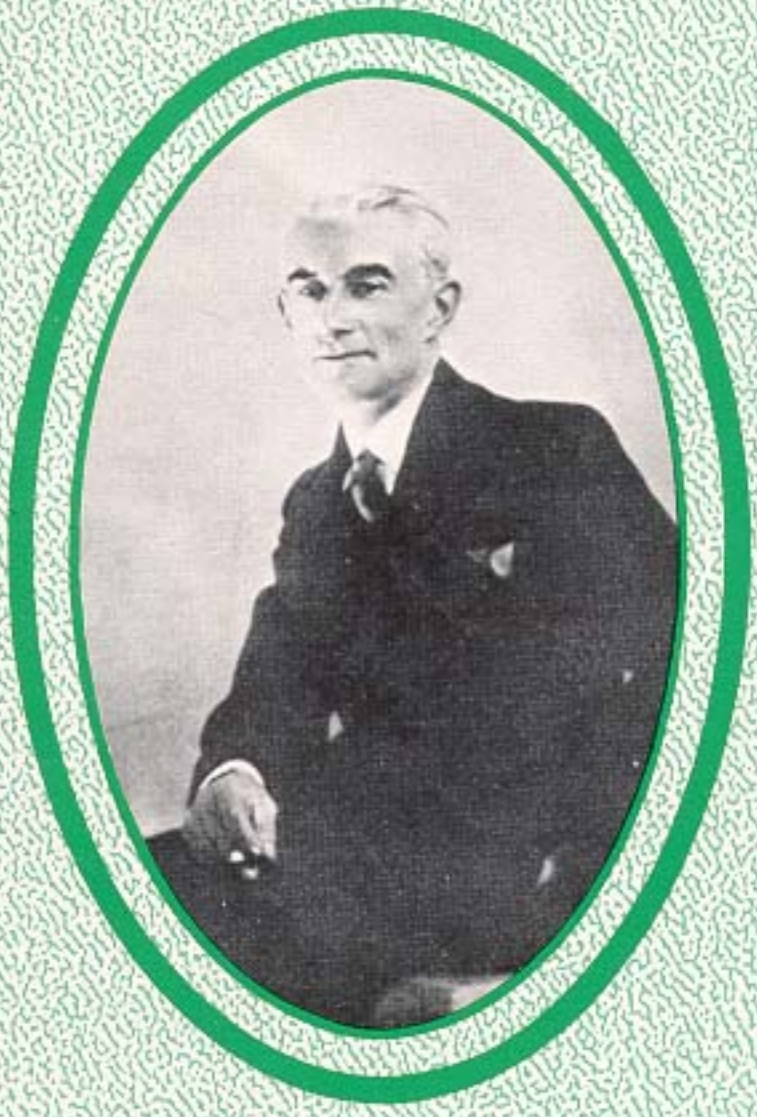
PIANO TECHNICIANS JOURNAL

November 1981



Maurice Ravel

A Man and His Piano

Philippe Entremont and Bösendorfer

The gleaming Bösendorfer piano by Kimball which has dazzled audiences with its beauty and magnificent singing qualities now accompanies the dazzling French virtuoso, Philippe Entremont. The piano that was built to match the unique artistry of Liszt now will enjoy the sensitive performances of Entremont and together will delight audiences throughout the world. But delighting audiences is not new for Bösendorfer, the choice of the masters, Wagner, Brahms and Strauss: neither is the exceptional standard of quality it sets. Bösendorfer today is still handcrafted by perfectionists in Vienna, Austria. The craftsman's skills are the integral part of the creation of Bösendorfer that separates this masterpiece from anything ordinary. Each mechanism takes over a year to complete. The lumber used on the pianos is seasoned outdoors from three to four years. The additional width of the Imperial Grand piano (it has nine additional keys), enables the entire lower range to have extraordinary resonance. The piano's exceptional singing capability allows each chord a clarity and distinctness throughout every performance, not usually associated with an ordinary Concert Grand. In a world of ordinary things, the Bösendorfer piano by Kimball stands out as an extraordinary achievement. If you would like to learn more about Kimball's Bösendorfer, contact James Birk, Kimball International, Inc., 1549 Royal St., Jasper, IN 47546.

