it, we continue to grow by one of several methods:

(1) Expansion: Magnifying sub-topics to see progressively smaller details;

(2) Diversity: The same subject being given a different treatment by a different author or instructor;

(3) Repetition: Selecting the better archival documents, evaluating the validity of the information against current standards and repeating the information as *new* for a group of technicians who never saw the original material, and as *review* for those who did.

A lot of changes are the result of new or improved materials or resources from *outside* our profession. Glues, lubricants, and space-aged raw materials come to mind (as do faster computers and bulky, sluggish programs to slow them down again). Other changes involve tools or procedural matters. This is largely due to the ongoing ingenuity of technicians, young and old, RPT, and Associates, who realize that time and knowledge really *is* what we provide — and who are trying to maximize on both. Not to be overlooked is information that was simply not available before now — largely due to manufacturers' increasing willingness to release and trust us with formally privileged or "insider" data.

Indeed, the writer's of a decade ago were sharing the "best of" their experiences and resources of the moment. So where is the potential for trouble? There are two areas that occur to me: complacency and lack of proper guidance.

In the first instance, it's important that we not become content with *all* of the old ways at the *expense of* endorsing newer ones. In the second case, without a mentor, or other form of structured learning, a younger technician could conceivably collect numerous old books and other documents (including the *Journal*), accept the contents on a wholesale basis without challenge or question, and do possible harm to either an instrument, his or her reputation, or both. Don't think so? What about the use of WD-40 for action centers, to name one?

Off subject, but possibly paralleling my point: I was (privately) concerned about, and questioned the validity of the PACE program. I was not necessarily against the idea; just the vehicle. I wondered whether the lessons might insult those readers who already knew the information. Having seen all the installments to date, I must say that I haven't really learned anything new. Yet, at a minimum, the monthly installments reinforce that I *do* know a particular procedure, and that my skills in a certain area *are* still current. Conversely, although I may be comfortable with the subject matter, I haven't necessarily utilized that knowledge in quite a while. It may be time for me to brush up! In any case, one sentence of a PACE article could easily make a difference in my approach to tuning or a given repair. I already see it coming.

The Piano Technicians Guild has a vested interest in providing the most up-to-date information available on any number of subjects via the *Journal* and other mediums. We're pedaling along relatively fast, but I'd

Forum Continued On Page 11

like to propose an additional idea (along with concluding these ramblings). Old-timers, make a resolution to start attending chapter meetings and seminars again. New members, "associate" yourself with someone who, regardless of age, is continuing to learn, who is still mentally alert and open to new innovations as they become available, and who can put you back on track when you go astray.

So that my "research" doesn't go to waste, I *am* going to include a few items from back then. You may consider the excerpts inspirational, or just old news, depending on your viewpoint. Whatever the case, the start of a new year seems an appropriate time for this.

The setup

Sid Stone was the Immediate Past President, to be succeeded by Ernie Preuitt winding down his tenure in 1984, and later the same year, Charlie Huether as President(s) of PTG. It was Dick Bittinger's turn in the bucket to be Institute Director in 1984. Where? Indianapolis.

We were not as self-contained then as we are today. Our outside face to the world was through a professional management agency, who specialized in handling the affairs for several smaller organizations (and we qualified). Barbara Parks was in charge of this management agency, and was also our Executive Director, and Larry Goldsmith was the Communications Director. At first I thought Larry either answered the telephone, or did a lot of the grunt work but needed a title. I later saw that Larry had an alias of *Journal* Editor. Same thing, just different names. Jack Krefting was the Technical Editor. Some folks *still* don't realize, that starting with me, those title's have been juxtaposed, along with the job descriptions. There *is* no Technical Editor, except by implication. Yours truly is the Editor, but like Mr. Goldsmith, can be called — just about anything.

Golden hammer

Here's a letter from the January 1984 issue that should bring back memories to some:

Dear Fellow Members, Our reasons for entering a trade or profession, and especially for remaining in it for most of a lifetime, are not easy to explain even to ourselves. There must be numerous satisfactions to keep our interest for so long and I have found many of these. We need to enjoy the work itself, to recognize the challenges, to honestly feel that we have been more than a mediocre workman in the field we have chosen. We hope to have a good relationship with the people for whom we work and with our associates. There is considerable satisfaction in eventually acquiring sufficient skill and developing a clientele that will provide an adequate income.

There are small triumphs in being able to give some younger and talented person a boost along the way. But it is a very special feeling of reward to receive the recognition of friends and coworkers expressed by the award of the Golden Hammer. It is with much humility and gratitude that I thank you all for this remembrance of our years together. It will help me to feel that I was able to do something more than tune a piano pretty well. Sincerely,

Robert A. Burton,
Piano Technician

Don Galt

I'd be remiss if I didn't include the following remarks from Jack Krefting, especially since his sentiments parallel my own:

It is with a great sense of loss that we observe the passing of any colleague, but Don Galt's contribution to the technical community was so great that it deserves special mention here. For eight and a half years, March 1969 through August 1977, Don served with distinction as Technical Editor of the PTJ. During his tenure, the level of competence within the PTG rose markedly, due in part to the excellent articles he wrote.

Don was a fine technician, excellent writer, diplomat, inspiration to others and, perhaps most important of all, a thoughtful person. He will be sorely missed.

Multi-purpose tool contest

Although the primary focus of Forum articles in 1984 was that of vertical piano rebuilding, Krefting also had a pet project during this period: that of accepting and publishing ideas for multi-purpose tools. Frankly, a lot of the submissions were of questionable value, but reading about them was fun. Since a number of recent articles are regulation and hammer related, the following are a couple of the more interesting and worthwhile items that were mentioned.

"This simple homemade gadget does four things: 1. Removes and replaces springs; 2. Adjusts repetition spring tension; 3. Hooks grand shanks to hold hammer against strings; 4. Sets hammer blow distance in piano once guide hammers are set, as pictured. **(See Figure 1)**

Michael Tocquigny

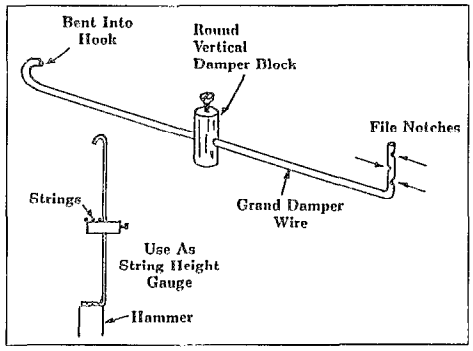

Figure 1

Just for flavoring, one of the more light-hearted, but no less useful entries:

Former President Sid Stone of the San Francisco Chapter suggests (with a smile) that we consider the common six-inch steel rule that most of us carry around. Sid has 12 uses for the tool.

1. *Measure hammer blow distance;*
2. *Measure back check distance;*
3. *Measure key height;*
4. *Measure pressure bar height;*
5. *Measure tuning pin height;*
6. *Measure key dip;*
7. *Use as screwdriver on screws with narrow slots;*
8. [which includes] *Drop screw*

regulator;

9. Center pin lubricant applicator (fits between flanges);

10. For [applying] *liquid graphite (squeak douse) on damper hangers;*

11. Remover of articles between keys;

12. Inserter of mute strip before tuning.

As a simplistic example of my editorial, and without even asking, I wonder whether Sid (one of those who never tires of learning), still uses squeak douse, perhaps as an expedient, or whether he uses another, more modern lubricant, or whether he removes the damper rod and uses VJ lube on the hangers or hanger brackets. This is not a challenge, just curiosity.

Argh #1

I happened upon a listing of Institute instructors, complete with pictures.

One in particular jumped off the page — the one of me. I thought piano work was statistically purported to be one of the lowest stress vocations of all possible choices; that, as a result, it made folks stay younger, longer! Perhaps I should have heeded some of those lifestyle recommendations from the medical profession.

Cut to the present: something new and argh #2

Dear Jim, After viewing the before and after shots on the cover of the September Journal, I feel it necessary to respond with a caution. It's obvious that the "before" hammer is cut quite severely. I would guess the string cuts are at least 3/4" long. In my opinion, a hammer in this condition is completely worn out. Reshaping a hammer like this for reuse is going to present two rather serious problems: overcentering by at least 1/4" and lightening the touch, down and up, by about 5 grams. A piano with short, light, reshaped hammers like this will not repeat correctly and the touch will be unacceptably light. In an emergency, a hammer like this could be lightly shaped to remove half of the cuts. The tone will improve noticeably and the touch will still be borderline acceptable.

If the cover hammer was intended to show a nice job of reshaping and was not intended for reuse, I admire the nice, symmetrical job. Regards,

Richard [Davenport]

While chatting with Susan Graham over lunch during last year's Arizona State Seminar, I asked where she acquired her left-handed drill press, an illustration of which appeared in a much *earlier* Forum column. I'm left-handed, and it seemed an innocent question. She laughed, and informed me that the graphic of the drill press had been inadvertently flipped in the magazine. Furthermore, in the years since, I was the only person that had ever men-

tioned it. Congratulations, Richard. I was waiting for someone to comment about the hammers on the cover. You took the bait, and won the prize: you get to buy me a glass of milk at the next seminar or convention we attend together. While waiting for *that* eventful day, I'll add that the cover photo was to show a nice job of reshaping. (Refer to the Davis/Erwin article this month, and their suggestions for practicing hammer shaping). Thanks for the informative comments, Richard, and for exercising restraint while making them.

Speaking of bait, I just received a very interesting tool modification from "Yo Richard." We'll be highlighting this time-saving fixture, with photographs, in an upcoming Forum.

What's going on?

To kick-start the new year, permit me to introduce a couple of additional *Journal* columns:

"The Tuner": Beginning this month we're initiating a repeat of Paul Monroe's series. This column first appeared a decade ago, and pursuant to the conditions mentioned in my comments above, the information is still useful to both established technicians and those who are seeing Paul's writing for the first time. To insure this, Paul graciously agreed to go back and edit his articles to reflect contemporary trends and developments. Thank you, Paul!

"Technostuff": Richard Anderson aficionados read that right. Richard's writing is not unknown to members of the Chicago or Waukegan chapters. His material has appeared in their respective newsletters *with* permission. "Beyond that," according to Richard, "I don't know where they've been." Richard's unique style is finally available for the masses. Although you'll find out for yourself soon enough, I'll point out that Richard (unlike, ahem, others) has an extraordinary ability to take a snapshot in time, and record the moment using a minimum of words.

Closing thoughts

Beginning this month, we'll be printing Don Maninno's *current* regulation steps and (any) associated repairs that coincide with that particular step. With this in mind, I'd like to suggest that you create your own separate listing of steps and repairs. Following Don's list-to-date would be a good place to start. If this is done on paper (actually better in this case) instead of computer, try using a small, loose-leaf notebook that is reserved exclusively for this purpose. Use one page for each *significant* step. Some pages will contain only one or two lines. However, the remaining "white space" can contain additional notes or reminders during certain stages of the regulation process. You might create

columns on certain pages. One column might contain the year and month of *Journal* article(s) that cover a particular repair or procedure. In another, you might record times beside certain operations (do this in pencil — you'll get faster). Should you run across an unusual situation, or wish to alter the steps as applies to your work habits, just add the information to your book. Should your work patterns differ, rearranging pages is easy. You'll ultimately have your own customized work guide.

I hope you enjoyed the few references to the past. While perusing the various articles, I found myself going through a myriad of emotions — a lot of smiling, some laughter, followed by moments of overwhelming sadness — even crying. It's important that we continue the pursuit of improving our knowledge and skills. But in our haste, let us not forget to look back occasionally. It is there that we find the pioneers, the hard work by tireless members, the sharing, and the fraternal side of the organization — all of which are the platform upon which the Piano Technicians Guild was founded and continues to grow. -jh-

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LESSON PLAN

Technical Lesson #5

String Splicing

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 present methods for doing a professional job of splicing a broken piano string. This lesson adds to the string skills learned in Technical Lesson #4. Participants will learn to form neat, stable knots.

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 set-up

To teach this job in a hands-on format, obtain the following parts and materials, as used in Technical Lesson #4 (December 1993 *Journal*):

- An old piano on which strings can be replaced (preferably one that needs restringing) can be used for only one or two participants. For larger groups, stringing fixtures as shown in Figure 1 and Photo 1 of Technical Lesson #4 are more practical. These are also useful to have around the chapter for future lessons and as technical exam props.
- Piano wire (size #15 is convenient for the stringing fixtures)
- Stringing tools for meeting leader
- Bandages
- Extra eye protection

Estimated lesson time

One hour

Tools & materials participants must bring

Participants must obtain and bring all items shown in **Photo 1**, as well as the following:

- A medium size hammer
- Needle-nose pliers
- A small flat-blade screwdriver
- Tuning hammer
- Eye protection

Assigned prior reading for participants

Same as for Lesson #4 — *PTG Technical Exam Source Book* (PTG Home Office, 816-753-7747), pages V.1 through V.21. Also, try to practice the techniques in this lesson prior to the meeting session to acquaint yourself with your tools and gain some initial knowledge of the procedures. This will make the hands-on session go more smoothly.

General instructions

The object of good string work is to achieve tuning stability, good tone, and a neat, craftsman-like repair. With the right tools, techniques, and—above all—some practice, you can do quality string repairs. In general, neatness and stability go hand-in-hand.

Important details are:

- Splicing an existing string is often a more efficient repair than replacing with a new string. A good splice is more stable than an entire new wire, and in the case of wound strings, the original will best match the tone of its neighbors. With the right techniques, splicing is often faster than replacement.
- Beckets should penetrate the full tuning pin diameter, and be squeezed tightly into the tuning pins; if a loop is left hanging out, it can bend over, causing the string to drop in pitch.
- Tuning pin coils should be level and tight against each other, and the tuning pin height correct so the strings cannot migrate up or down on the pin.
- Strings should be seated at all bearing points and unison strings levelled for best tone and stability.
- When *splicing* a broken string, use repair wire of equal size or one half-size larger than the original.
- When *replacing* a string on a piano, match the original size. Carefully measure the original wire with your micrometer; sometimes the old wire will seem to be one half-thousandth inch off a standard size; measure in several spots and choose the closest standard size replacement wire. Note: Wire gauge size = (micrometer reading - 5)÷2. Thus a wire measuring .031" would be size #13 [(31-5)/2=13]
- When replacing or repairing a string, always wind two tuning pin coils on the new string (or new section of string) using a dummy pin, back the piano tuning pin out one turn, then transfer the coils to the piano pin and wind the final turn in place as the

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string is brought up to tension. This minimizes loosening of the pin block by only requiring the pin be backed out one turn, rather than three.

I suggest the following procedures:

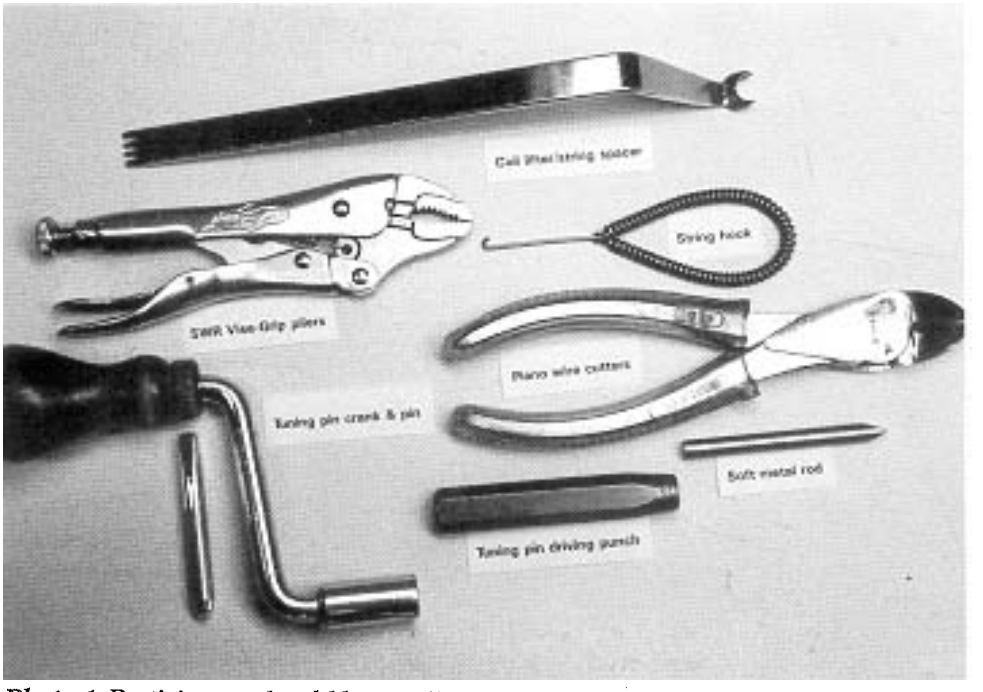


Photo 1: Participants should bring all items shown above, as well as a medium size hammer, needle-nose pliers, a small flat-blade screwdriver, tuning hammer and eye protection.

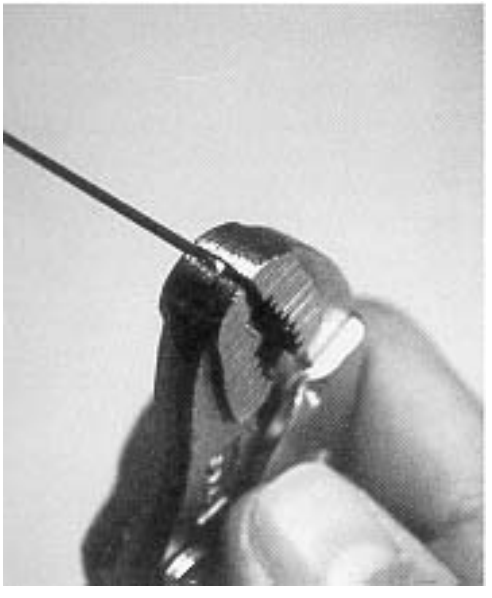
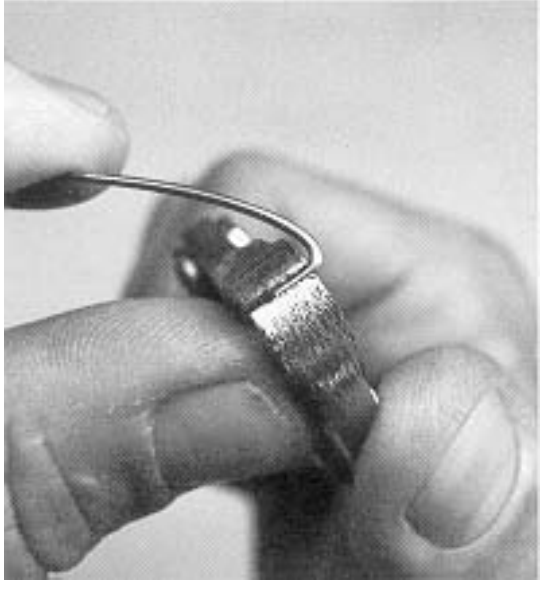
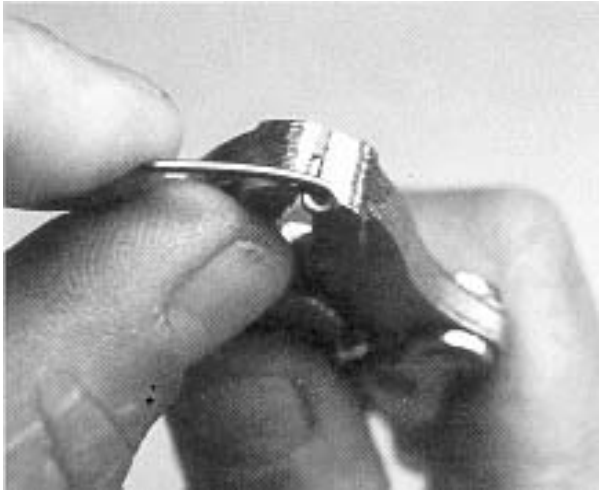


Photo 2: On the piano or string jig, lower tension and cut a plain string next to a tuning pin to simulate a break. Cut a length of new wire of the correct size. Back out the adjusting screw in the handle of your 5WR Vise-Grip pliers until the handles will close, then, holding the handles together, tighten the adjusting screw until the jaws come together (this gives the correct adjustment for gripping the wire). Grip the end of your repair wire at the very end of the jaws as shown, with the wire extending slightly more than half way across the jaws.



Photos 3 & 4: Holding the repair wire with one hand, rotate the Vise-Grips toward you three-quarters of a turn until you have formed a loop as shown. Take your time, and practice on several wires until you can form an "eye" in the wire barely larger than the wire diameter. Hint: the size of the loop depends upon the tension you hold on the wire during bending, especially during the first half of the bend.