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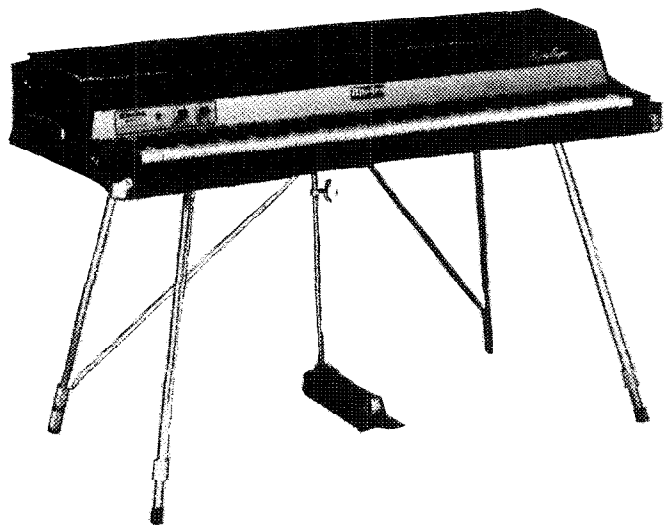
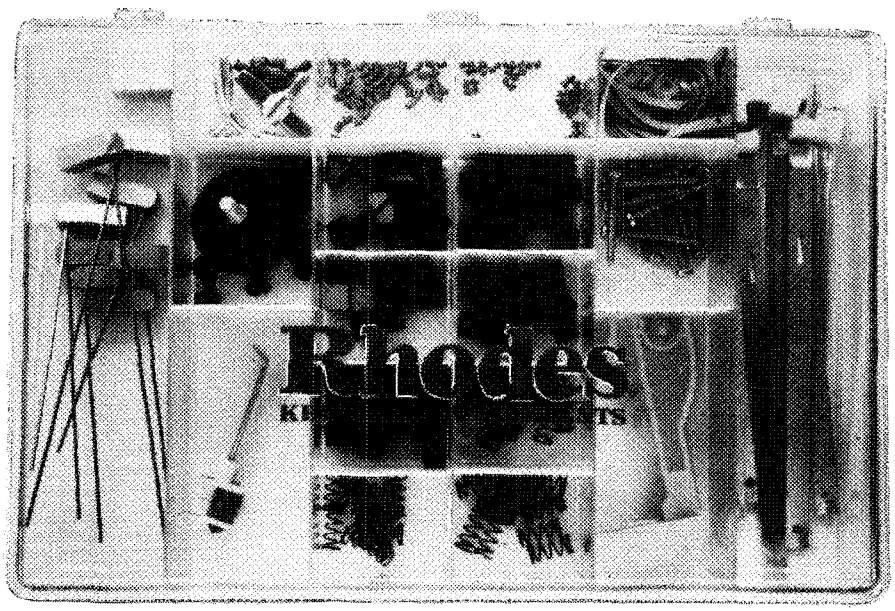


The Schaff Piano Supply Company has been chosen as a national distributor for Rhodes electronic piano replacement parts. We now have in stock the action parts and some major hardware items for both the new modular piano as well as the original model manufactured before June of 1975. By being a distributor, we can obtain any component from any model of Rhodes electronic piano at a substantial savings in cost and delivery time for our customers. We will be happy to send a Rhodes parts catalog and price list free of charge upon request.



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Piano Technicians Journal

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COVER . . . Of all the descriptions of French composer Maurice Ravel, probably the most widely known is that given by Stravinsky, "the most perfect of swiss clock makers". His expert craftsmanship and attention to detail sometimes belies the power and passion that lies beneath the surface of his music.

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EDITORIAL

Don L. Santy,
Executive Editor

Judging from the many comments, letters and news reports coming into the Home Office the San Francisco convention was "One of the very best." Granted, prices were a bit of a shock and the site was far from the majority of the membership but practically everybody thought it was "well worth it."

As in the past our National Convention was not only a refreshing and stimulating "tonic" mid-year (and vacation opportunity) but an intensive and highly professional learning experience as well. Most of all, however, it meant old friends getting together and strengthening bonds. Jess Cunningham came up to me and commented, "this is great, it's just like the old times."

Many members are curious as to how we select a convention site. Several years prior to the convention the Guild Vice President sends out invitations to all chapters in that region whose turn it is to host. Those that respond are contacted for information regarding facilities available in their area. A convention site selection committee consisting of the Vice President, the local RVP, the Executive Director and the local host chapter president then investigate the various sites that qualify. The hotel must have room for our Institute classes, space sufficient to move pianos in and out, at least 500 rooms available for housing, adequate banquet room for about 6 00 people, space for the Auxiliary, a proper layout for our blind members, room for our exhibits, reasonable prices, some incentive packages, air conditioning (because of our summer meetings), access to less expensive facilities for those on small incomes, etc., etc. We require certain guarantees in terms of service, limitations on prices, complimentary rooms, confirmations, etc.