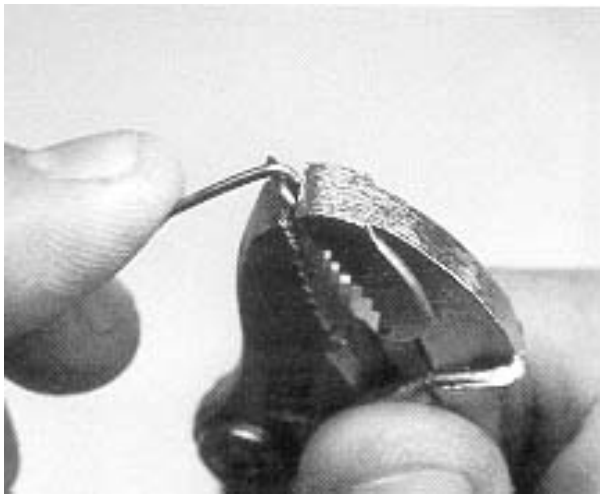


Photo 5: Once your loop is made, remove the Vise-Grips and grab the eye of the loop itself. Holding the loop with the pliers, bend the wire over the tail of the loop, forming almost a 90 degree bend. This completes the new wire portion of the knot.

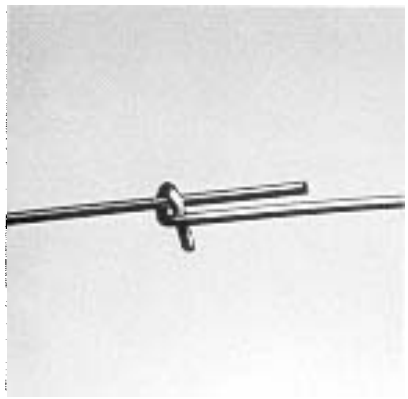


Photo 6: Slide the repair wire loop over the end of the broken piano wire as shown.

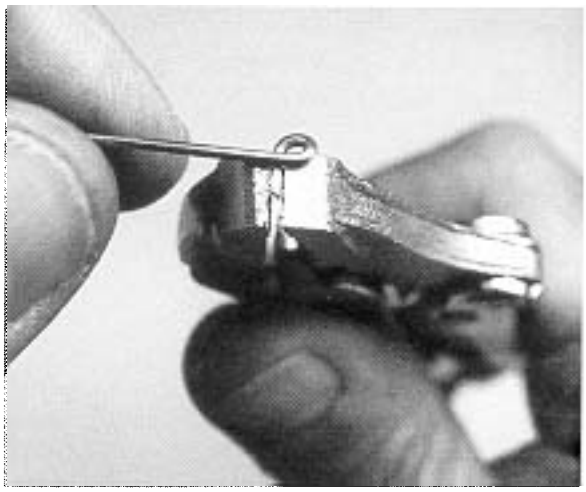
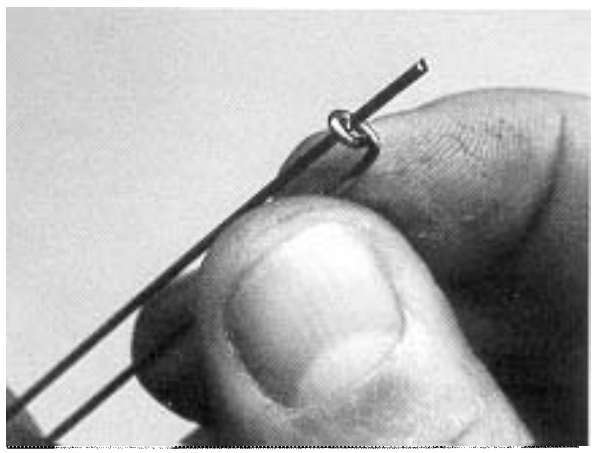
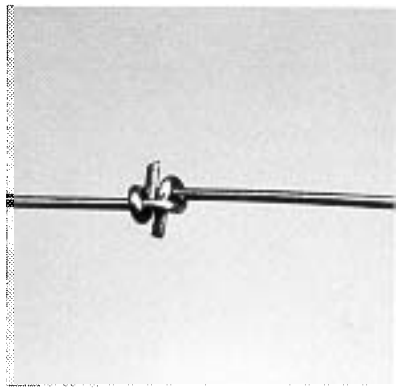


Photo 7: Now form the same type of loop in the end of the broken piano wire, *with one difference*. Note that this loop is a mirror image of the first. Whereas you rotated the Vise-Grips *toward* you for the first loop, you should rotate them *away* from you when making this one. As you did with the repair wire, bend the loop approximately 90 degrees to the wire, making sure the tail is on the inside of the bend.



Photos 8 & 9: Now, thread the end of the repair wire through the loop of the piano wire as shown. Pull the end of the repair wire through until the two loops are snug together. Notice that when properly made, this knot is very compact even before putting it under tension. This makes it very stable, since the tiny loops cannot close up or deform much further than they already are. If necessary, the tails can be trimmed even shorter before proceeding. Follow steps 8 through 14 of Technical Lesson #4 to install the spliced string back onto its tuning pin.



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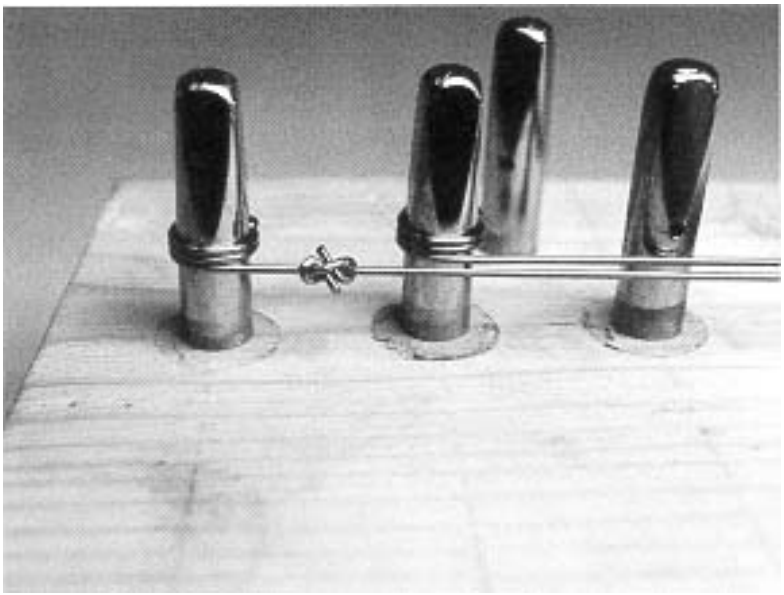

Photo 10: This view shows the knot as it appears when up to pitch. (**Important**: if using a stringing fixture as shown here, tighten the string only until it produces a tone. Avoid high tension.) Notice that this small knot fits well in tight quarters, and has a tidy, craftsman-like appearance.

Final steps

If doing this repair on an actual piano, tune the string to pitch, then stabilize as much as possible by tapping down at all bearing points, re-checking the becket and hitch pin areas, and levelling the string to its unison mates. You can also rub it with moderate pressure using a hammer shank. Re-tune.

A new string will go out of tune quickly. To prevent having to return frequently to re-tune it, you can insert a piece of felt between the new string and a plate strut or neighboring unison to mute it out. The other strings of the unison will still sound, but the new string will not be a problem and you can re-tune it later when convenient.

Where are splices appropriate?

Plain strings: Never leave a splice in the speaking length.

- For a break at the tuning pin, splice as discussed here.
- For a break at the agraffe or capo bar on grands, v-bar on uprights — back off shared tuning pin one turn to "borrow" extra wire, so splice can be positioned on non-speaking side of agraffe or capo.

Wound strings: Splice can be on any section of core wire, including in the speaking length.

- For a break at the agraffe, remove copper winding if necessary to expose at least 5/8" of core wire. Then, form the loop in the repair wire large enough to pass over the bass string windings. Do this by gripping the repair wire as in photo 3, but bending the wire around the bass string. Slide the repair loop over the broken bass string, then make a normal small loop in the exposed core wire as in photo 7.

Follow-up

As with any new skill, participants should practice this job on their own until they can perform it easily with consistent results. The stringing fixtures are ideal for this, as they can be taken home for further work. Practice, along with obtaining the necessary tools, will reward the technician with the *skill*—as well as the knowledge—to do the job efficiently for the client.

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Tuning Lesson #5
Focusing On Beats

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

This lesson consists of practice in listening for and identifying coincident partials in common intervals using the Coleman Beat Locator, along with strike tones and aural focusing techniques. After taking this lesson participants should be convinced that interval beats arise from coincident partials, and should know how to name the common tuning intervals and identify which coincident partials produce their beats. Learning about coincident partials will enhance the student's appreciation for the complexity of piano sound while laying a foundation for understanding of how and why we use the various beat-rate checks in tuning. This understanding is best achieved through guided practice at the piano, which this and subsequent lessons should help to provide.

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 mis-aligned hammers, string termination noises, or other factors that would prove distracting.

Tools participants must bring

Tuning hammer and mutes, Coleman Beat Locator (available from James W. Coleman, Sr., RPT, for about $2 each; group orders suggested).

Home study assignment for participants

1. As a primer, sit at a piano and read "Beats: What They Are and Where They Come From," by Ron Berry, *The PTG Tuning Examination: A Source Book*, p.133 (August 1988 *Journal*). As part of this assignment, identify and correct the error in Figure 1 (*Source Book* only, p.134).

2. For a more detailed introduction, read chapter 6, "Tuning Theory and Terminology" in *Piano Servicing Tuning and Rebuilding* 2nd edition, by Arthur Reblitz.

3. Study the text on the pink slide of the Coleman Beat Locator; following the examples, locate the coincident partials for a major third and a major sixth. (Hint: instead of folding the slides as directed, try just standing them upright between the backs of the sharps and the fallboard, with the yellow slide in front.)

General Instructions

The piano should be strip-muted to single strings during this lesson. The instructor should briefly demonstrate how to use the Coleman Beat Locator, strike tones, and aural focusing, as described below. Interval naming is also a part of this lesson, and the chart with text on the next page is intended to be a resource for interval names and coincident partials. The text describes two ways to name intervals of a given semitone width, and should be helpful in identifying intervals and their coincident partials at the keyboard.

Using the Coleman Beat Locator

This is a simple visual aid for understanding the origins of interval beats. It consists of two slides, each about 22 inches long and wide enough to span three octaves plus a major third. Markings on each slide indicate locations of a note's partials when the number "1" is positioned over the note of a standard piano keyboard. Slides may be stood upright behind the sharps. Positioning the "1" or "first partial" stripe of the front, yellow slide over the lower note of an interval will indicate the locations of the partials of that note (up to partial 10). Positioning the "1" of the rear, pink slide over the upper note of the interval will indicate the locations of the partials of that note. Coincident partials for the interval are indicated at locations where any two numbers, one on the yellow slide, and one on the pink slide, line up over a key. The approximate pitches of interval beats are located where there are coincident partials.

Lesson #5 Continues Next Page

Using Strike Tones

Beats may sometimes be more easily heard by the following technique, which has also been called "ghosting." Depress the two interval keys without allowing the hammers to contact the strings, and then strike and release a third key corresponding to the approximate pitch of the desired beat, as indicated by the Coleman Beat Locator. The strike note will excite the desired partials of the open interval strings if it is close to their pitch, revealing interval beats which might otherwise be nearly inaudible or masked by louder sounds.

Aural Focusing

The following technique may help train your ears to listen to beats at the pitch level of the coincident partials that give rise to them. Play the interval, and while sustaining the sound, lightly play and release a "focal" note corresponding to the approximate pitch of the desired beats as indicated by the Coleman Beat Locator. Repeat as needed to achieve an aural "focus."

Following the examples below, each participant will first identify the interval on the keyboard from the spoken name; then use the Coleman Beat Locator and strike tones to identify and confirm the coincident partial sources of the beats in any two of the common intervals used in tuning. The instructor may select intervals for each participant from among single and double octaves; perfect and augmented fourths; perfect fifths, twelfths and nineteenths; major and minor thirds, sixths and tenths; major seventeenths; and minor sevenths, fourteenths and twenty-firsts. The instructor simply states the name of an interval, gives a starting note, and asks the participant to locate the interval on the piano, and then to locate its coincident partials. Having identified the principal coincident partials involved in each interval, the participant will then attempt to tune the intervals with respect to one of the coincident partials involved, as directed by the instructor, using the strike tone and/or aural focusing techniques described above. This will help train participants to listen to interval beats more closely. Each participant should have about ten minutes tuning, with the balance of time spent observing.

Example 1: Single Octave C1-C2

A. Identify coincident partials. Set up a Coleman Beat Locator standing vertically behind the sharps, yellow slide in front. Position the first partial stripe of the yellow slide so it is lined up with note C1. Position the pink slide so the numeral "1" shows up above the note C2. Locate coincident partials for the C1-C2 octave by finding where the black stripe on the yellow slide is directly below a black square on the pink slide. Now depress C1 and C2 silently, and strike the notes corresponding to each coincident partial location, listening for beats. Damp the strings between each strike at a different coincident partial level.

B. Tune the C1-C2 octave so it is beatless at the 6:3 level, by depressing C1 and C2 silently as before, striking the note corresponding to the coincident partial, and tuning either C1 or C2 to eliminate the beats at the 6:3 coincident partial level as indicated with the strike test.

C. Now, using an aural focusing technique as described above, detune the 6:3 octave to about two beats per second wide, and then, using a different focal note, attempt to tune the interval beatless at the 10:5 level. Confirm the 10:5 tuning with a strike test.

Example 2: Minor Third D3-F3

A. Identify coincident partials, as in the previous example. Position the "1" of the yellow slide over D3, and the "1" of the pink slide over F3. Locate the coincident partials for the D3-F3 minor third. Now depress D3 and F3 silently, and strike the notes corresponding to each coincident partial location, listening for beats. Compare the ghost sound with the actual sound by playing the interval.

B. Tune the D3-F3 minor third so it is contracted and beating at about 4-6 bps at the 6:5 level. Confirm this beat rate with a strike note test.

C. Now tune the interval even more contracted until you can hear the 7:6 pair of partials beating (use the Coleman Beat Locator to find their approximate pitch level), and confirm with a strike note test. Observe what happens to the beat rate of the 6:5 pair of partials when that of the 7:6 pair becomes audible. Using an aural focusing technique, tune the interval pure at first the 7:6 level (a small minor third), and then the 6:5 level (a large minor third).

Although space does not permit giving examples for all the common intervals, it should not be difficult for the instructor to come up with variations on the themes above. Repeat the exercise in a similar manner for as many of the other common tuning intervals as time permits, experimenting as needed and varying the keyboard location (bass, tenor, treble) to get a feeling for where the beats are located. Try to stick with the common intervals most used in tuning during the lesson. The entire lesson may be repeated to expand the coverage to more intervals if desired. The instructor should encourage participants to review and expand upon what they have learned by practicing at home, using the Coleman Beat Locator and the chart accompanying this lesson on the next page, along with the listening techniques described.

Note: Do you find these lesson plans valuable? Do you have specific suggestions for changes or clarification? Please direct any comments or suggestions to Journal *editor Jim Harvey, who will forward them to the author.*

0 U 1 : 1, 2:2, etc.	12 8v 2 : 1, 4 : 2, etc.	24 D8v 4 : 1, 8 : 2	36 T8v 8 : 1
1 m2 11 : 10	13 m9 11 : 5	25 m16	37 m23
2 M2 8 : 7, 9 : 8, 13 : 12	14 M9 9 : 4, 13 : 6	26 M16 9 : 2, 13 : 3	38 M23 9 : 1
3 m3 6 : 5, 7 : 6, 12 : 10	15 m10 7 : 3, 12 : 5	27 m17	39 m24
4 M3 5 : 4, 10 : 8	16 M10 5 : 2, 10 : 4	28 M17 5 : 1, 10 : 2	40 M24 10 : 1
5 P4 4 : 3, 8 : 6, 11 : 8	17 P11 8 : 3, 11 : 4	29 P18 11 : 2	41 P25 11 : 1
6 A4 7 : 5, 10 : 7	18 A11 14 : 5	30 A18	42 A25
7 P5 3 : 2, 6 : 4, 12 : 8	19 P12 3 : 1, 6 : 2, 12 : 4	31 P19 6 : 1, 12 : 2	43 P26 12 : 1
8 m6 8 : 5, 16 : 10	20 m13 16 : 5	32 m20	44 m27
9 M6 5 : 3, 10 : 6, 13 : 8	21 M13 10 : 3, 13 : 4	33 M20 13 : 2	45 M27 13 : 1
10 m7 7 : 4, 11 : 6, 14 : 8	22 m14 7 : 2, 11 : 3, 14 : 4	34 m21 7 : 1, 14 : 2	46 m28 14 : 1
11 M7 13 : 7, 15 : 8	23 M14 15 : 4	35 M21 15 : 2	47 M28 15 : 1

Intervals and Selected Coincident Partials Over Four Octaves

Abbreviations:
U=unison,
8v=octave,
D=double,
T=triple,
m=minor,
M=major,
P=perfect,
A=augmented

This chart shows the interval width in semitones (left side of each box), the abbreviated name of the interval (boldface), and up to three of its coincident partial pairs. Not all of these are shown. In each pair that is, the first number designates a partial from the lower note of the interval. Moving horizontally to the right across a row shows intervals progressively one octave (twelve semitones) wider, an arrangement that brings out some of the patterns in intervals and coincident partials. Though partials above the eighth are of little use in tuning, many are included here to elucidate these patterns.

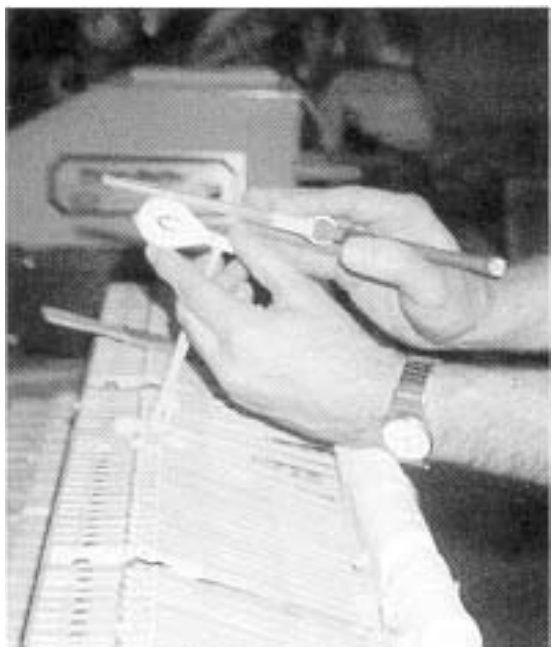
Piano technicians often use an octave system of interval naming for clarity. For example, the interval that is twenty-four semitones wide is normally called a double octave (abbreviated D8v) rather than a perfect fifteenth (P15). You could pick any interval above in the right three columns and lower eleven rows and name it using the "octave system" by stating the interval at the top of the column and the interval to the extreme left. For example, the interval that is 34 semitones wide, the m21 (minor twenty-first), could also be called a D8v-m7 (double octave-minor seventh). Either name is acceptable.

Hammer Work

Filing • Resurfacing

A Photo Survey Continues

Nick Gravagne, RPT
Contributing Editor
New Mexico Chapter



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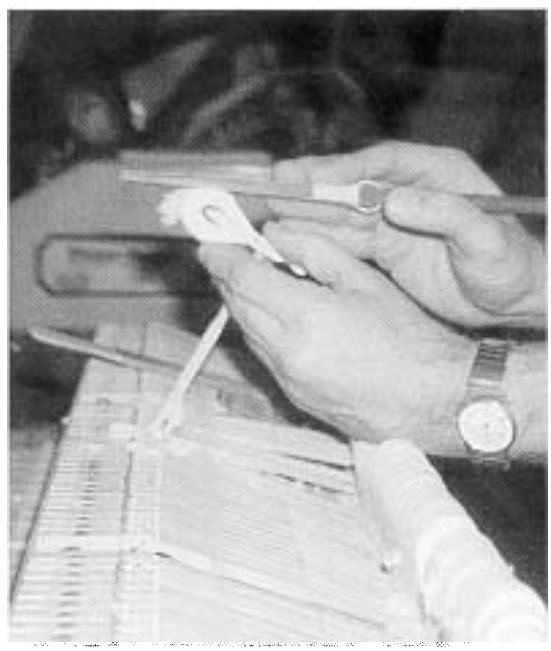

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Continuing with our photo survey, this month's edition focuses on hammer filing and hammer resurfacing. These terms and procedures are not quite the same. Hammer filing implies a radical or semi-radical process of hammer shaping and felt removal; the string cuts are pronounced, measuring 3/8 inch to 1/2 inch long. Resurfacing, on the other hand, implies that the hammers are not seriously grooved, requiring simply a smoothing out—a resurfacing. Although the purposes and processes overlap, filing usually demands the use of a sandpaper paddle equipped with a sharp coarse paper (followed by lighter grits), while resurfacing can be completely accomplished with 3/8 inch wide sandpaper strips backed with clear, or ribbed strapping tape.

Check the "nap"

A definite nap can at times be found in some sets of hammers. That is, they file and peel smoothly going up one side of the hammer, say from the staple to the crown, but pull and tear going up the other side towards the crown. Other sets will file smoothly going up one side, right over the crown, and down the other side towards the staple. Both techniques are demonstrated in the following photos.

Keep a sharp eye and steady hand

However felt is removed from a hammer, and in whatever amounts, the sides of the hammer (i.e., left and right sides) must remain square to the narrower filing surfaces. And of course, the crown of the hammer must especially be square to the hammer sides such that the striking point hits the three strings of a unison dead on. When working with either a file or a strip, keep a sharp eye on the way the felt is peeling; the advancing line of the peel should be seen as square to the hammer sides. A definite tuft of felt will appear and grow larger—**watch it!**

Freehand vs. support

Note that in the photos the hammers are being filed freehand . There are no supporting blocks or fixtures to help steady the hammer and shank assembly; all support and steadiness is provided by the technician's hands. Although the use of support items has value, we recommend that freehand techniques also be mastered since they

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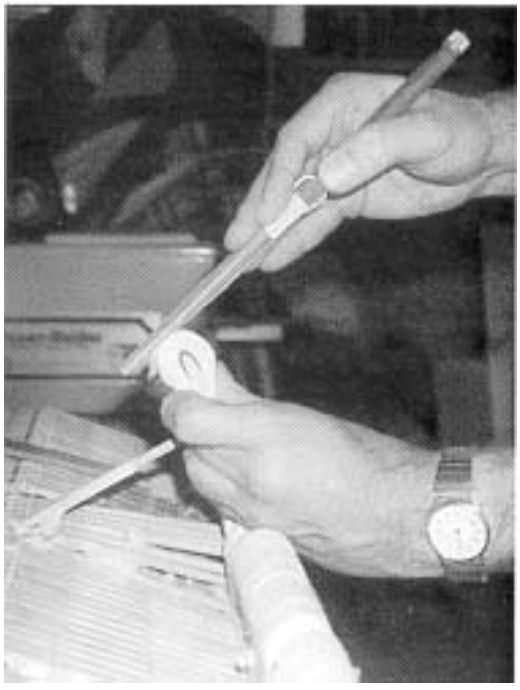

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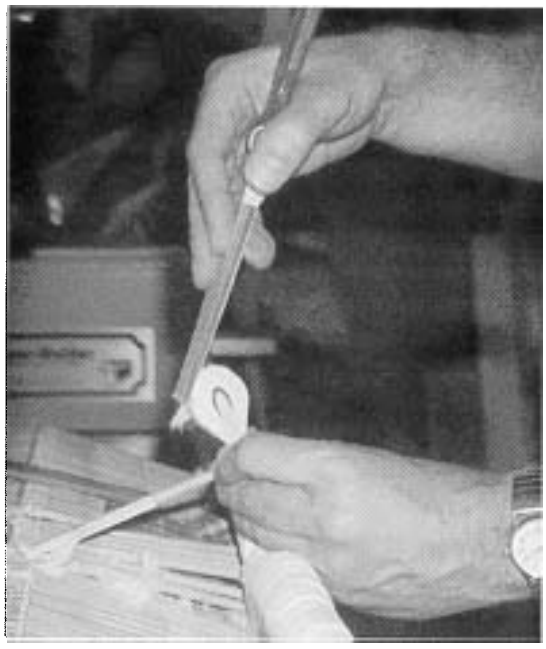

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will be required for those voicing operations carried out when the action is half in the action cavity, and half in the technician's lap. A past article in this series pointed out a certain filing technique called a voicing filing , i.e., a light but definite filing with a sandpaper stick in order to brighten the tone. The filing is quickly done, action shoved back in the piano, and the tone checked. For the sake of speed and efficiency, this voicing filing is carried out freehand. More on support systems later.

Up and over the top (Photos 1-5)

1. The action is on a bench with the hammers toward you. Starting with the file low on the shoulder, use firm and even strokes to get the peel rolling. Once going, control the file stick (paddle) such that the depth of the cut tapers from zero to something close to the depth of the string cuts.
2. A rolling peel and felt tuft can be seen drooping over the hammer crown. Note how the right hand grips the paddle, and the left hand grips and supports the hammer and shank.
3. Don't chicken out! The felt has been rolled over the top and is now heading down the other side. Remember not to tip the paddle side to side. Use long controlled strokes, keep the paddle steady, square to the sides of the hammer, and nail that tuft on the opposite shoulder.
4. Continuing down the hill, notice that the hand grip on the paddle has not changed at all through these four photos. The left hand, however, which always firmly holds the hammer, has changed position as the hammer and shank were lowered from an almost upright position to a 45 degree angle.
5. Here the paddle is no longer cradled in the pocket made by the thumb and forefinger. This new grip allows for a firm and more direct downward stroke. When the filing has advanced to this point, observe the hammer shape. Often more felt will be found on the shank side of the hammer. Use the paddle per this photo to even out the shape. Either up or down strokes may be used. In the photo, up strokes are being used, causing a small tuft of felt to form at the hammer crown. The paddle is then used to cut off the tuft, and to smooth and comb the felt.

If at the end of the first filing there still exists objectionable grooves in the crown, repeat the process, but play it safe. It is better to remove twice or thrice and be right than to remove too much in one heavy and clumsy pass. Also, as mentioned, the foregoing process employs a heavy grit paper. The disturbed hammers, which will appear to be having

a bad hair day, will require smoothing and combing with lighter grits. If smoothing with a paddle, rather than strips, tread more lightly on subsequent filings.

Up both sides to the summit

(Photos 6-8) When the felt on the shank side of the hammer reacts stubbornly against your downward filing efforts, it does so by tearing and pulling out. Don't fight it. File up to the crown from both sides, then remove the tuft.

6. Although you can begin on either shoulder, I prefer to start on the shank side. Notice the tuft forming.
7. Paddle grip has changed, hammer shank is lifted to something more vertical, and a second tuft is rolled to the top.
8. Finally, after the two tufts have met, they are together rolled over the top and filed off at the place shown in the photo. Once again, the hammer shape is checked and corrected one shoulder at a time.

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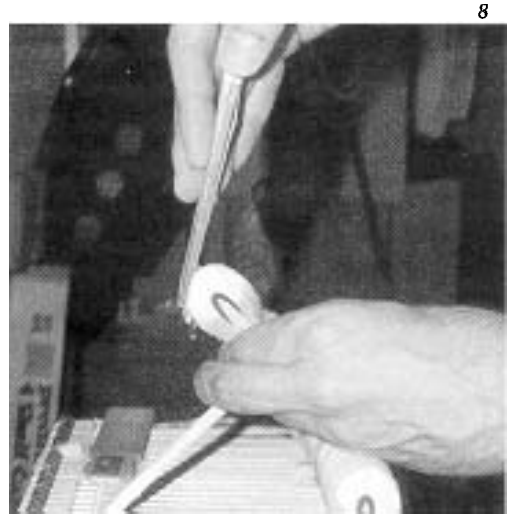

Practice

Next time an action comes in for new hammers, take advantage of the chance to demolish the old set. Practice filing with various grits, needling, over-needling, voicing, hardening, etc. Even if you have lots of experience, working in free abandon will probably teach you something, or at least provide for a dark, emotional catharsis.

Strip sanding, resurfacing, smoothing

(Photos 9-11)The next set of photos demonstrates strip filing techniques, which, although usually reserved for less radical felt removal, is preferred by some technicians for all felt removal. In the photos, however, the purpose is light-duty filing and smoothing. Note that the action can be facing either way.

9. A 120—grit paper backed by tape is pulled up towards the crown along the curved surface of the hammer. The forefinger of the left hand is used to clamp the strip against the hammer, but not so tightly that the strip cannot be pulled up; i.e., the forefinger does not move, but allows the strip to pass under it. The process is repeated until a tuft forms at the top. Note that for all strip

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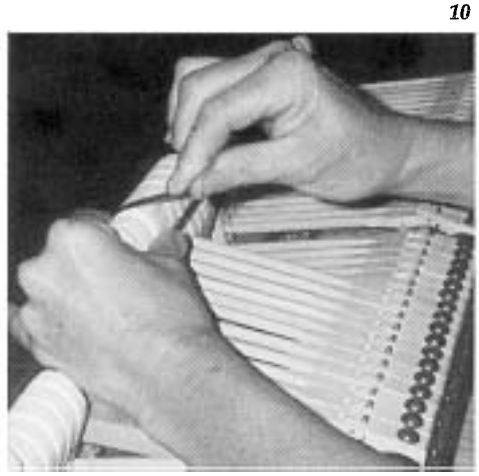

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sanding procedures the hammer tails can be solidly supported by the voicing block.

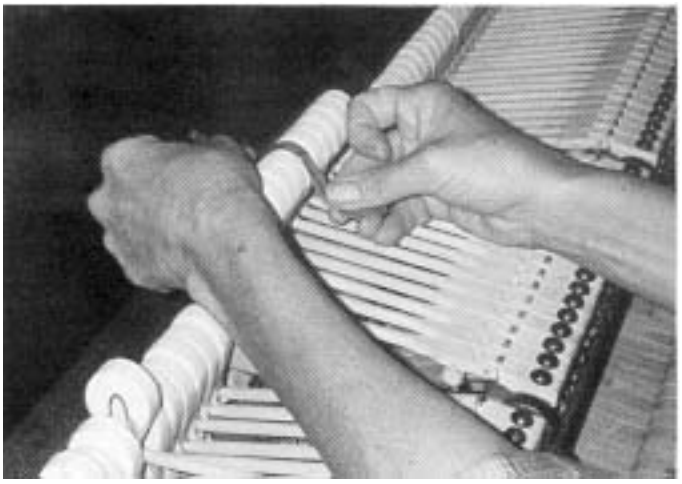
10. The strip pulls a tuft of felt more directly over the crown. The left forefinger is still clamping the strip.
11. Here, on the opposite shoulder, the thumb clamps the strip as it is pulled up to the top. A new tuft forms on this shoulder and is rolled up to meet the tuft from the other shoulder.
12. Finally, the hammer is shoe-shined to smooth and even things out. The hammer top is then checked for squareness. Out-of-square tops are squared by additional shoe-shining.

Important Note: After resurfacing, an unexpected sort of tone may make a rude, Dracula-like appearance. The tone may not only be uneven, but some of the notes may be too bright or pingy, even though squarely fit to the strings. So who needs this? Such a tone I should get for all my careful work? Well, not to worry—the effect should be anticipated. The excessive brightness or ping is a result of having removed the softer, springy layer of what I like to call the hammer's protective coating .

Remember, the top of the hammer requires this springy, protective coating to modulate the tone downward to something strong and bright, but not harsh and shrill. Just under the coating will be found harder layers of felt, as there should be. Thus, the protective coating must be reapplied. This is easily done by shallow needling (sugar coating) directly on the crown or, in more recalcitrant cases, by softening the upper layers with the fabric softener solution mentioned in an earlier article. (Fabric softening techniques will be photo-covered in the future.) A very common mistake here is to needle the shoulders to death in an attempt to soften the tone. Now, the shoulders may require a few deep stitches, but most if not all the tonal trouble is at the crown—it has been stripped of its protective coating.

Gang filing

As pointed out last month, a wide strip can be used to resurface several hammers at once. But, although the narrow 3/8 inch strip is more effective in the angled hammers, the one-hammer-at-a-time method allows for more control in all sections. In any case, watch out for non-uniformity in hammer shape along with hammer top squareness.



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Other methods

Popular with some technicians and factories is another method of filing. It requires the use of both a wedge-shaped supporting block under the shanks of several hammers, and a thin strip of cloth covered wood lying on all the shanks. According to some technicians, these supporting components not only help steady the hammers and shanks, but provide for a more controlled paddling technique. This method will be presented, photo fashion, in an upcoming article. Also upcoming will be photo surveys of additional hammer work and voicing techniques.

The Against Grain

Bob Davis, RPT
&
Dale Ervin, RPT
Modesto Chapter

You might be surprised to see two concurrent series of articles dealing with similar subject matter. We hope you are following Nick Gravagne's fine series. His articles and ours are paralleling each other in many ways. We discussed this with the Journal Editor, and decided that printing different takes on the same subject was good rather than bad, for several reasons. First, no one author knows everything or even remembers to put in everything s/he knows. Second, as we've said before, there is no one Truth; even seeing where we disagree can be enlightening, and will remind you that ultimately it is what makes sense to you that matters. Third, a professional photographer uses two or more light sources to illuminate the subject, so that details stand out in sharp relief.

As we looked back at previous articles on hammer filing, it seemed as if the subject has been pretty well covered, so we decided not to write a complete disquisition of all we know about filing, but to focus on a few details where we might have some additional thoughts.

Housekeeping-Before-We-Get-Letters Department: A minor correction — last month we suggested that the action be bedded, aligned (action parts spaced, traveled, and the hammers perpendicular to the strings) and regulated before shaping. While the first two are necessary, regulation should obviously wait.

If you have experience with filing, or if you tried last month's suggested exercises on several different types of hammers, you know that they don't all file the same. Some hammers will layer easily, even to the point that it's hard to do anything else. Others don't seem to be so sensitive, and can be treated more like an homogeneous mass. This is the result of different linking strengths in the two directions, vertical and horizontal. If the horizontal (i.e., circumferential or intra-layer) linking of the wool fibers is strong but the vertical (inter-layer) linking is not, the layering will be more obvious. If the linking is more uniform, the hammer will more readily assume any shape. Some manufacturers typically file to a more pointed shape than others, and usually we will find that the felt they choose for their hammers is different from that in hammers with more rounded shapes.

So, is there a practical application for these observations? Yes.

The traditional approach emphasizes following the layers, and with good reason. We have been trying to maximize resilience while controlling stiffness. Since the strongest bond is along the grain line, staying pretty close to the grain helps maintain the tension around the outside of the hammer, and therefore the compression within. The overall stiffness of the hammer is maintained, as well as the bounciness, the outside layer included.

Here they go again

However, as usual, it is our opinion that there is another side to the story. The customary method speaks of cutting through layers as if they were concentric rubber bands, which, when cut, produce useless pieces of "dead felt" attached to the top and sides of the hammer. Is this true? If so, is it necessarily bad?

We have looked at the advantages of following the grain; what could be the advantages of a more pointed shape? Imagine taking a hammer, which comes out of the press

naturally roundish, and imposing a more pointed profile on it without regard to the grain. This does leave a discontinuous layer or layers, reducing the tension over the top and leaving a partial layer at the outside of the low shoulder not doing much. The low shoulder piece still contributes to the weight of the hammer, and does no harm. In fact, it can be left or removed according to the mass needs of the hammer. The tension is still maintained in most of the interior of the hammer by the continuity of the inner layers.

The situation at the tip is a little more complicated. First, the strike point is not only narrower, it is more likely to stay narrow longer, which is good, especially in the top half of the piano. Second, if the tip is under less tension, it could have a cushioning effect that may actually be desirable for production of a balanced range of partials. What after all is the purpose of "sugar coating" (shallow needling, one to two millimeters deep, of the crown)? It is to reduce the tension and/or density in this area. The felt is not completely dead, but just of lower stiffness. It still maintains some springiness due to the nature of wool. More energy is concentrated onto a smaller area of the hammer and the string, which may offset some of this lower stiffness. The third factor is a little trickier to describe. The string doesn't care about layers or tension. It reacts only to the curve of energy delivery. For each hammer velocity the string "sees" only the total stiffness and resilience over a brief but finite time, in a direction perpendicular to the string, without regard to how the stiffness and resilience are produced. Various combinations of felt choice, shape, and juicing can produce the desired results. Tone production is a package, and each choice is related to others.

Think parabola

Now let's do some work against the grain, and really change a hammer from its natural shape. Take a spare tenor hammer with no juice in it,

plenty of felt, and a fairly round shape. First file it, following the grain, only enough to remove the string grooves or, in the case of a new hammer, the cupping that is a result of cutting them apart. Use only as heavy a grit as necessary to do the job. If this is a new hammer, 220 will probably be enough to leave a good surface. Now listen to this hammer carefully, describing to yourself the amount of "ping, clang, and bong" (or whatever other words you like) you hear at all dynamic levels. Paddle it with 400 or 600 and listen again.

Next, we'll change the shape. Using a paddle with 80 or 100 grit open-coat paper, start filing in the upward direction in the middle of the shoulder (touching at perhaps the two o'clock position; the paddle will be tipped about twenty degrees from vertical). Instead of moving on around, stay in the same place until you have a sizable flat spot. There is probably quite a tuft at the top end of your stroke now. This is where the sandpaper is contacting the end-grain of the layer head-on and rolling it back. Even though the grain has been interrupted above and below the paddle, there is not a similar tuft at the bottom of the flat spot, because the paddle is riding off the ends of the cut layers. If you reverse the direction, and file downward in the same place, a tuft will form there instead. The importance of this will become evident soon.

Draw a line straight across the strike point of the hammer (from edge to edge, not in the direction of the string marks). Now, changing to curved strokes, you can smooth out the curve in the hammer by light *downward* strokes from the crown toward the flat spot, and light upward strokes from the bottom. The downward strokes actually start with the paddle almost horizontal, just barely missing for the moment the line you drew. If the initial flat spot wasn't too deep, you may be able to take a substantial amount off the waist and shoulders without removing anything at all from the center of the tip, and still wind up with a reasonable-looking shape. There should be no tufts (or at least very small ones), and a hammer that has a smooth half-parabola on one side to compare to the other, more rounded side. A tuft means you are swimming against the current; just reverse direction at that place.

About grits

The coarser the grit, the more of a raking effect it has. That is, an 80 grit paper will tend to snag a thicker layer (or more layers at once, if you prefer) than will finer paper. If you still have small tufts left, a smoothing with 220 or finer paper will make them almost entirely invisible, if you pay attention to the grain direction. If you have a trouble spot, you can actually sand lightly side-to-side. If you have flat spots, you probably went a little too far at some time. While 220 is fine enough for a very dressy surface, on the crown we actually use papers clear down to 600 in some cases — for a little extra sparkle in the attack sound. This can simulate some playing-in. Ironing the surface with a warm iron made for this purpose will have a similar effect. Remember that either process will make the tone slightly brighter but not more powerful.

In practice, very few hammers are filed absolutely with the layers throughout the entire set. If you are trying to file all the way around in one direction on a hammer with strong layers, the tufts on one side or the other will make this apparent. Only your experience can tell you how much deviation from the grain is appropriate for the piano you are working on, based on the type of felt, the intention of the piano maker, and your client's tonal preference. For this reason, it is good to be aware of the tonal concepts of the manufacturers of

good makes of pianos you service, as well as to get a feel for the results various shapes produce on various felts.

Naming names at last

Different styles of hammer respond to different voicing techniques. Up to this point, we have assiduously avoided naming makes of hammers or pianos, as the purpose of all this discussion is to emphasize the flexibility of being able to work with what is before us. And, with increasing experience comes greater humility. Years ago, the authors were more opinionated with regard to piano and hammer manufacturers. Now, although like everyone we still have preferences, we have seen absolutely stunning examples of practically every type of hammer and voicing style in numerous high- and medium-quality pianos, and realize it is up to us just to quietly acquire more skill.

That said, several interesting observations come to mind regarding the Steinway hammer. Before the groans start, "But I thought this was to be about *Everyday* Voicing," it really is. We use these examples because they illustrate the use of several different techniques within one make. The principles still apply to all hammers. Lots of big solid old uprights have tremendous tonal potential, and this subtlety is not lost on them. A tonal sense developed through practice will not only allow us to make an economical improvement on a spinet, console, or inexpensive grand, it will help us know when it's time to stop.