Once the Site Selection Committee has all the information, completes negotiations with the hotel and decides on the place we should use, it is taken back to the Board of Directors for their final approval. Sometimes the committee suggests two facilities and leaves the final selection up to the combined wisdom of the Board. No one person makes the decision. As many as 12 Guild members take part in this process.

We recently investigated the possibility for using a college campus for our conventions in deference to those on limited incomes. Colleges, since they are publicly and tax supported can offer many conveniences for less money. We quickly found, however, that most of the housing is in college dormatories without air conditioning and with common-use bathrooms. Most of the people who support our conventions want better accommodations than that. We also discovered that most college campuses are "off the beaten path" and transportation would be difficult for people coming in by air. Facilities are spread out and class rooms and special programs would require lots of walking which could be a problem to the elderly and handicapped. Many other problems made it apparent that the use of college campuses would be impractical at this time and with the convention format we are now using.

Where does the local host chapter come in? They can be invaluable to the success of a convention. They help the Home Office by supplying registration personnel, assistance to the Institute Director and the chapter representative assigned to the convention. They also help in the planning of the convention and supply the entertainment. They coordinate the program for the opening ceremony, the main banquet and the closing luncheon along with the Home Office personnel. They help the Home Office staff with local arrangements and assist in many other ways. This enables us to save money on personnel, involve chapter membership in a stimulating and interesting enterprise and gives us the privilege of getting to know some very fine members "up close."

The local chapter is helped with their costs by being paid $600 prior to the convention and an additional 25¢ per registered after the convention. More often than not this does not cover their costs but it helps considerably. Much depends on how many services they are able to get "for free" from local drayage companies, etc.

Some of the problems your conventions will have to face in the future is the ever rising costs, the proliferation of smaller meetings and seminars being held around the country which tend to compete with them, particularly in terms of demands for instructors and now exhibitors, the requirements for special space and services, the length of time your convention requires, etc.

Nothing really takes the place of a NATIONAL CONVENTION. This is

where people from throughout the land can get together. It transcends local and regional opportunities and it brings the four borders together in one unified, productive, happy experience.

The members of the board go through an exhaustive two days of Board Sessions, two days of Council Sessions, another day of Board Session, numerous committee sessions, many business meetings, and still try to get time to visit with old friends and attend some classes. They are going "hell bent for leather" for 10 arduous days. This is the most grueling convention experience I have ever seen in the thirty years of Association Management I have been privileged to take part in and the dozens of organizations I have served.

The Home Office staff work| twelve to fifteen hour days. Employees get paid no overtime, they receive little time off to compensate, they are simply paid their usual and ordinary salaries and are happy to serve the Guild and look forward to your conventions. Because of employment security laws we have to use Executive personnel, relatives or friends under these circumstances.

PTG is most fortunate to have the completely dedicated service of some highly knowledgeable and professional people who act as your Institute Directors. Their job is formidable and demanding. Every Director I have had the pleasure to observe has done an outstanding job. This is truly the "top priority event" of your conventions and the "meat and potatoes" of your menu. Everything else is sheer dressing and desert, but none the less important to the overall experience.

Our twenty fifth anniversary convention next summer has many things going for it. A truly outstanding and active local chapter which is throwing itself into the job enthusiastically under the leadership of President Carlos Ralon and local host chairman Ruth Ann Jordan. Good prices at a fine hotel facility right down the street from every thing. A great "old timer" Institute Director is Wendal Eaton who is experienced and well organized. The site is "at the helm" in our "ship of state" the nations capital which will afford family units a truly outstanding educational experience as well as a vacation. We are gearing up for it now at the Home Office since it takes months of preparation and myraids of detail work to make it all come out right.

Plan on being there, you won't be sorry!

Reader Feedback

Dear Don,

It was indeed a privilege and a pleasure to have received a 'Man of Note' award at the banquet, San Francisco Convention. TO PTG MANY THANKS!