The Renner hammer, used on the Hamburg pianos, has a pronounced tendency to layer, while the New York Steinway hammer, especially with even a very light application of lacquer, can almost be sculpted to shape. Both can obviously produce excellent results. Even the New York hammer gets a little bit of both styles of filing in the factory. The first filing follows the grain as much as possible. This is done by people who file all day and have a very good feel for how far to go. After this first filing, juice is applied, thinned according to what the voicer is hearing. The next filing is more likely to cut across the grain and produce the more parabolic or egg shape illustrated in their service manual.

This sculpting can be done in one of two ways. In the first, a familiar approach is used, with the paddling done on both sides from the waist toward the tip. The strokes get much lighter as the paddle goes up toward the strike point. Rather than the hammer insisting on a continuous layer, the paper is actually able to cut back up through the grain, which would not be possible on a more layer-y hammer. The tip is dressed lightly and last, and the whole hammer is strip-filed with finer paper.

The second method consists of two steps and is more like our experiment: a quick rough filing to impose a sort of soft diamond shape. The tip and waist are left more pointed than

desired, and the strike point is avoided, while the flat spot we exaggerated is not very big or completely flat. Then comes a strip filing to smooth off the points. In the rough filing, grain is ignored, and the direction of filing can be toward the tip or away from it, although it is more likely to be up from the bottom and down from the top, while leaving the strike point untouched. Some curve is maintained so that not too much felt is taken off at about the one o'clock position, which would leave the tip too unsupported. In the angled sections, the strip filing is done with a strip of 220 paper one inch or less wide, backed with tape, and pulled up both sides and over the top, smoothing out the bumps. In the straight sections, it is done with a sheet or half sheet of 220, also backed with tape.

The final result from both these methods, with a little practice, is a beautiful, smooth parabola. In both methods, we can think of the fine paper as sanding or cutting the felt rather than peeling it.

Incidentally, you might want to try paddle-filing the straight-hung sections with a paddle six inches wide, or as wide as you can grip with your thumb hanging over one end and your little finger hanging over the other. This allows you to press with the remaining fingers. You will want to be absolutely sure that the hammers are perfectly level, so that one is not filed disproportionately. If you are supporting them under the shanks, watch out for the glue collar, which can raise one more than the others. One of your regular inch-wide paddles can be held on top of the shanks with one hand to trap them while your other hand does the filing with the wide stick. Quarter-inch plywood works. Glue paper to both sides with spray or stick adhesive, to avoid warping; put 220 on one side and a coarser grit on the other.

The spray adhesive can be bought in two levels of stickiness. One has quite a strong bond. The other is intended for artists to use during paste-up, and allows re-positioning of paper. With the stickier one, the paper can just about be slapped on the paddle and used, but it's hard to get off. The lighter adhesive takes a little longer to dry, but the paper is easy to strip off when it's worn out. If you don't like sprays (these have no CFC's), the kind of glue that comes in a stick behaves pretty much like the paste-up stuff. If you want to go high-tech, get thin birch veneer aircraft plywood from a hobby shop. It may be a little hard to find and it's expensive, but it is thinner, lighter, and stiffer.

The hammers-as-sculpture technique works best on softer hammers that have strong inter-layer linking, especially with light juicing. It is usually less appropriate for ones with more pronounced layering, like the Renners above. If they are filed with too much of a point, the orphaned felt on top may indeed make the attack too furry.

Speaking of sculpture, now seems like a good time to talk about motorized shaping. Although we have both used the miniature rotary drum sanders, we rarely do, except perhaps for a cosmetic clean-up of vertical or grand hammers down near the staples. They can cut through ten layers as easily as one. However, if you want to use them for rough work and have a very steady hand, at least be aware that they are a little easier to control if you move the tool in the direction that the *top* of the sanding drum is rotating, as if the drum were a wheel rolling along the surface. This might be counterintuitive for those of us who are used to feeding wood *into* rotating saw blades, etc., but the drum doesn't dig in so badly when used as described above.

We think a better choice is the

McCall mini-belt sander, which is made to be driven by a Foredom reversible-handpiece drill. The speed and ease of use of this device reduces fatigue, and may leave the user more patient to make the critical judgments at the end of the filing. For those of us who do quite a bit of filing, it can pay for itself fairly quickly. Inexperienced users will want to use a fine-grit belt and do a little practicing first, but getting the hang of it is not hard. It is like hand-sanding with fine papers in that it does more sanding than peeling. The advantage to this is that it produces a beautifully finished surface. Users must be aware, though, that this means that almost any hammer can be filed to almost any shape; the filer is not as aware of the grain as with hand filing. This makes it easier to get unintended tonal results, as well as more difficult to keep the strike point level. One option is to do all the tops last, by hand. Also, the tool puts even more fine wool particles into the air than hand sanding does, so good ventilation and masking are, if possible, even more crucial.

This idea from Willis and Dave Snyder: If you do a lot of work with the same type of hammer, and you know it will require a certain preliminary shape, file some guide hammers throughout the scale to the shape you want *before* they are hung, then clamp up the set in convenient groups and use a belt sander to bring them all to the shape of the samples. They can then be finished in the piano.

Coming attractions

After some discussion, we have decided that we have a few more things to say about fitting the hammers to the strings than will fit here, so we'll see you next month. Happy New Year!

Please make note: In the August 1993 issue of the Journal, a portion of copy was missing from this column. Below is a corrected version of two sections of the article entitled, "Hammers: Internal Forces At Work." We apologize for any inconvenience this may have caused.

Back to internal forces

Because the felt is bent, compressed and stretched, certain areas have differing densities. The felt above the tip of the molding to about one-half way up is denser than the outer half by reason of its being sharply bent which densifies it and also being under the most intense compressive forces applied by the press. The outer half is less dense because the felt had to be stretched rather than bent so as to conform to the perimeter of the caul. This represents tension. It is this tension around the perimeter that captures and restrains the felt core that has been severely densified and compressed. The tension maintains the compression and the compression determines the stiffness of the spring. Although tension is important, the compression component is the predominant and primary force we are adjusting and tension is subservient to it. It is apparent through our experience that all kinds of variations and aberrations exist. But with this ideal model in mind, we can improve a hammer's condition.

A demo for tension & compression

To prove these forces are present to some degree, simply cut open any spare hammer, tenor or bass, with a razor from strike point to molding tip. I've tortured all kinds of hammers with results ranging from the dramatic to nothing at all. Recently I discovered slicing through the molding with a band saw up to the underfelt—which frees the felt to return to its original shape to some degree. Once again I saw varying results. The ones without movement are the infamous "felt on a stick" type. These lack any tension and have little compression. The result you will find is the felt expanding upon being cut and some additional movement over an elapsed time (1-7 days). Typically the ones that expand the most have a more versatile voicing application that the ones that don't. (See Photo 2). Note: In Sample 1, with the molding cut out, the felt has not moved. Sample 2 literally unloaded dramatically upon being set free. No assistance required. Honest!

Why the differences in response? 1. Difference in manufacturing process based on the maker's hammer stiffness requirements for their specific tone building system. 2. Poor design and manufacture. 3. Cost! Quality material, equipment and expertise are expensive. The fact that we are aware of different styles of hammer will help us to recognize the capabilities and limitations of each style so we can more quickly assess what voicing measure will be needed—juice, light or heavy needling, or jack hammer!

Don Mannino, RPT
National Service Manager
Young Chang Pianos

Action Spread & Repetition Springs

Seventh in a Series of Articles on

Grand Action Regulation

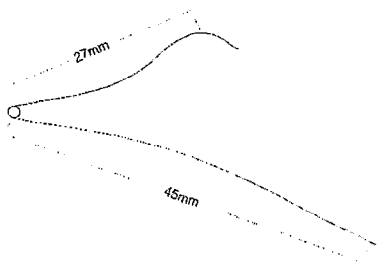
Another area often needing maintenance in actions with a butterfly type spring is the repetition spring groove. Be aware that many pianos with butterfly repetition springs have a waxy lubricant in the spring groove, which will gradually stiffen and collect dust, and in the process cause the spring to stick. This may not actually hurt the repetition of the action that much, but it certainly makes the springs look weak when they are being regulated. Before the springs are adjusted the spring grooves should be cleaned and possibly relubricated.

Butterfly style springs are one of the most misregulated of grand action parts. Although this has been discussed many times at convention classes and in *Journal* articles, I want to do so once again because we need to be sure that our action will regulate properly, and this is as good a time as any to repair the springs and get them re-bent to their proper shape if someone has kinked them during past service.

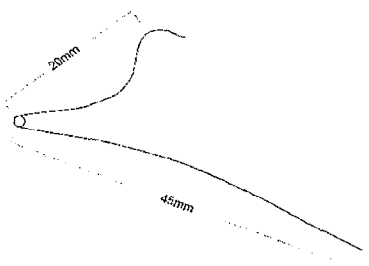
The reason that a kinked spring must be repaired is that the geometry of the spring has been ruined by the sharp bend in the wire. The effective length of the top portion of the spring is too short, as the spring is contacting the repetition lever much closer to the repetition lever center. This lessens the leverage, giving the spring less effective force as it presses up on the repetition lever. In other words, the spring tension is stronger (because it is bent up), but less of the spring force goes into supporting the hammer because of the reduction in the leverage.

As I continue my not-quite monthly series on regulation, I have been careful to not spend too much time on non-regulation steps. I mentioned briefly in my fourth article that the knuckles must be bolstered or replaced if their shape is no longer round, and I want to reiterate this point because it is so important. The excess friction generated by flattened, worn knuckles adds tremendous resistance to the pianist at letoff, and must not be ignored.

Correct Spring Length



Incorrect Bent Spring
Effective length of upper portion of spring is shortened.



Another side effect caused by a kinked repetition spring is increased resistance at letoff. Since the spring has less mechanical advantage on the repetition lever, conversely it has more mechanical advantage on the jack. This adds resistance when the key reaches letoff, and makes it harder for the pianist to control the action during soft passages.

Once the repetition springs are returned to their correct shape, the spring grooves are cleaned and lubricated, and the knuckles are shaped up, the springs may be rough regulated for a strong hammer rise. In many cases restoring the correct knuckle shape and cleaning the spring grooves will restore the correct rise in the hammers — the friction levels have been lowered and the geometry is restored, so the spring tension may be more than sufficient. If the hammers don't rise, though, the springs should be tightened before continuing. Let us continue now with our regulation steps.

6. Set the action spread.

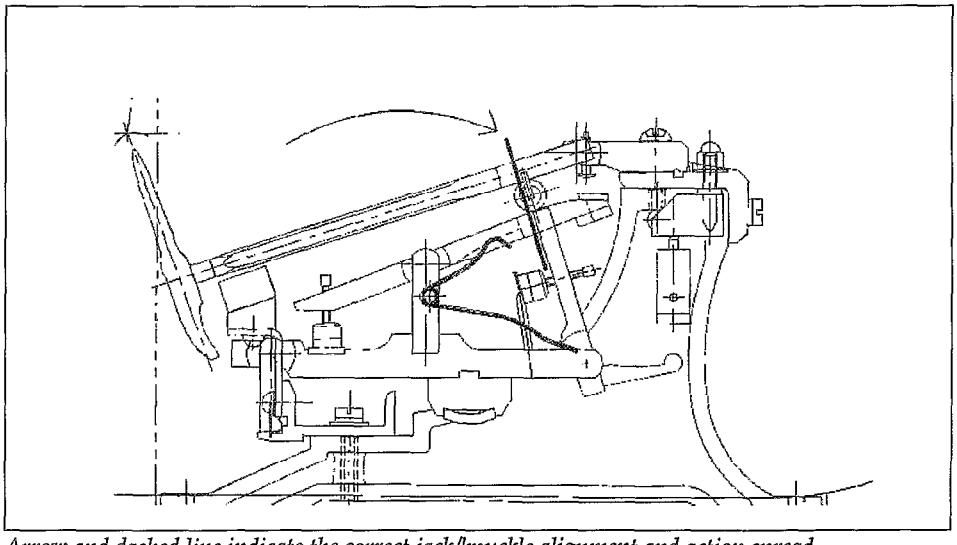
The action spread is adjusted in most grand actions by moving the wippen rail. If you have an original specification for the spread in the action you are servicing, it is safer and wiser to regulate the spread to that specification. If you do not have the correct measurement, you must spend a little time evaluating and testing for the optimum spread measurement. To measure the spread, place a small, thin metal rule on the sides of the action parts at one of the breaks, with

the end of the rule carefully placed at the center of the wippen flange center pin. Now pivot the rule around the bottom location until the hammer shank center is just at the edge of the rule. Carefully recheck your location at the wippen center, and read the measurement at the hammer center. Most actions fall between 112 and 115 mm, but a difference of only .5mm is substantial, and will greatly affect the regulation and touch of the action.

To establish what the spread should be, it is critical that the action parts be in good condition (how many times should I repeat this?). Regulate a note in the center section of the keyboard to some acceptable, repeatable settings for testing. It is not terribly important that the note be regulated to the final settings for this action. The process of changing the spread for testing throws the action badly out of regulation, however, so each change of the spread must be followed by re-regulation to the same settings.

Once the note is regulated to the acceptable test specifications, carefully measure the spread and make a note of it. Measure the down and up weight of the test note at the key, and make a note of the *difference* between the down and up weights. This difference figure represents the friction in the action. Now change the spread a little, preferably no more than 1mm; re-regulate the note to the specifications, and re-measure the down and up weights at the key again, making note of the difference. It is necessary to regulate all parts in the action — the letoff, blow, drop, and jack to knuckle regulation. Continue this process of changing the spread, regulating the note, and measuring the friction until you find the spread dimension with the smallest difference figure, and therefore the lowest friction, and this should be the optimum spread for the action you are working on.

Another way to check and verify a spread measurement is to visually check the alignment of the parts, especially the jack in relation to the knuckle (**See diagram below**). If there is a small score mark across the top of the repetition lever, try regulating the jack so that the rear edge of the jack is precisely aligned with the score in the top of the repetition lever, then check the jack regulation to the knuckle core. If this looks good, then regulate the capstan for an acceptable blow distance (45-47mm) and check to see if the rear edge of the jack lines up well with the knuckle core. What I mean is that a line drawn up the rear



Arrow and dashed line indicate the correct jack/knuckle alignment and action spread.

edge of the jack, if extended on up to the hammer shank, should not only meet up with the back edge of the knuckle core, but the line should continue straight up along the back edge of the knuckle core to the shank. If the spread is too great, this jack/knuckle line will not be straight, but will be bent back or forward.

These two methods of checking the spread, the friction test and the jack to knuckle alignment test, are really just two ways of looking at the same problem. Since improper spread causes the jack to be out of alignment with the knuckle, its motion at letoff is no longer perpendicular to the knuckle skin. Visualizing these changes with an action model will help understand this concept.

Once you have determined the optimum spread specification, whether by testing or by looking up the manufacturer's specification, set the spread at each scale break, measuring very carefully and being sure to tighten the screws securely.

On fixed rail actions such as the Steinway, correcting errors in the spread should not be taken lightly. It is possible to resolder the rails, but it is a very tricky task requiring elaborate fixtures. I recommend that errors in spread on this type of action (which do occur) be left as is, and the regulation specifications be adjusted later to make up for the incorrect spread. If there is a small problem it is sometimes possible to shim the flanges slightly to tip them one way or the other, giving a slight change in spread, but verify that you are actually getting benefits using the friction test above before making wholesale changes in the action.

7. Pre-regulate the repetition springs

With the action stack assembled on the keyframe, place the action on the workbench and test each note for sufficient repetition spring strength. At this stage, we need to insure that the springs will clearly raise the hammers out of check when the key is slowly released. Don't bother to be finicky at this point, because the key dip, backchecks, letoff, blow, and drop will all affect the spring regulation a little, and they haven't been set yet.

Using your spring hook (there are some newly designed spring tools that work very well — look them up at your next convention, or contact a piano supply company), disengage the spring from the groove in the repetition lever. Hook the tool under the rounded end of the spring, and gently pull the spring up and back. Be careful to not kink the wire, but pull on the spring coils that are within the wippen post. If a spring will not strengthen enough with this type of pulling, you had better take a careful look at the situation, as something else may be wrong. Here is a short checklist:

1. New hammers are too heavy;
2. Hammer or repetition lever centers are too tight;
3. Knuckle skin is dirty, or repetition lever tops are worn and need recoating;
4. Spring grooves are still sticky;
5. Springs are tired and should be replaced (not very common).

If you must get more spring tension than the aforementioned gentle tugging will achieve, then you can carefully place the spring hook on the *lower* portion of the spring, and pull with your other hand up and *towards you* on the upper portion of the spring. This will pull the spring coil open greatly, so be careful.

Next month we will really begin to turn some regulating screws as we look at the 2 regulation steps within the wippen. There are a few different methods of setting each of these two important regulating screws, and different results will be achieved according to the methods used to check your work.

Regulation Checklist:

Regulation Step	*Related Items*
6. Set Action Spread	Bolster or Replace Knuckles
7. Pre-regulate Repetition Springs	Clean and Lubricate Spring Grooves Correct Spring Bends Replace Springs Inspect/replace silk spring cord (if any)

[Ed. note: Beginning this month, we will publish Don's regulation checklist and related items for only the item(s) currently being discussed. Periodically, and of course at the conclusion of the series, we'll print the complete list. See this month's Forum for additional information and ideas on this subject. -jh-]

Sources of Knowledge: *Apparent & Obscure*

Richard Anderson, RPT
Feature Writer
Chicago Chapter

I'll begin by sharing with you some of my favorite sources of information about what we do.

First, of course, are your own chapter meetings. Attending is like having ready access to a database containing hundreds of collective years of experience in doing what we do (including making the kinds of mistakes we all want to avoid).

Next is the PTG *Journal*. It's the only source of current technical information for piano technicians. It's great, and keeps getting better. I'm constantly picking up valuable tips both large and small.

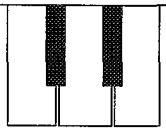
A less obvious, but no less enlightening source of technical information as well as enthusiasm for working on old wooden things is *WoodenBoat*. It's written for people who repair, build, and design boats with wooden hulls. If you think a piano is under stress when it moves from the sun belt to the Northeast, imagine a boat sitting in water for hundreds of years. These guys have developed some interesting techniques of marrying traditional methods and materials with newfangled stuff (they use a lot of epoxy) to build and restore wooden boats. One issue mentioned a type of glue that was used for construction of W.W.II mosquito fighter-bombers and is now used for a specific method of boat hull construction. This glue could have important applications in piano rebuilding. Stay tuned for test results. The same issue also contained an article on how UV light degradation of lignin (the stuff that holds wood cells together) affects the adhesion of new finishes to old wood. Contact WoodenBoat at 800-435-0715.

Fine Woodworking is a must for anyone doing shop work. It has a great Q&A column, good articles on the basics of wood technology, and inspiring articles with great pictures of some wooden works of art. It's also a good source of current events in the wood world of a political, technical, and business nature. Contact *Fine Woodworking* at The Taunton Press, 63 S. Main St., Box 355, Newtown CT 06470-9971. (*WoodenBoat* and *Fine Woodworking* are also available at most larger bookstores.)

Also of interest to wood shop people is *Woodshop News*. It's a monthly, printed on newsprint and published "for and about people who work with wood." It's oriented to professional shops and has lots of inspiring business skill articles. It also has tool reviews and regional classifieds. As a reference to the diversity of articles, one issue featured an article on carpal tunnel syndrome. Call 800-341-1522 to subscribe.

I also subscribe to *The Music Trades*. It's published monthly and consists mostly of press releases from music industry manufacturers. It also has a good editorial commentary and marketing advice that is applicable to what we do, along with some entertaining and enlightening advertising. (Did you know that certain models of pianos are designed for specific "price points"?) This magazine helps me realize that I'm but a small part of the music industry.

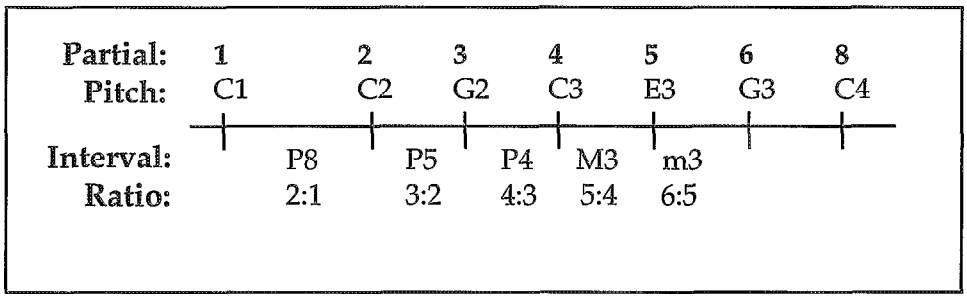
So there you have it. Plenty of sources for stuff you didn't even know you needed to know.



Tuner's Corner

Overtones in a Nutshell

Michael A. Kimbell, RPT
Contributing Editor
San Francisco Chapter

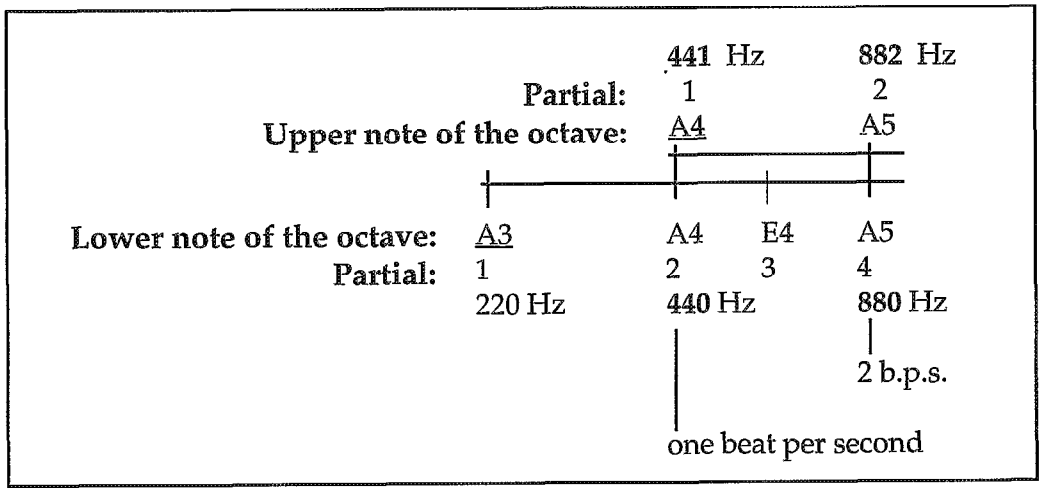


Example 1 - Intervals between partials of the note C1

Last month I introduced the subject of overtones by describing how a single string vibrates not only along its entire length, but also simultaneously in halves, thirds, quarters, fifths, and so on. These smaller vibrations are called "overtones" or "partials." This month I shall not only explain partials in greater detail but also show how theory has practical application for tuning. I shall begin by discussing and illustrating the important relationships between partials of two strings tuned an octave, a fifth or a fourth apart from each other. These relationships result in the "beats" by which we judge the octave, fifth or fourth to be "in tune" or "out of tune." Understanding partials and their relationships helps us not only to hear beats more clearly but also to understand and use appropriate aural tests for octaves, fifths and fourths. The most important of these tests, which are based on matching overtones, will be described in this article.

Example 1 illustrates and reviews the partials of a single string (in this case C1) together with the beatless intervals that occur between the partials. The first partial or "fundamental" is always the same pitch as the note itself; the second partial is always an octave higher than the first, the third partial is always a perfect fifth above the second, the fourth partial is always a perfect fourth above the third, and so forth. Notice the order and descending size of the intervals between partials: *octave, fifth, fourth, major third, minor third.* Notice also how each interval's ratio relates to the numbers of the two partials that define the interval: the octave of ratio 2:1 occurs between partials 1 and 2, the perfect fifth of ratio 3:2 occurs between partials 2 and 3, the perfect fourth of ratio 4:3 occurs between partials 3 and 4, and so forth. If you can bear these relationships in mind, you will find it easy to work out the series of partials for any note and apply the information in this article to any position on the keyboard.

Last month I pointed out that the first partial vibrates the loudest, while the other partials are softer and become progressively weaker as one goes up the series. In the piano this is strictly true only in the treble: as one goes down into the bass section of the piano, the next few partials above the fundamental become stronger, and in the low bass they actually overshadow the first partial. As we shall see, the relative strength of partials in the various registers of the piano corresponds to our choice of octave tests



Example 2 - Beats caused by out-of-tune octave A3-A4

within each register.

Let us now turn to the subject of the "beats," which occur when two strings are slightly out of tune with each other. The most obvious example is the unison. If one string of the note A4 vibrates at 440 Hertz (vibrations per second) and a second string vibrates at 441 Hz, we hear a "beat" at the rate of one per second. Once every second the vibrations of the two strings are together and reinforce each other, making the sound stronger; a half-second after each reinforcement the two strings vibrate contrary to each other, making the sound weaker; the strong moments are heard as "beats."

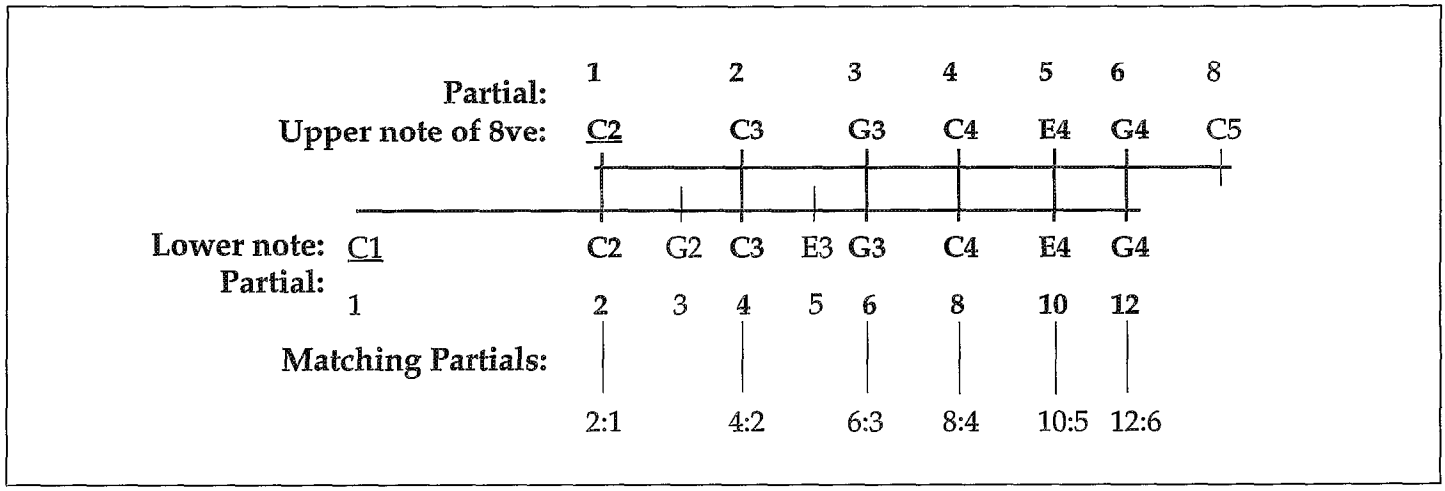
If we apply this thinking to the octave A3-A4 we run into a problem unless we consider the partials of the two notes in question. If A3 vibrates at 220 Hz and A4 at 441 Hz, the difference of 221 beats per second is obviously not an audible or useful phenomenon! However, according to last month's discussion the second partial of A3 should be an octave higher and vibrate at twice the rate: the second partial of A3 is thus A4, vibrating at 440 Hz. Since the first partial of A4 vibrates at 441 Hz, we should not be surprised to hear a beating of once per second for this out-of-tune octave. In fact, what we are really hearing is an out-of-tune *unison* between the matching (or *almost* matching) partials, as shown in **Example 2** at the 2:1 matching level.

Nevertheless, there is still another potential problem for our ears: in addition to the 1 b.p.s. mismatch at the 2:1 level just described, there is also a 2 b.p.s mismatch at the 4:2 level (also shown in Example 2), not to mention faster beats at the higher levels illustrated in **Example 3**. As if this were not bad enough, inharmonicity increases all of these beat speeds slightly so that they no longer "keep time" with each other, adding further to our ears' confusion.

Fortunately, in most cases the beating is prominent at only one of the partial-matching levels. In the high treble section of the piano the first partials of individual strings are the strongest, and therefore the strongest beating of out-of-tune treble octaves occurs at the 2:1 level, that is, at the same pitch as the first partial of the upper note of the octave (which is the same pitch as the second partial of the lower note of the octave, in other words the upper note of the octave itself). This fact can be of practical help to us in two ways. First, it tells us where (at what pitch-level) to listen for the beats; secondly, it helps us to choose and understand the appropriate aural tests for the octave we are trying to tune.

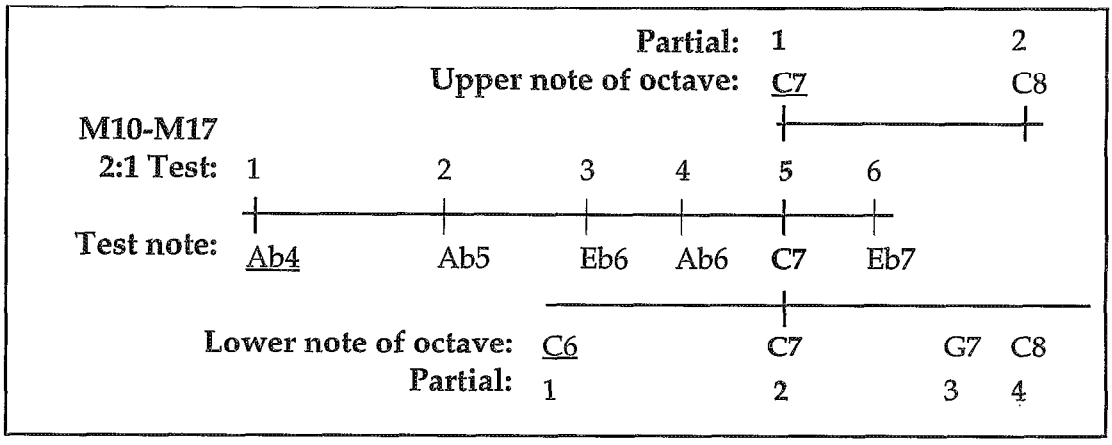
The practical application of overtones in the area of aural tests is illustrated by the major tenth-seventeenth test for a 2:1 octave. If our goal is to tune the treble octave C6-C7 so that it is perfectly beatless at the 2:1 level, how do we know when the beating has truly stopped? How can we be sure that an ultra-slow beat has been eliminated, especially if the beat is hard to hear in the first place? The only way is to employ a pair of moderately beating test intervals (in this case the major tenth Ab4-C6 and the major seventeenth Ab4-C7) and to tune the octave so that the two test intervals beat at exactly the same rate. The test note Ab4 thus acts as a point of reference to each of the two notes of the octave: the major tenth test interval is formed between the test note and the lower note of the octave, and the major seventeenth test interval is formed between the test note and the upper note of the octave. When the beat speeds of the tenth and seventeenth are exactly the same, then the octave is truly beatless at the 2:1 level. (The subject of "stretching" the octave slightly will be left until next month.)

Example 4 (page 38) shows the tenth-seventeenth test for the octave C6-C7 and illustrates how it works. The partials of the test note Ab4 are laid out between the partials of the two notes of the octave. As you can see, the fifth partial of the test note coincides with the second partial of C6 and the first partial of C7. Our goal is to match the second partial of C6 and the first partial of C7 exactly. If the fifth partial of Ab4 were also matched



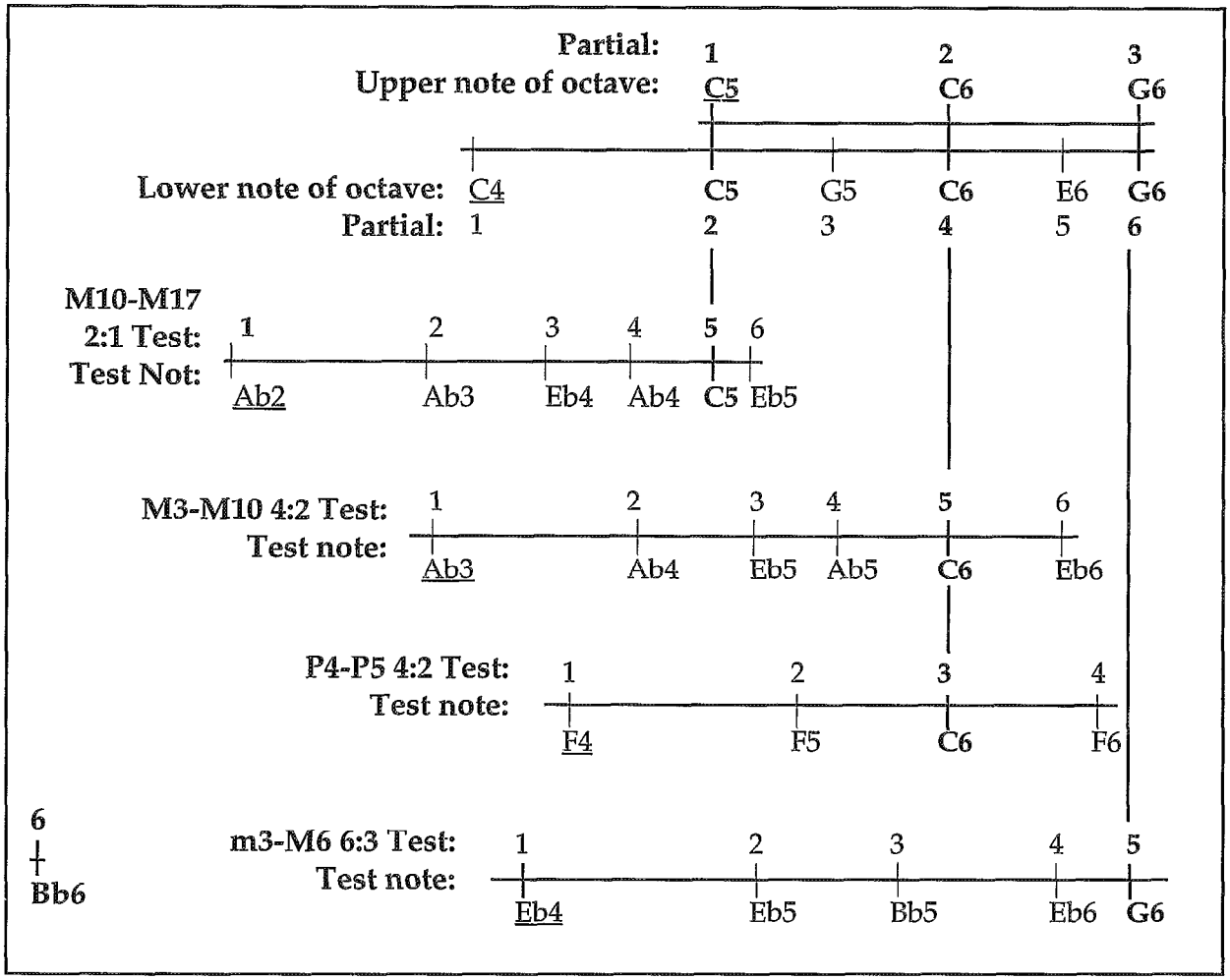
Example 3 - Matching partials of the octave C1 - C2

exactly to C7, then the tenth and seventeenth would be beatless. Since of course they are not beatless, the fifth partial of Ab4 is therefore slightly mismatched to C7. If the tenth and seventeenth beat at exactly the same speed, then the mismatch with the second partial of C6 is identical to the mismatch with the first partial of C7; the second partial of C6 and the first partial of C7 are therefore indirectly but very precisely matched, and our goal has been achieved.

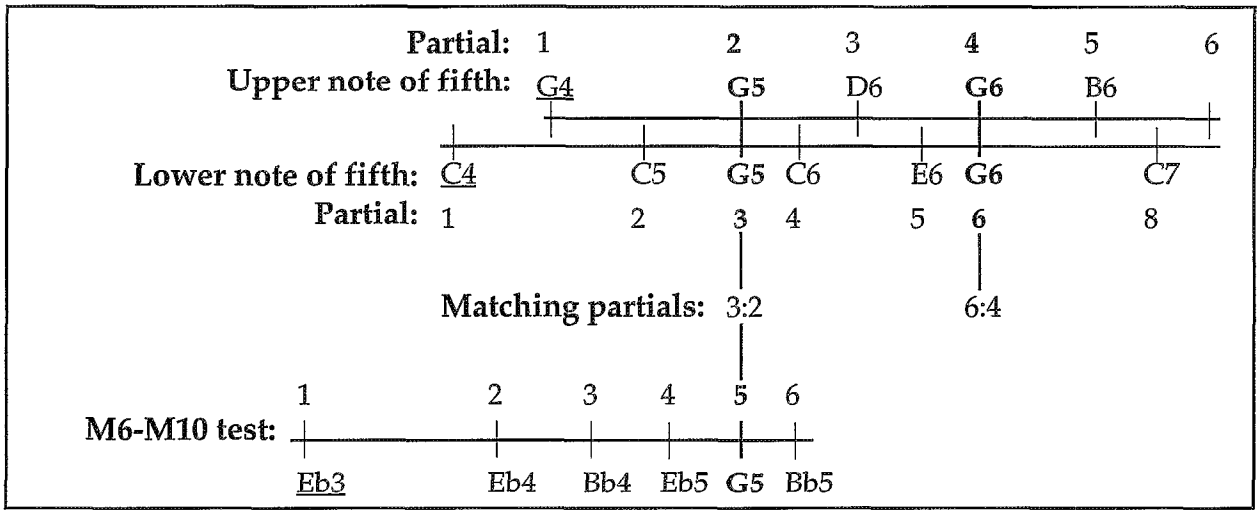


Example 4 - 2:1 octave test for C6-C7

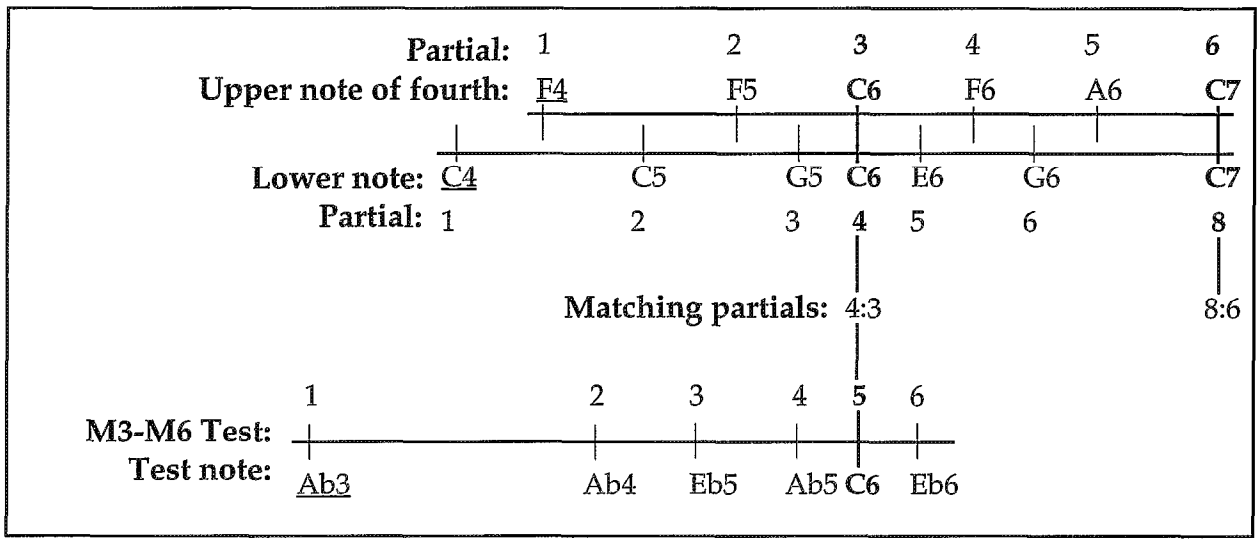
In the midrange of the piano the second partial becomes more prominent, and the loudest beating occurs at the 4:2 level instead of the 2:1 level. The major third-tenth test for 4:2 partial matching works in the same manner as the tenth-seventeenth test just described. For the octave C4-C5, the test note is Ab3, and the goal for a perfect "4:2 octave" is to tune C5 so that the third Ab3-C4 beats at exactly the same rate as the tenth Ab3-C5. (On large pianos tuners usually let the tenth beat a tiny bit faster than the third to compensate for inharmonicity.) A good alternative to the M3-M10 test is the P4-P5 test: for the octave C4-C5 the test note is F4, a fourth above the lower note of the octave and a fifth below the upper note of the octave. When the fourth C4-F4 and the fifth F4-C5 beat at exactly the same rate, the octave C4-C5 is beatless at the 4:2 level. Towards the bass, as higher partials become more prominent, procedures that match these higher partials become appropriate in octave tuning. For most smaller pianos, tuners can focus on the 6:3 level throughout the entire bass section. As an example, for the octave A2-A3, the test note is C3, a minor third above the lower note of the octave and a major sixth below the upper note of the octave. When the minor third A2-C3 and the major sixth C3-A3 beat at exactly the same rate,



Example 5 - Matching partials of test notes for C4 - C5



Example 6 - Matching partials of the perfect fifth C4-G4



Example 7 - Matching partials of the perfect fifth C4-F4

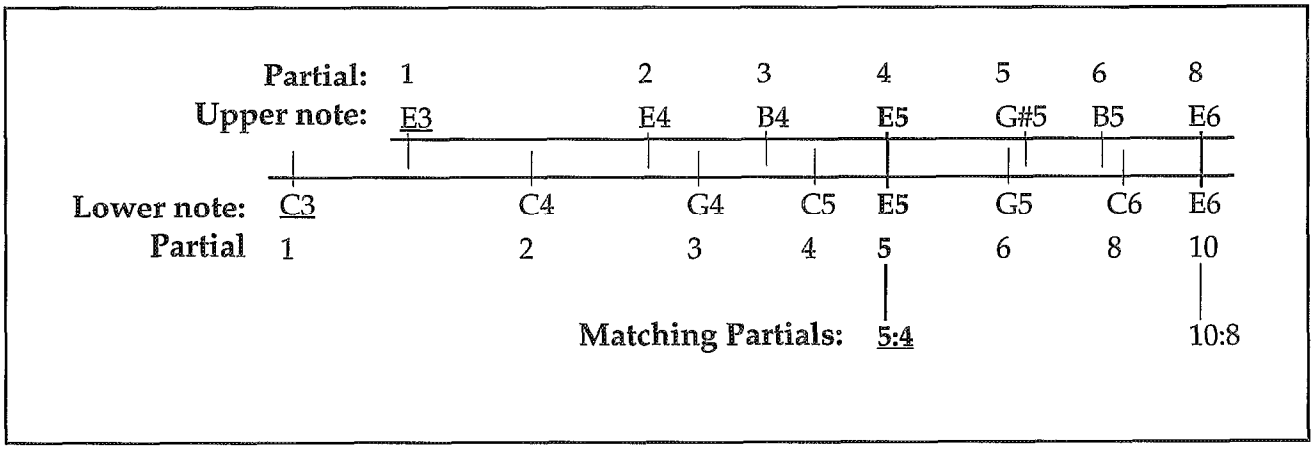
the octave A2-A3 is beatless at the 6:3 level.