May I share in connection with the award, another experience with you. While on the way out of the banquet, proudly carrying my award, I was asked by a young gentleman, how such an award could be achieved? Guess I had to think a little fast, and upon a little hesitation I replied, "about twenty two or three years of National and Local Examinations, one of the first Private Tutors for National Conventions, Regional Vice President in my Region for two years, number of classes in Tuning Instruction in Regional and National Conventions, two terms as President in the Local Chapters, and being a Chartered Member of PTG. Become involved both locally and nationally in PTG and possibly your name will be in consideration for such an award."

THANKS AGAIN PTG. I WILL ALWAYS HOLD THIS AWARD IN HIGH ESTEEM.

Jack W. Sprinkle

PRESIDENT'S MESSAGE

Sid Stone, President

STRESS

One of the most popular topics these days in magazines, books, and lecture halls is the subject of STRESS — what it is — how it affects our lives — how to deal with it — how to live with it, etc.

Most of what is said about stress depicts it as an unwanted, an undesirable force in our lives. Stress can cause any number of illnesses; and if we do not know how to handle stress, we can become casualties of stress.

The PTG film, "Casualties of Stress", being a technical firm concerns itself with the devastating effects of stress: a cracked pinblock — loose tuning pins — separated bridges — all casualties of stress.

Continuing along the lines that stress may be a necessary evil, let us make a comparison between a piano and our bodies or our lives. The causes of stress in each case may be listed as:

(1) improper care, abuse, neglect
(2) outside influences
(3) old age and brittle parts

If a piano is not properly cared for; if it is neglected, i.e., not tuned for many years, the strings may break when being tuned. Likewise, if we do not take care of our bodies and our minds; if we neglect health and safety factors, we may well become casualties of life's stresses.

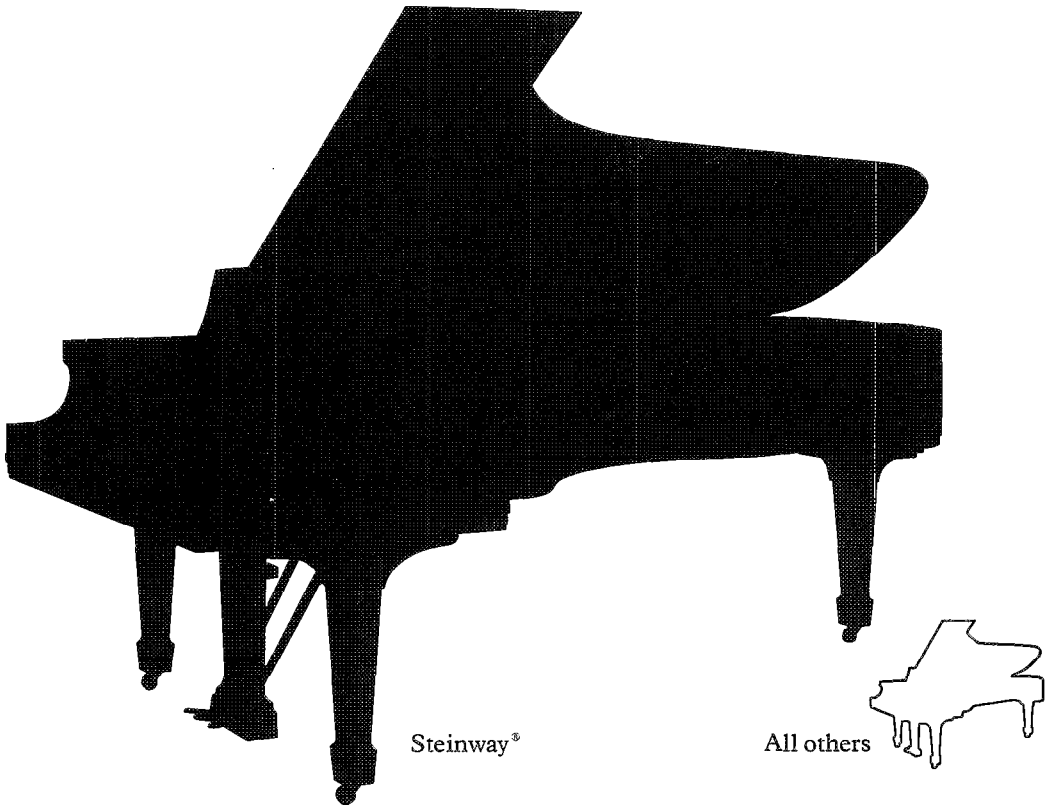
Outside influences on a piano such as extreme temperature and humidity changes can result in stress casualties. Likewise, if we allow other people to change our temperament in an extreme manner, we may not be able to handle the stress that follows.

A piano that is old may have brittle parts, and here is where stress often leads to casualty. The parts in our bodies likewise become brittle with age, and the older we get the more careful we must be in stressful situations.

However, stress is not all bad. In fact we can say that stress is GOOD. In a piano it is an absolute necessity. Imagine playing a piano without stress on the strings! Such a piano would be worthless as a musical instrument.

Is stress bad in our lives? No indeed! If everything came easy for us, we would not appreciate it. At the time of writing this President's Message the Stones are in the process of moving — and as you may well know such a time puts a strain on our lives. We also are selling our home and buying another — we are in the process of selling our store and buying another — we are making final preparations for our China trip in less than two weeks. Then there is my own business to take care of as well as the responsibility in PTG. It was these circumstances that prompted me to write this article on stress.

We can allow stress to overcome us, but if we can overcome stress, we are so much better off. Stress can be a bane or a blessing — a blow or a benefit. It is all up to us. We may need to remember that the stress in a piano is the reason for the production of beautiful music that enriches our own lives and the lives of those around us. The same can be true in our lives.



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Baltimore Symphony	Steinway 11	Others 1
Boston Symphony Orchestra	Steinway 4	Others 2
Chicago Symphony	Steinway 6	Others 1
Cincinnati Symphony Orchestra	Steinway 10	Others 0
Cleveland Orchestra	Steinway 15	Others 2
Dallas Symphony Orchestra	Steinway 8	Others 1
Denver Symphony Orchestra	Steinway 6	Others 3
Detroit Symphony Orchestra	Steinway 7	Others 5
Houston Symphony Orchestra	Steinway 10	Others 2
Indianapolis Symphony Orchestra	Steinway 6	Others 1
Los Angeles Philharmonic	Steinway 6	Others 0
Minnesota Orchestra	Steinway 9	Others 1
New York Philharmonic	Steinway 12	Others 3
Oklahoma Symphony Orchestra	Steinway 2	Others 0
Oregon Symphony Orchestra	Steinway 5	Others 0
Philadelphia Orchestra	Steinway 9	Others 2
Pittsburgh Symphony Orchestra	Steinway 9	Others 1
St. Louis Symphony	Steinway 6	Others 2
San Antonio Symphony	Steinway 5	Others 1
San Francisco Symphony	Steinway 12	Others 2
Seattle Symphony Orchestra	Steinway 2	Others 2
Tulsa Philharmonic	Steinway 2	Others 0
National Symphony of Washington, D.C.	Steinway 5	Others 1

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THE TECHNICAL FORUM

Jack Krefting, Technical Editor

One of our frequent contributors to the Forum, Carlos Eugenio Borges Cortes, has written again with what could be a very interesting opportunity --- or should we say adventure --- for a young tuner-technician who is willing to spend a year and a half or more in Brazil. That country is practically devoid of skilled technicians, especially those with training in concert preparation, voicing and fine tuning. He invites interested parties to write to hime at this address:

Rua Tobias do Amaral 103
Cosme Velho
Rio de Janeiro, 22241
Brasil

HAMMER BLOW VS. KEY DIP

Mr. Cortes offers an interesting technical question as well:

QUESTION: *"there has been a series of articles in PTG journal dealing with grand regulation, in which, among other very interesting considerations, the notion of dip versus blow distance priority is introduced. I would very much like to see in your Forum comments on the following considerations.*

"I've read in books a supposed "universal" dip measurement of 3/8" (7/16" for Steinways) nevertheless I believe the only way to know both dimensions is to consult the manufacturer. I took the trouble of writing to several of them asking for this information; among the ones I've written to, several answered me whereas others did not.

"From the answers I got I could verify these measurements to vary significantly. Since in repair work one is confronted with several different brands of pianos I had to establish a way of finding the original or at least consistent dip and blow distances.

"The key, whippen and hammer form, for practical purposes, a fixed relation leverage system (and I say for practical purposes because the relation can actually be slightly varied by prying for instance the knuckle position). As such if the total leverage relation is say 5:1 and if one fix the dip at say 10mm, the blow distance can not be different from 50mm as otherwise either there will be no after-touch if a longer distance is set for blow (the hammer will not be able to complete its full excursion) or the key will travel further from the point of after-touch finishing, if the distance is smaller than the 50 mm. If on the other way blow distance is fixed at say 1-7/8", the dip can not be different from .375". Since pianists can not care less what the blow distance in their pianos is and since the reduction in loudness resulting from a smaller than original blow distance is not easy to detect (or is it?). I am in favor of the dip priority once the original dimensions are unknown.