All of the tests discussed so far for 2:1, 4:2 and 6:3 octaves are illustrated in **Example 5**. For the sake of comparison, all of the tests are shown in relation to the octave C4-C5, and although all of these tests can be used for C4-C5, the 4:2 (M3-M10 and P4-P5) tests are the most suitable in the midrange. Next month I shall explain how inharmonicity makes it impossible to match partials at more than one level at the same time. Meanwhile, however, it is important to know that the beating of the test intervals occurs at the same pitch as the partials of the octave we are trying to match. In Example 5 the test intervals (M10-M17) for the 2:1 level of C4-C5 beat at C5; the test intervals (M3-M10 and P4-P5) for the 4:2 level beat at C6; and the test intervals (m3-M6) for the 6:3 level beat at G6. This knowledge can help us focus our ears on the beats.

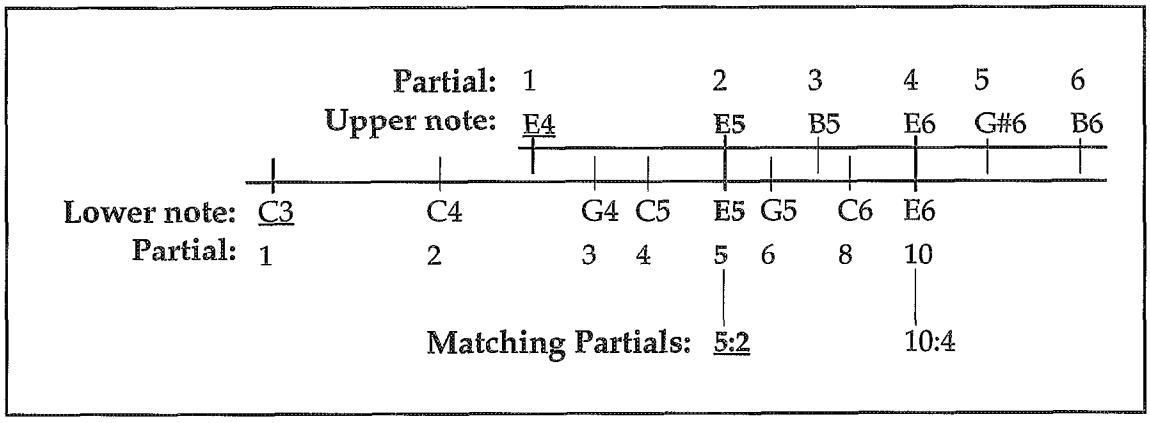
The concepts of matching partials and test intervals can also help us in the tuning of fifths and fourths. Here again we use moderately beating thirds, sixths and tenths as test intervals. If we are setting up the temperament and have not yet tuned the test note, we have the further advantage of being able to adjust the test note up or down so that the test intervals beat at a comfortable speed. **Examples 6 and 7** show the matching partials of notes that form perfect fifths or fourths, together with matching partials of the appropriate test intervals. Since perfect fifths and fourths are tempered or slightly out-of-tune, it becomes a question of carefully controlling the slight mismatch of the partials of the two notes that form the fifth or fourth. Instead of equalizing the beat rates of the two test intervals, we establish and control a slight difference in the two beat rates. For the perfect fifth, we use a test note a major sixth below the lower note of the fifth (which is the same as a major tenth below the upper note of the fifth) and try to make the tenth beat about one-half beat per second more slowly than the sixth. In Example 6, Eb3 is the test note for the fifth C4-G4, while the sixth Eb3-C4 and the tenth Eb3-G4 are the test intervals. For the perfect fourth, we use a test note a major third below the lower note of the fourth (which is the same as a major sixth below the upper note of the fourth) and try to make the sixth beat about one beat per second faster than the third. In Example 7, Ab3 is the test note for the fourth C4-F4, while the third Ab3-C4 and the sixth Ab3-F4 are the test intervals. You will also notice that for the perfect

fifth and perfect fourth we are interested only in the lowest levels of matching partials, 3:2 for the fifth and 4:3 for the fourth. These are the same numbers as the ratios of vibrations of the fundamentals (first partials) of the two notes that make up each interval, again 3:2 for the fifth and 4:3 for the fourth. (Strictly speaking, these are the ratios for *beatless* fifths and fourths; since we temper these intervals, the ratios are still fairly close to 3:2 and 4:3 but are no longer exactly so.) Examples 6 and 7 show that there are higher levels of matching partials for fifths and fourths, just as there are for octaves, but for the most part these are all but inaudible. Sometimes, however, there is fairly prominent beating at the 6:4 level of fifths, which conflicts with the slower beating at the 3:2 level; the faster 6:4 level beats can fool us into thinking that the fifth is more heavily tempered than it actually is. Hard hammers, which bring out these faster beats at higher partials in the midrange, can thus make it more difficult to set a temperament.

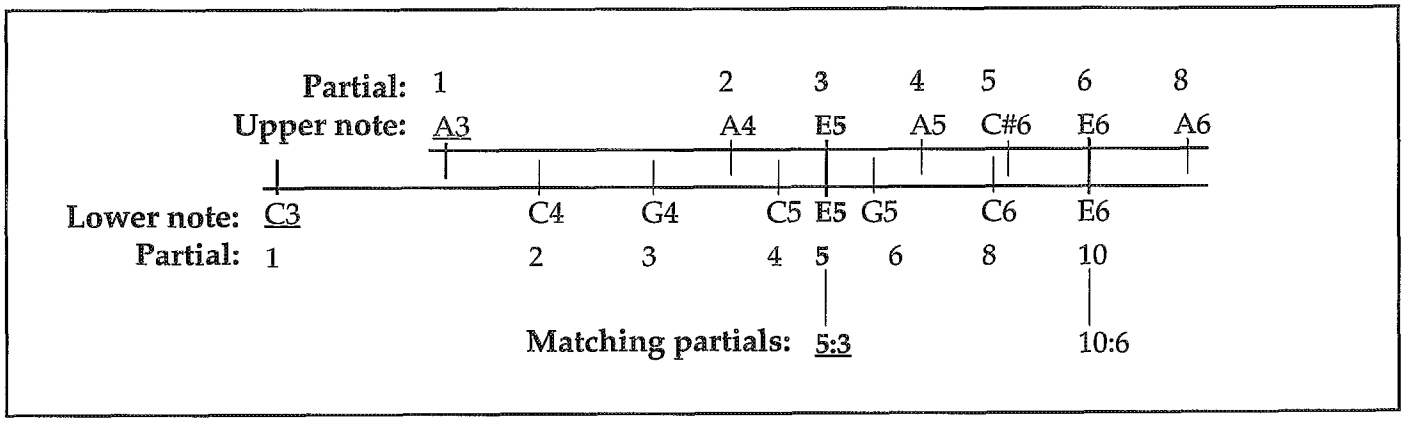
It remains to make a further observation about major thirds, sixths and tenths. As shown in **Examples 8, 9 and 10**, the audible beating of all three of these intervals occurs at the fifth partial of the lower note of the interval, that is, two octaves and a major third above the lower note of the



Example 8 - Matching partials of the major third C3-E3



Example 9 - Matching partials of the major tenth C3-E4

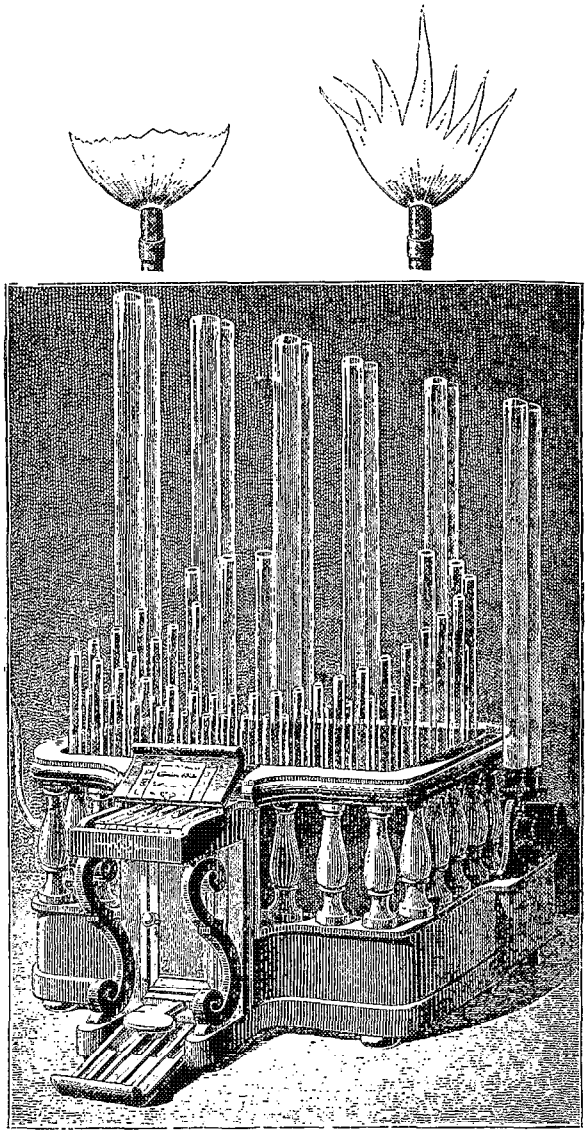


Example 10 - Matching partials of the major sixth C3-A3

major third, sixth or tenth. Again, this can help us focus our ears on the beats, whether we are tuning the major third, sixth or tenth itself, or using it as a test interval for tuning an octave, fifth or fourth. Note that for all of the test notes in all of the examples in this article, it is the fifth partial of the test note that matches the key partials of the interval we are trying to test. When we use any of these "fifth partial" tests in tuning, we listen for beats a major seventeenth (two octaves plus a major third) above the test note.

In summary, we have seen how to reconstruct the series of partials for any note by going up an octave, then a fifth, fourth, major third and minor third. We have seen how the partials of two notes of an interval interact with each other to cause beats; that the numbers of the matching partials of the two notes are directly related to the vibration ratio of the beatless interval; and that the beating occurs at the same pitch as the matching partials whenever these partials are very slightly mismatched due to tempering of the interval. We have also seen how to use aural tests for octaves, fifths and fourths using a "test note" that has a partial at the same pitch as the matching partials of the interval we are trying to tune. Next month we shall see how inharmonicity can be another cause of mismatched partials, and how we accommodate these mismatched partials in our octave tuning.

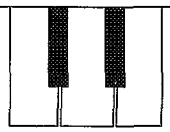
Foundation Spotlight



"Organ with glass pipes for singing flames...so intense are its vibrations that they excite corresponding tremors in the floor and the windows and the furniture of the room"—from the book "Sound and Music" by the Rev. J.A. Zuhm, C.S.C. (A.C. McClurg and Company, Chicago 1892). This volume, part of the library of William Braid White, was donated to the Piano Technicians Guild Foundation Museum and Archives by Fred Odenheimer.

As part of its adopted mission—"...to participate in the preservation of resource materials..."—the PTG Foundation has taken on the challenge of accumulating an archive of materials in piano technology, as well as a facility in which those materials can be displayed and used. If you have historical materials that you would like to donate to the Foundation, please contact Bruce Dornfeld, RPT, 2134 Walters Avenue, Northbrook, IL 60062.

If you wish to support this important effort financially, please send your contributions to the Piano Technicians Guild Foundation, 3930 Washington, Kansas City, MO 64111-2963.



The Tuner

Paul Monroe, RPT
Orange County Chapter

The purpose of this series of articles is to reach out to the inexperienced tuner and help create a good foundation on which to build a profession.

The TUNER—is more than a person sitting at a piano playing thirds, fourths, fifths, sixths with one hand and adjusting tension on the strings with the other. This is very important, but so are the other aspects of this business. I'll be talking about some of these aspects in this column. The comments and suggestions will be directed to the associate working towards achieving RPT status.

I would like to start at the point where you have an appointment. Do you know your client? Have you been there before? In either case you should contact them the night before to confirm your appointment for the next day. There is nothing more frustrating and expensive as to drive several miles and find no one home. My experience has been that calling the night before eliminates more than 95 percent of the "no shows."

Before you make the telephone call, ascertain the most direct route. If you can't locate the street or road on your map, ask for directions when you make your call to confirm the appointment. When you have the directions, write them on the back of your client index card. (I'll talk more about the "card" later on.)

Exercise good judgment in scheduling your routine for the day. For new clients, allow the amount of time you need to inspect, service, raise pitch if necessary and tune, plus the time required to drive to the next appointment. For a repeat client, your record card will assist you in knowing what you will be doing at the next appointment and you will know from experience how much time to allow.

Be on time. Not early, not late—on time. It reflects on you personally. If you can't be on time, call ahead and explain your position and when you expect to arrive. Remember, if you inconvenience your client, your best tuning may not be good enough for a referral, and referrals are the main source of new business.

This client I have mentioned is a very important person to know. Here are but a few of the many ideas on how to learn about this person.

Notice the decor of the home as you enter. What kinds of pictures are hanging on the wall? Are they oil paintings? (It may have been painted by your client.) Do you see family pictures? Most likely someone you are looking at is taking piano lessons. Observe the level of music you find on the piano. Sometimes you'll find their lesson assignment, which will tell you their level of accomplishment. These little things begin to formulate a basis on which to know your client.

If the piano is hardly playable because it needs regulation, the hammers are flat at the strike point, or the dampers work only sometimes; you have an opportunity to sell repair work and maybe a complete restoration job. It can happen, so don't be backward about being forward.

To know your client will help you sell piano repair work. I believe you have a responsibility to advise the client on the condition of the piano, what it needs and how much it is going to cost for repairs.

You may be saying at this point, "I haven't had sufficient experience to know all the things a piano should have." This is where the Guild is very important to you. Attend chapter meetings, local seminars, state and national conventions. Attending affairs of this nature should be top priority on your list if you plan to be good at your profession.

In the meantime, until you have had sufficient experience and you recognize the piano needs a great deal of work, ask your client if you can bring in another technician to evaluate the piano, then call on one of the members in your chapter who has a shop or has had good experience at evaluating pianos. Ask that member to go with you and give *you* the evaluation. Pay the technician for the evaluation and include it in the proposal price to your client. Where and when to do the work will be discussed in future articles.

Up to now you have been gathering information you can use as long as you have this client. You have established a certain amount of rapport and you are ready to service the piano.

It is important to have an established routine to check out a piano before you start to insert muting strips. You will save time and you won't miss items that may be important. The following list is a beginning point. I'm sure you'll add and revise to fit your needs.

1. Observe the appearance
2. Play all of the notes
3. Check the physical condition
4. Correct problems
5. Mute and tune
6. Recheck unisons
7. Record piano name and serial number
8. Itemize the work you did—present your bill

In subsequent issues of the *Journal* I will be detailing each of the items on this list. Remember, if you want to become good in your profession, attend your Guild sponsored meetings, seminars and conventions.

Bill Spurlock, RPT
Marketing Committee

Marketing Ourselves

RPTs:

These New Business Aids Can Make You Rich & Famous!

That might be overstating it just a bit, but the Marketing Committee *has* come up with two new items that promise to be our most popular business aids yet. The **Service Record** allows basic service history to be maintained right at the piano, while the **Bookmark** serves as a combination thank-you card and advertisement for the RPT and PTG. In accordance with 1993 Council's decision to allow Associate members to purchase PTG's informational publications (technical bulletins, brochures, etc.) but not contracts or business forms, both these products are available exclusively to RPTs only. Both bear the RPT logo version, and add benefit and distinction to RPT membership while providing incentive for Associate upgrading.

The RPT Bookmark

Are you the type of person who likes to sit a customer down at the end of a job, and explain that you are a Piano Technicians Guild member, and that PTG provides examinations to qualify RPT members? I suspect that few of us have the time or temerity to do that after every tuning, and that few customers would sit still for such a presentation. Still, most of us would *like* our customers to be aware of PTG and the standards we work so hard to establish. And we all know that personal attention is the key to customer satisfaction and repeat business. So, how can we make each client aware of RPT and what that means, while also expressing gratitude for their business?

Enter the RPT Bookmark. This new RPT business aid is designed to build recognition for PTG and RPTs, and to build client loyalty without requiring an overt sales presentation from the technician. The Bookmark, so called because of its dimensions and attractive paper, is meant to be simply left on each piano that a technician services. One side carries a thank you message and the RPT logo, with space for your handwritten signature between. The other side displays a familiar keyboard graphic so the client will associate it with the piano, and most important, the letters "RPT" in large bold type followed by a brief explanation of RPT.

The "RPT" letters are a powerful graphic element designed to catch the attention of anyone seeing the Bookmark, even if they are only picking it up to throw away. The shape and graphics will reflect quality and distinction, and your handwritten signature will add a personal touch.

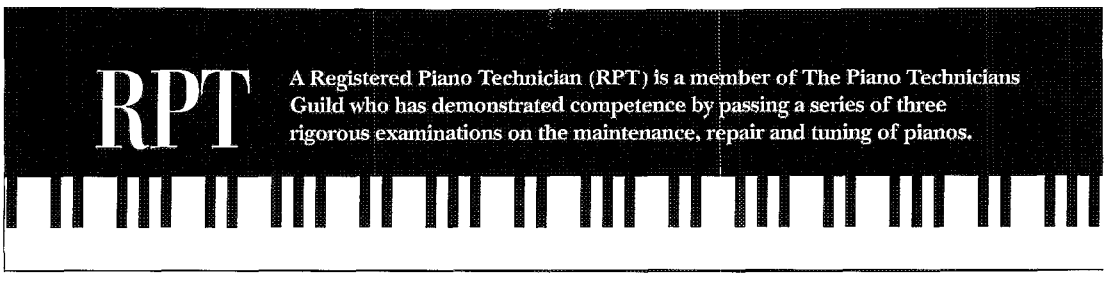
Uses for the Bookmark:

A Bookmark can simply be left on the music desk of each piano you service, waiting to be discovered by the client. Often there are open music books on the piano, which you must set aside before removing case parts. Insert Bookmarks before closing the books and the client will later discover your thoughtfulness, and discover what an RPT is when reopening their music.

It's repetition that builds recognition, so a Bookmark should be left after each visit. Not only will this little tool remind the client of your previous service, but repeated exposure to the term "RPT" and to the PTG Logo will support recognition in all our other business aids.

Public recognition of PTG is within our grasp:

Because of the Bookmark's design, and because it requires no effort to distribute, we believe this tool has tremendous potential for creating public recognition of PTG and for distinguishing RPTs as qualified technicians. Such recognition has



always been our goal, but many have assumed it impossible to achieve. However, consider the effect of 2,000 RPTs each handing out five to ten Bookmarks per week—we have the potential here for making 500,000 to one million people per year aware of PTG and RPT!

Is this realistic? I believe so. Although some Bookmark recipients would be repeat customers, and thus already aware of PTG, word-of-mouth referrals would carry our message to many others. The point is that this simple tool can gain us the public recognition we have long sought. Shall we get started?

> *"This simple tool can gain us the public recognition we have long sought."*

The Service Record

Although most technicians maintain service information (dates, service done, and so on) in card files or computer records, it's also useful to keep a basic service history in the client's piano. Then pitch stability and service history are instantly available without having to consult office records. If the record also includes temperature and relative humidity readings, tuning instability can be easier to diagnose and demonstrate to the client.

Most are familiar with the former PTG service stickers. Referred to as "oil change" stickers by some, these had limited space for writing and had to be stuck to a piano's finish by their adhesive backing (not an appealing option on a fine instrument).

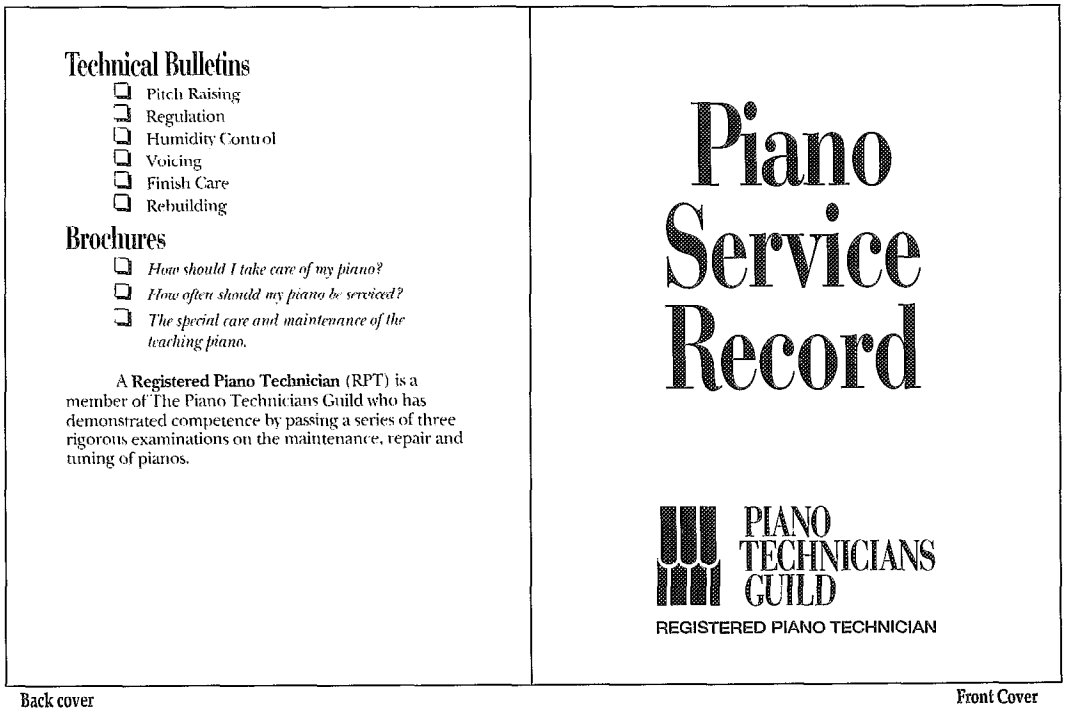
The new Service Record incorporates several improvements. First, it is a folded card, printed on heavy stock. It is intended to be left in the piano, not stuck to it. The Service Record has space for up to 30 service calls, with entries for date, service done, temperature, and relative humidity. Using one of the nifty new Airguide digital hygrometers ($42.00 from Pianotek, John Ford, and Dampp-Chaser), it's a simple matter to record the temperature and relative humidity readings for each service date, along with the amount of any pitch change necessary. With this information always available at the piano, you are well equipped to respond to complaints about climate-caused tuning instability, and to document the need for a home or piano humidity control system.

The Service Record also serves another purpose. Have you ever wished for a simple way to keep track of which brochures or technical bulletins you have given to clients to avoid duplication or to continue a discussion from your previous visit? This new business aid is the answer: the back cover lists each brochure and bulletin by name, with check boxes you can mark after giving an item to the client.

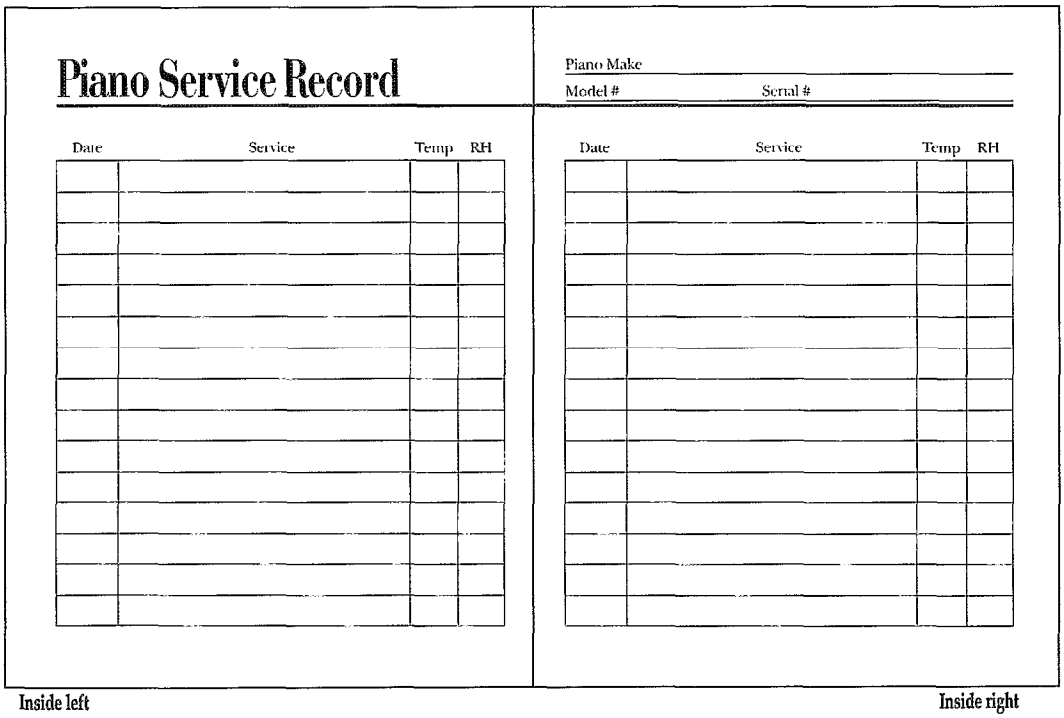
Placing the Service Record in the piano:

For verticals with one-piece lids, the Service Record stores nicely on top of the pin block. Because of the thickness of its folded design, it will normally stay put between the lid and pinblock even if the piano is moved. For two-piece lids where the pinblock is not exposed, the Service Record can be placed on the keybed, between an end action bracket and the case. Alternatively, you can punch a hole in one corner for a string loop and hang it inside the piano.

For grands, the Service Record will usually fit between the plate and rim, just under the treble music desk slide or lid prop mount. Here it will be out of sight but still accessible. Alternatively, place it under the music desk in the treble tuning pin area.



Back cover Front Cover



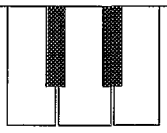
Applying your business label: Space is provided on the back cover for your business name, address, etc. Rubber stamps, preprinted labels, or stickers will all work well here. Although this product is primarily intended for technicians' use only, a short description of RPT is included next to the labeling area in case a client should look at it.

How well does it work?

I have tested this design for the past eight months, and have found it to be extremely useful. The service data helps me provide better service to my clients by forecasting future tuning needs, while the climate/pitch change data helps me demonstrate the need for humidity control. (Transferring this data to the chart on the Climate Control Technical Bulletin provides the client with some convincing and informative reading as they ponder investing in a humidity control system.) The reaction of clients has been very interesting; as they see me filling out the Service Record, they often make a positive remark about having received such "professional" or "conscientious" service.

PTG Bookmarks and Piano Service Record cards may be purchased from the PTG Home Office by calling 816-753-7747, Monday through Friday, 8:30 a.m. to 5:00 p.m., Central Standard Time or you may FAX an order to 816-531-0070, seven days a week/24 hours a day. Quantities and prices for each are as follows: Bookmarks—100/$8, 500/$35 and 1,000/$60. Service Record Cards—100/$15, 500/$65 and 1,000/$115.

These new marketing tools are available only to RPT members.



Book Review

Piano Servicing, Tuning & Rebuilding
Second Edition 1993

Arthur A. Reblitz

Wade Johnson, RPT
Rhode Island Chapter

This is a thoughtfully revised edition of the book by Mr. Reblitz, originally published in 1976 as a *basic* guide and reference "for the professional, the student, and the hobbyist" (a direct quotation from the book's subtitle).

This new edition has been expanded (341 pages, compared to 184 in the original). However, again it does not undertake to be an exhaustive compendium of state-of-the-art procedures being used across this country for servicing and restoring pianos. Instead, it is a sharing of the knowledge and opinions of the author, based on his considerable experience and the experiences of many fine technicians from whom he has learned over the years. Journeyman piano technicians and rebuilders who found items with which to disagree in the first edition will probably also find such items in the new edition—but they will also find much with which to agree.

Mr. Reblitz is a man still in his forties whose first love for more than three decades has been the restoration of orchestrions, reproducing pianos and other valuable antiques in the mechanical musical instrument category. He is a stickler for proper and skillful procedures in working with wood, metal, glue, etc. He is an RPT member of the Piano Technicians Guild but has not, to the best of our knowledge, been active in the Guild's examination and test standards program nor its annual technical institutes. His advice may not, therefore, necessarily conform to all of the criteria in the Guild's examinations for RPT. But if a novice or aspiring piano technician uses this book in conjunction with access to one or more experienced, competent technicians serving as mentors, or in a good piano technology school, we think the book could serve as a very helpful reference and guide.

This last comment could have been made about the first edition, and the second edition is an improvement over the first. In the new edition, for example, the chapter on repairs precedes rather than follows the chapter on regulating—a better placement for the guidance of a novice, to emphasize the drawbacks of trying to regulate a piano that is in need of repair. The information about repairs has been considerably expanded. And there is a completely new, and helpful, chapter entitled "Evaluating an Old Piano: Is It Worth Buying or Repairing?" The basics of tuning theory in the first edition are essentially repeated, but are helped by the addition of comments entitled "Theory vs. Reality." These additional comments explain why the inharmonicity of a given piano will make the tuner deviate from pure theory—it points the way toward his presentation of *Tuning Procedure* (now a separate chapter) where the effects of this inharmonicity, among other things, are further explained. Added to this chapter are two methods of setting the temperament octave: the "Defebaugh F-F" and the "Potter F-A" temperaments in lieu of the fourths and fifths approach to setting the temperament that appeared in Reblitz' first edition (and in William Braid White's book, which was our "bible" prior to 1976).

The chapter on "Restoration" (rebuilding) has been expanded, from 32 pages in the first edition, to almost seventy. There are more suggestions about restoring the case, more techniques for soundboard restoration, and instructions for making a new bridge cap (absent from the first edition, which told you only to send it out for duplication). The new edition discusses soundboard replacement for the first time, but doesn't attempt to tell you how to make a new board yourself. The sections on pinblock use mostly the same illustrations as in the first edition. The restoration of the grand damper and underlever system is rather briefly discussed for the first time in the new edition. The chapter on electronic pianos, which appeared in the first edition, has been dropped. There is an expanded appendix, bibliography, and index. The book is available from its publisher, The Vestal Press, Vestal NY 13851; $29.95 soft cover or $39.95 hard cover, plus $4.80 total shipping and handling for up to two books. Piano supply houses are also selling it.

MANUFACTURING REVIEW:

The Fandrich Piano Factory Tour

Marvin McDonald
Puget Sound Chapter

In an area that is very economically depressed you will find a thriving piano factory making musical history and helping the economic climate of the Grays Harbor community. Thanks to the ingenuity of Darrell Fandrich & Chris Trivelas, action designers, and Delwin Fandrich, vertical piano designer, the Fandrich Piano Company is busy and backlogged.

I alluded in the last paragraph to the fact that Fandrich is making history. Could it be because of the "Cut-off Bar" and the "Z-Bar" that help the soundboard to respond to the correct frequency at the right time? While these are very ingenious parts to this unusual design and do in fact impart a quality that only the Fandrich Piano can attain, they are not the major reason behind my statement. Neither can we attribute this to the fact that this piano has the thickest pinblock in the industry, uses an ingenious agraffe design to keep the strings in place, and is engineered so that the softest hammer in production today reproduces a rich, full, and exciting sound without juicing the hammers. Okay, what is it?

Plain and simply, for the *first* time in the history of music an upright piano has been designed that will keep up with the demands of the concert artist. This piano is able to produce heart stirring power and in the next instant give you the sweetest nuance, while still maintaining total and complete control over the instrument. Finally a vertical that will allow the finest pianist to become one with the instrument, leaving him/her free to develop the expressive content of the music and explore the avenues he/she wants to explore, without concerning one's self with the ability of the instrument.

Barbara Fandrich, a warm and talented woman, keeps the factory going and takes care of the public relations while handling sales. The pianos are currently priced at $10,400.00 retail. If you can make it to one of their open house tours you can get the piano at $9600.00. While there may be vertical pianos in the industry that are priced a little lower than the Fandrich, there are none that have the tone and character of the Fandrich piano. If you have wanted to own a grand piano but simply cannot afford the space and only have room for an upright, then your problem has been solved. It takes a grand of at least 6' to begin to equal the tonal response of the Fandrich piano, and no grand action can outperform it. As an added benefit, the back of this piano is designed so that it looks like a piece of modern sculpture, it displays well, and this brings yet another reward, you get more of the rich sound of the piano during the performance.

There will be open house tours on a regular basis for some time, and we will endeavor to keep you apprised of them. Our own Susan Irelan will let me know, as she is working very closely with Barbara. This is a very interesting tour as well as informative. You may wish to invite some clients to the factory who might want to consider the Fandrich piano as an alternative to a grand piano.

1994 Events Calendar

January 29, 1994
Lehigh Valley One Day Seminar
Holiday Inn East
Contact: John Zeiner, Jr.
828 Hanover Avenue
Allentown, PA 18103
215-437-1887

February 11-13
California State Conference
Cathedral Hill Hotel—San Francisco
Contact: John Schaecher
2015 Divisadero Street
San Francisco, CA 94115
415-567-1800

March 3-6
PA State Conference
Harrisburg, PA
Contact: Keith Bowman
210 Hamilton Street
Harrisburg, PA 17102
717-234-4475

March 10-12
Pacific Northwest Conference
Seattle Chapter—Bellevue Red Lion
Contact: Randy Rush
2627 NE 86th Street
Seattle, WA 98115
206-525-7601

March 12
Bluegrass Tuning Seminar
Transylvania University—Lexington, KY
Contact: Russell Schmidt
311 Desha Road
Lexington, KY 40351
606-269-4293

April 8-10
Central East Regional Seminar
Holiday Inn South—Indianapolis, IN
Contact: Bob Bussell
224 W. Banta Road
Indianapolis, IN 46217
317-782-4320

April 9
Calgary One Day Seminar
Red Deer College
Contact: Chris Gregg
11444 Coventry Blvd, NE
Calgary, AB T3K 4B1

April 15-17
Central West Regional Seminar
Boulder-Denver Chapters—Boulder
Contact: Richard Capp
3350 Loyola Ct.
Boulder, CO 80303

April 16
East Tennessee One Day Seminar
Knoxville
Contact: Dennis Mayhew
7700 Old Clinton Pike
Powell, TN 37849
615-938-5440

April 29-30
Intermountain Seminar
Excelsior Hotel—Utah Valley
Contact: Vincent Mrykalo
694 N. 100 E.
Provo, Utah 84606
801-375-2987

May 11-14
Pianoforte Tuners Association Convention
Bothwell Bridge Hotel—Glasgow Scotland
Contact: Ralph Long
8 Baldock Street
Ware, Herts SG12 9DZ
Ware (0920) 469485

July 6-10
37th Annual PTG Convention & Technical Institute
Kansas City, Missouri
Contact: PTG Home Office
3930 Washington,
Kansas City, MO 64111-2963
Phone: 816-753-7747
FAX: 816-531-0070

S	M	T
2	3	4
9	10	11
16	17	18
23	24	25
30	31	

February		1
6	7	8
Conference	14	15
20	21	22
27	28	

March		1
	7	8
13	14	15
20	21	22
27	28	29

W	T	F	S
	January		1
5	6	Arizona State Seminar	
12	13	14	15
19	20	21	22
26	27	28	Lehigh Valley 1-Day
2	3	4	5
9	10	California State...	
16	17	18	19
23	24	25	26
2	PA State Conference		
9	Pacific NW Conference		Bluegrass Tuning Seminar
16	17	18	19
23	24	25	26
30	31		

S	M	T	W	T	F	S
			April		1	2
3	4	5	6	7	Central East Regional	Calgary 1-Day
	11	12	13	14	Central West Regional	East Tennessee 1-Day
	18	19	20	21	22	23
24	25	26	27	28	Intermountain Seminar	
31						
			July		1	2
3	4	PTG's 37th Annual Council, Convention & Technical Institute				
	11	12	13	14	15	16
17	18	19	20	21	22	23

Pianoforte Tuners Association Convention • May 11-14

Ten Day Tour in Planning Process

The Pianoforte Tuners' Association will hold its annual convention May 11-14, 1994 at the Bothwell Bridge Hotel just outside Glasgow, Scotland. Ralph Long, member of the International Relations Committee of PTG and the Convention Sub-Committee Organizer for PTA, is in the process of arranging a tour for approximately ten days, either before or after the convention. Some of the sites to be included are Edinburgh, St. Andrews Golf Course, Aberdeen, stopping at Scone Palace—the crowning place of kings of Scotland, also visiting Glamis Castle—the birth place of Her Royal Highness Princess Margaret and the setting for Shakespeare's *Macbeth*. There will be a chance to explore Balmoral Castle, Crathes Castle and Gardens, Craigievar Castle or the Castles of Mar. Going further to Inverness, traveling south to Loch Ness, to Drumnadrochit, visiting the Nessie Exhibition Centre and also visiting Castle Urquhart, then on to Fort William and to see Ben Nevis, the highest mountain in the British Isles. Then leaving the Highlands of Scotland, visiting Glencoe, known for the massacre between the Campbells and the Mac Donalds continuing south round Loch Lomand, and for the benefit of those who like whiskey, there are many distilleries which are open to the general public on organized tours.

This is only a brief outline of what you can experience during this tour. For additional information and details, contact Ralph Long at 8 Baldock Street, Ware, Herts SG 12 9 DZ or call him at Ware: (0920) 469485. Additional information may be printed in the future issues of the *Journal* as well.

AUXILIARY EXCHANGE

Dedicated To Piano Technicians Guild Auxiliary News and Interests

Happy New Year to each and every one of you. As I sit here at this computer on Halloween, 1993, it feels very much like the dead of winter for we are experiencing our first snow of the winter. It's too early! I do hope that you had a dynamic and memorable holiday with your family and loved ones. With sons and daughters away at college, and people generally spread all over the country and world during the year it is fitting that we all convene together at this one holy and sacred time of the year to renew our pledge of commitment to each other.

As I reflect over the past year (and where did it go?) I, of course, remember Ruth Pollard. I only had one occasion to meet and talk with her but she was most delightful and full of knowledge about our organization and how it got started. I have the cassette tape that Beva Jean Wisenbaker made when she interviewed Ruth in her home last year. If any of you would like the loan of it out of our library, please let me know. Include postage with your request which should not be very much for a small cassette tape.

I would hope that you have made a gift to the scholarship fund in Ruth's honor or a family member, living or dead. Our scholarship fund needs to grow and be nurtured by the love of remembered friends and family. Don't forget cookbooks also. Marie Eumurian at 1634 Barlow Street, La Crosse, WI 54601 has all of the cookbooks and I'm sure she would love to hear from you asking for three or four of those books. Still only eight dollars which includes postage. Where else would you find such a bargain?

And, speaking of gifts, don't forget our greeting cards which are appropriate for any holiday or note writing during the year. This package of cards, one grand and the other upright, was designed just for us so no one else in the world will have cards such as these. Just for those of you who like to give something no one else has seen. These cards are only seven dollars and the postage comes to around two dollars for two packs. Let's buy from ourselves, please. I have all of these cards in my home, so let's hear from you.

As you sent in your renewal dues for the new year, 1994, I do hope that you have included your telephone number and birth day and month. It really helps me out when I go to the directory and find the numbers there in our section. Many times I need an answer immediately and can not wait for a letter and must spend time looking up the telephone numbers. This will help your executive board to do its job for you.

Which brings me to another topic. We are going to have an exciting time at convention this summer. The Hyatt Hotel has many facilities over others we have convened in, so bring your swim suit and work out suit. The plans for the tour are going nicely and I believe you will read about that in another column on these pages from Paul Cook.

It is very important that you sign up to attend the Awards Banquet this year and receive a ticket with a number on it. I am going to have a drawing from those numbers which will determine the winners of several auxiliary paid registration fees at the following convention in 1995 in Albuquerque. Don't miss the opportunity to attend the 1995 convention with your registration paid for you.

While we're on the topic of convention, 1994, let me reiterate how important it will be to your budget to make your plans early this time. We were able to hold all costs down this year again, however, the charges for late registration will be very costly.

There was a slight increase in the cost of the tour because of the food prices but I think you are really going to like what we are doing on that tour. In fact, my husband even told me that many tuners will skip class and go on the tour. We seem to do more exciting adventures on that tour every year. In the future, they may plan convention around the tour and have classes on the side. Only kidding, of course. The tour will be forty-five dollars, which includes the luncheon.

All of you who are bringing the kids, please contact Eileen Guthrie with ages of kids and ideas of places to go before or during or after convention. She would like to share her van with same age groups which are 7, 11, 15 and 18. That sounds like fun and who knows, some interesting mail could ensue from that summer outing!

Is there a Six Flags in Kansas City?

I hope your winter is warm and cuddly and all good things come to you.

Most Sincerely,
Phyllis K. Tremper
President

From The Auxiliary Editor

Happy New Year Again!

(Or Where Does The Time Go?

Every year I make myself a promise to be more prepared for the holiday season, and every year it seems that there are less and less days between Halloween and January 1st!

Since moving out here to "The A-440" as we've christened it, we have experienced some lifestyle changes—no TV reception, for one—and we are all thoroughly enjoying our new place. Our old 1913 Vintage house has a lot of idiosyncrasies that we're learning to live with and we've been madly clearing brush and sprucing up the outbuildings. January and February are the months for pouring over the seed catalogs, etc. and fantasizing about how wonderful the garden/yard/barn, etc. would look if we only had more time/money/land etc.!!

OOPS! We Goofed!

Our apologies to Gary and Lisa Weller. It seems that a few months ago we reported that Gary was the Guild member and Lisa was our Auxiliary member. We were wrong! Lisa is a member of the Guild and her husband Gary is a member of our Auxiliary. Somehow someone got the wires crossed and fixed something that wasn't broken! Our apologies to the Wellers.

Continuing A Musical Theme

Helen Pearson shared with us a few months ago how she had decorated her guest room in a piano theme—seems she's at it again. Helen writes that the bathroom is now music oriented too, with pink tile, wallpaper that is black with white notes and curtains that are white with a keyboard valance to match the ones in the guest room.

Helen also would like to present this challenge: "Much music has been written about brooks, fountains, rain, etc. Now we want a composition more appropriate for the tinkles and firing of Canon (Tschaikovsky). I'll give a reward for the best piece submitted. See you in Kansas City where I'll present the award!"

1994 KC Auxiliary Tour Will Knock Your Socks Off!

Happy New Year! And it will be, if you attend this year's convention in Kansas City. Wow, do we have an exciting itinerary planned for you!

We will participate in a "who done it?" Murder Mystery lunch on our tour, attend dynamite classes expressly for us (the Auxiliary members), plus, be allowed to attend any Guild class we want to on Sunday. Banquets, parties, concerts and exhibits will all be part of our fun filled festivities. Kansas City is home to "Worlds of Fun," a Disneyland-type fun park with rides for kids and adults, shops, walks, food, water slides, trains, boats and much, much more. The "Worlds of Fun" park will be an "on your own" activity.

This will be a convention the whole family can enjoy—or leave the kids behind, and enjoy your own getaway vacation. Plan to attend!

Kansas City is also home to the best steaks in the world! The Hereford House restaurant touts "the best steak in Kansas City." I personally recommend their Kansas City Strip Steak, and can't wait to get back for another one. Lucky for us, the Hereford House is only a few blocks walking distance from our hotel. Oh boy!

This year's tour will knock your socks off! Last September, Phyllis Tremper attended the Planning Council meeting all day. Her husband Fred, Sue Speir and I met with several professional tour companies and picked the best of the best they all had to offer. What a time we will have.

Of course, we will start off with a complete City tour. We will learn about all the hot spots to come back to on our own, if we wish. We will see the famous Country Club Plaza—the first planned suburban shopping center in the country, with over 150 elegant stores and shops, many beautiful fountains and statues of Spanish architecture. Then, we will see the Santa Fe Trail; a hot night spot next to the magnificent Crown Center referred to as a "city within a city." Then, downtown Kansas City, for all it's highlights, next to the beautiful Missouri River. Yes, we will see the famous River Market too.

Next we will drive our buses right into a huge cave—that's right, a cave over 3 1/2 miles into the mountain, directly under the "Worlds of Fun" theme park. Have you ever been in a cave before? Let alone 3 1/2 miles back inside a cave...in a bus!?????

A two hour Murder Mystery lunch will be our next stop at Stephenson's Restaurant where a troop of actors will perform a two hour "who done it?" in which we will get to assist in solving the murder mystery. Lunch will consist of their famous smoked meats, with green rice and apple fritters!

Then we will be off to Independence, which was the home of Harry S. Truman, late President of the United States. We will visit the Truman Library and Museum, which is especially impressive. Sue and I went through the museum together. You have got to see this. The Museum even has an exact replica of Harry Truman's White House Oval Office with the actual original furnishings, pictures, globes, rugs and all.

At the time of this writing, we are also looking into visiting the largest organ in the world. It, too, is in Independence, in the Church of the Latter Day Saints. We will see if we can get a special performance just for us. What memories!

What a tour this is going to be. This will be a tour you will be talking about for years to come. You will want to go on this one!

NOW, SOME CHAPTER NEWS.

We have a new chapter forming in Illinois, thanks to the efforts of Jenny Schwinn and her friends. We also have a chapter reforming in Phoenix, Arizona, thanks to Pat Coleman and the Auxiliary members out there. They are busy planning for the Christmas holiday as I write. I'm sure it will have been a success by the time your read this. It is nice to see the growth in our organization. Congratulations!

IMPORTANT DUES CHANGE NOTICE:

This year, the PTG Board has agreed to include our dues notices on their Guild member's dues statements. This saves us duplicate mailing, and exposes our organization to every Guild member. You will not receive any billing directly from the Auxiliary, only from the Guild. Be sure your spouse signs you up. Ask your spouse right now, while you are thinking about it, if you are not sure they signed you up. Remember, dues must be paid by the end of January to be on the membership roster and to be included in the membership directory.

Membership keeps you in the know with our newsletter, and gives you discounts at local and national conventions. Your participation is also very important to the Guild's success. See you in Kansas City!

L.Paul Cook
Vice President

NEW MEMBERS

REGION 1

021-BOSTON, MA

ROBERT J. NAZZARO
19 KELLY ROAD
ORONO, ME 04473

029-RHODE ISLAND

ROBERT D. BLACK
165 WINTHROP STREET, #330
TAUNTON, MA 02780

031-NEW HAMPSHIRE

DANIEL H. SHEPPARD
1111R WASHINGTON ST.
GLOUCESTER, MA 01930

060-MONTREAL, QC

MARC TRANQUILLE
340, 36TH AVENUE
LACHINE, QC H8T 2A6 CANADA

078-NEW JERSEY

STEVEN C. HENDRICKS
32 LAKESIDE TRAIL
KINNELON, NJ 07405

WILLIAM A. HENDRICKS
52 WHITE OAK COURT
PARSIPPANY, NJ 07054

122-CAPITOL AREA, NY

KARL E. SALZER
77 VISCHER FERRY ROAD
REXFORD, NY 12148

190-SOUTHEASTERN PA

DEREK L. FOSTER
9117 EASTON ROAD, BOX 195
FERNDALE, PA 18921

REGION 2

231-RICHMOND, VA

JOHN H. STENSTROM
2604 PARK AVENUE
RICHMOND, VA 23220

REGION 3

708-BATON ROUGE, LA

PATRICK S. THERIOT
905 AUDUBON
BATON ROUGE, LA 70806

771-HOUSTON, TX

TIMOTHY J. COOLEY
25903 WINGFIELD LANE
SPRING, TX 77373

WILLEM B. RENNER
9220 CLAREWOOD, #1091
HOUSTON, TX 77036

NICHOLAS THOMPSON
5030 WILSHIRE
BEAUMONT, TX 77703

AVERY B. TODD
1515 BISSONNET, #29
HOUSTON, TX 77005

782-SAN ANTONIO, TX

LEE M. SANKEY
6830 COUNTRY HAVEN
SAN ANTONIO, TX 78240

REGION 4

405-BLUEGRASS, KY

KENNETH W. JONES
856 MEADOW LANE
LEXINGTON, KY 40505

441-CLEVELAND, OH

JEFFREY F. BARTO
9620 DAVID ROAD
GARFIELD HEIGHTS, OH 44125

ROBERT H. BELL
999 STANWELL DRIVE
HIGHLAND HEIGHTS, OH 44143

MARILYN A. EBLE
1441 DOVER CENT
WESTLAKE, OH 44145

MARK W. GRAHAM
1490 ROYCROFT AVENUE
LAKEWOOD, OH 44107

462-INDIANAPOLIS, IN

SAMUEL J. LEVITE
10228 CHRIS DRIVE
INDIANAPOLIS, IN 46229

489-LANSING, MI

ROBERT A. STEVENS
6047 HARKSON DRIVE
E. LANSING, MI 48823

549-APPLETON, WI

FRANCIS J. ELMER
1685 PENNY PLACE
GREEN BAY, WI 54302

THOMAS A. RODGERS
2900 W. MAIN STREET
APPLETON, WI 54911

REGION 5

551-MINN-N. IOWA/MN

JOHN C. GURTZ
3510 NW 19TH AVENUE
ROCHESTER, MN 55901

553-TWIN CITIES, MN

GERALD T. GIWOYNA
8229 JERGEN AVENUE S.
COTTAGE GROVE, MN 55016

ANDREW J. PLETTA
2303 3RD ST, NW, #304
NEW BRIGHTON, MN 55112

DAVID M. SCHULTZ
333 128TH STREET, W.
SHAKOPEE, MN 55379

REGION 6

851-PHOENIX, AZ

DAVID P. HIGGINS
13602 N. 20TH LANE
PHOENIX, AZ 85029

921-SAN DIEGO, CA

WILLIAM R. FUHRER
3426 VIA BELTRAN
SAN DIEGO, CA 92117

941-SAN FRANCISCO, CA
TERRI L. SNOW
3735 ANZA
SAN FRANCISCO, CA 94121

REGION 7

594-MONTANA

WAYNE A. BECKMAN
803 8TH AVENUE
HELENA, MT 59601

MARY L. STEVENS
920 4TH AVENUE
HAVRE, MT 59501

981-SEATTLE, WA

DAVID G. COWAN
1611 16TH STREET
BELLINGHAM, WA 98225

RECLASSIFICATIONS

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NORMAN SNYDER
98 RIVERSIDE DRIVE, #16C
NEW YORK, NY 10024

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ROY J. RATIGAN
367 WEST FOREST ROAD
MASTIC BEACH, NY 11951

ALLAN N. SCHUMACKER
40 MAPLE AVENUE
WESTBURY, NY 11590

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DONG-IN SHIN
221 HANNES STREET
SILVER SPRING, MD 20901

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BILL GARLICK SEMINARS-Upgrade your skills at intensive six day resident seminars at Bill's home. Applications are invited for upcoming seminars in tuning, grand action regulation, historic tunings, harpsichord maintenance. Tuition includes instruction and use of facilities, private bedroom (share baths), breakfast and lunch. Write or call for information. Bill Garlick, RPT, 53 Weeks St., Blue Point, NY 11715, (516) 363-7364

WELL-TEMPERED TUTOR. Learn to tune by ear with your Macintosh computer. Use pre-programmed temperaments or create your own. If you have trouble hearing beats, this program can isolate the beats for you. Score yourself with the PTG exam. Twenty-one historical temperaments also available. Demo disk available. Mark Anderson, RPT: 510-524-0390 (California). Great teaching tool!

VIDEOS

PIANO TECHNOLOGY EDUCATIONAL materials. Vertical Piano Regulation by Doug Neal, $115; Plate & Pinblock Installation by Cliff Geers (2 reel set), $148; Wood Repairs by Cliff Geers, $68. Soundboard repair by Cliff Geers, $86; Grand hammer replacement by Cliff Geers, $86. Add $5 per order for shipping and handling. Questions? Call 712-277-2187. Mail orders to PTEM, 3133 Summit, Sioux City, IA 51104

INSTRUCTIONAL VIDEO TAPES. Victor A. Benvenuto. Piano tuning, $50.00*; Grand Regulating, $50.00*; Grand Rebuilding, $100.00 (2)*; Key Making, $50.00*; Soundboard Replacement, $29.95*. (*Plus S/H). The Piano Shoppe, Inc., 6825 Germantown Avenue, Philadelphia, PA 19119-2113, 215-438-7038, Fax, 215-848-7426

WANTED

WANTED!! DEAD OR ALIVE: "Steinway uprights and grands." Call collect, Ben Knauer (818) 343-7744

CUBA NEEDS DONATED piano parts. In October I travelled to Cuba, found many interesting old pianos, and offered to return every year to donate labor and parts. Cuba has no money (70% less than in 1990) and it's partly our fault, given the 33-year-old economic blocade. Want to help w/ parts, cash or labor? Call Benjamin Treuhaft, 510-843-3823

QRS PLAY-A-SAX Music Rolls. Made in 1928-31. Must be in good to excellent condition. Call Jami at 816-753-7747 between 9-5

FOR SALE
MASON & HAMLIN
Ampico duo-art player grand. Flawlessly rebuilt by craftsman, over 200 rare rolls, rich mahogany finish. Truly one-of-a-kind instrument. $25,000.
415-368-7826

DISPLAY AD INDEX

Piano Discussions™

News From The World Of PianoDisc

Tech support goes international

Training and tech support staff take their act on the road

PianoDisc has come a long way since 1989, the year we first began making reproducing piano systems. Back then we started with a handful of dealers in a few US markets, a staff of barely a dozen and a few loyal techs.

Four years later PianoDisc systems can be found in almost every acoustic piano retail store in the US, as well as a significant portion of the world (see "Where in the world is PianoDisc?"). Also, the roster of authorized dealers and certified technicians has grown tremendously in this short time.

All this growth has meant a considerable increase in international activity for PianoDisc's installation training and tech support divisions. "Of course, we have installation training seminars here in Sacramento," says Kirk Burgett, president of operations, "but we also send our instructors and technicians out to other countries if the demand is there. It's less expensive to send one of our staff there than to ask ten installers to fly in from, say, Austria."

PianoDisc's senior installation technician **Mark Burgett** is introduced by PianoDisc's Taiwan distributor **Oliver Chang**. Mark went to Taiwan to conduct this installation training seminar in August 1992.

PianoDisc technicians have logged countless thousands of miles answering questions and training techs in North America, South America, Asia and Europe. "I went to Taiwan last year," recounts Mark Burgett, senior installation technician,"I was in Spain last spring, Brazil this summer. It's a lot of traveling, but it really helps the techs."

Recently PianoDisc tech Don Dusenbury returned from a sweep through Europe, which included a training seminar for Bosendorfer technicians at the factory in Vienna. "European techs are excited about PianoDisc", says Don. "I conducted seminars in England, Denmark and Austria. The response was really overwhelming." Don also visited Egtved PianoFabrik, PianoDisc's strongest European distributor. "Egtved has done a lot to promote PianoDisc in the European marketplace", says Don. "I'm sure that they will be instrumental in creating a dealer and installer network throughout Europe". We think so, too, Don - so make sure your passport stays up to date!

PianoDisc Installation Training 1994

- January 26-29
- February 16-19
- March 16-19
- April 13-16*
- May 11-14
- June 8-11

Training is free, but a $50.00 refundable deposit is required for confirmation. For information about attending a PianoDisc Installation Training seminar, call PianoDisc at (916) 567-9999.

Our Address

PianoDisc
4111 North Freeway Blvd.
Sacramento, CA 95834

Telephone Numbers

Phone: (916) 567-9999
Fax: (916) 567-1941

Tech Support: (619) 258-1460
(510) 427-0411

Our telephone lines are open daily (except weekends and holidays) from 8 AM-12 Noon and 1-5 PM Pacific Time.

* Revised schedule

Where in the world is PianoDisc?

So, just where can PianoDisc products be found? Well, the answer to that question is a little harder to figure out than you might think. You see, PianoDisc systems are sometimes installed in the US and then shipped to other countries, so it's hard to know exactly where they end up. But, we do have a list of countries that have officially imported PianoDisc products. That list includes Australia, Austria, Belgium, Brazil, Canada, the Czech Republic, Denmark, Germany, Holland, Hong Kong, Indonesia, Italy, Malaysia, Malta, Mexico, Singapore, South Korea, Spain, Switzerland, Taiwan, Thailand, Turkey, the United Kingdom and of course, the U.S.A.

Happy Holidays from your PianoDisc Family!

Tech Gazette

Yamaha Piano Services January, 1994

We will miss him

In past issues of *Tech Gazette*, we've covered a host of topics relating to various facets of the piano industry. We've talked with you about new products, regulating procedures, customer relations, seminars and technical programs, and a variety of other things.

We've also done those cute little "personnel profile" pieces, where we introduced you to the people here on the Yamaha Piano Services team. That meant that whenever anyone joined our ranks, they could count on having a picture taken, and having someone jot down a few lines of background, interests, hobbies and whatnot.

But we find ourselves in a somewhat different position. And though we've never before had occasion to do this on the pages of *Tech Gazette*, we want to use this column space to bid a fond farewell to someone who's been a vital part of Piano Services for quite some time now.

Lloyd Whitcomb. To some of you, the name won't carry so much as a shadow of recognition. But if you've ever had Lloyd working with you to resolve a customer service problem, or if you've ever attended any of his classes at PTG conventions, you'll have an inkling of why we're sad to see him go.

Back in 1979, Lloyd first came to us, offering some much needed part-time help in our growing Piano Parts Department while taking care of his own piano service business.

It wasn't long before his technical and communication skills were recognized by management. He was given a desk with a telephone, and put those skills to good use as a Technical Service Representative.

That lasted about a year-and-a-half, and we hired him as a full-time employee in 1981.

Lloyd Whitcomb, our friend

It didn't end there. A few short years later, it was somehow discovered that Lloyd was quite comfortable in the teaching arena, and didn't at all mind being in front of a group of people. It was at that point that airports, rental cars and hotels began playing significant roles in Lloyd's professional life.

Word of his teaching ability spread through the technical community, and he soon became a household word on the PTG circuit. People tended to gravitate to his engaging, energetic style, coupled to his comfortable, folksy wit.

But now, Lloyd has decided to take a dramatically different direction. This new path, he says, heads back toward his homeland, in the foothills of the Ozarks. Lloyd tells us that he wants to live where they don't have traffic reports on the radio, and where people don't set their car alarms at self-service gas stations.

The way we see it, that alone would be suspect enough. What's even more frightening is his claim of wanting to establish his own independent piano service business in Northwest Arkansas, and actually working for a living — like you do.

For those of you who may be interested, Lloyd's new address and telephone number will appear in the new directory of the *Journal*.

And for the record, we want Lloyd to know that he'll be missed here in the halls of Yamaha, and we wish him well as he closes this chapter in his career, and opens a new one.

And by the way, if there is any question about Lloyd's future with the Yamaha team, we have no plans to play the game without him.

Yes, he'll be playing a new position, but still for the same team.