"In this respect I follow the instructions given by Bluthner in their service manual of fixing the dip (at 10.5 mm in the case of Bluthner) on all the keys of each section, setting the blow distance of the end keys in such a way that there is proper after-touch and setting the remaining keys' blow distance by the end keys!

"My usual choice for small to medium grands is for a dip of 9.5 mm (.374"), the distance of all German made Steinways except for models C and D. As a result I have obtained blow distances as small as 1 5/8" (Pleyels, Grotrian Steinwegs), indicating a leverage relation of 4.35:1. Is this a valid approach or there are serious flaws in it? Your comments would be appreciated." — C.E. Borges Cortes

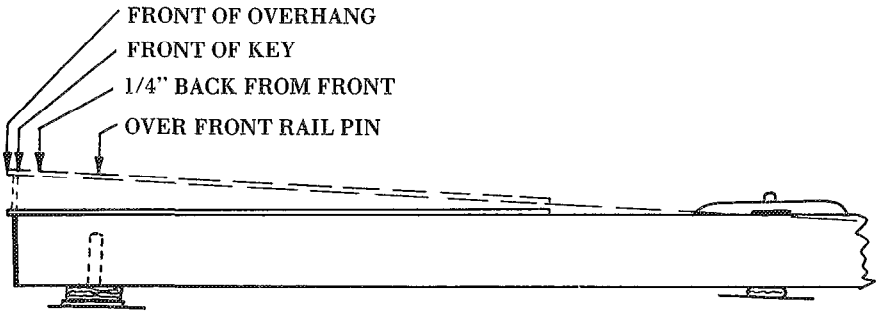


FIGURE 1

ANSWER: Key dip was discussed in some detail in this column in January 1981, and those who missed it might want to refer to that article, found on pp. 10-13. Briefly, however, we can state that specific values given (such as 3/8", .390, 7/16" or whatever) don't mean much when taken by themselves. The point along the length of the key where the measurement is made is as important as the

measurement itself, as illustrated in Fig. 1. Some makers may measure key travel at the front of the overhang, others at the front of the key, or 1/4" back from the front, or even over the front of the rail pin. The further toward the balance rail the measurement is made, the shallower the apparent key dip in terms of the value given. This is naturally exaggerated in pianos with short keys, but is present in every instrument.

The other factor to consider is the amount of pressure or weight on the key when the dip is measured. The front rail punching is compressible, and if undue pressure is applied when setting the dip, it will be shallow under normal playing conditions. The sharps are much more sensitive to this than the naturals because of the relatively small surface area of wood which touches the punching.

The ratio of 5:1 is a good general rule of thumb, but it assumes a 2:1 ratio in the keystick, which is not always the case. This ratio, more or less standard in the industry, specifies that the front half of the key be twice as long as the distance from the balance point to the capstan. If that ratio becomes greater, the dip will have to be increased to get the same amount of rise at the capstan, and the result will be a combination of greater key travel and lighter touch. Since we are working with a fixed leverage system, the reverse would also be true, all else being equal. As Cortes points out, the position of the knuckle with respect to the hammershank centerpin is also critical. If a technician substitutes parts which are even slightly different in the critical dimensions, a change in key travel or blow, or both, will be necessary for the action to even work, let alone perform properly.

Given a choice, I would prefer to set the dip at the specified value early in the process and worry about the blow distance later. Pianists will complain about many things, but the blow distance is not among them. While it is undeniable that a short blow results in some loss of power, it is also true that a wide letoff does the same thing with far greater annoyance to the pianist. A short blow may not be such a handicap after all when one considers the greater leverage which results at the key, a factor which may largely negate the power loss. Wide letoff, conversely, leaves the pianist with little control of the action at anything less than a *forte* level of sound.

I think the average pianist would prefer eveness to any other characteristic. If each note performs the same way, the artist can compensate for just about anything else. It may play like a truck, but at least it will be reliably deficient.

After eveness, I think the pianist would ask for control. Most of the nebulous feeling of control comes, I believe, at the very beginning and the very end of the key travel; in the beginning it is touch weight, and at the end it is accuracy of keyframe bedding, letoff and drop timing, and the amount of aftertouch. Damper timing and jack placement affect the touch during the stroke, sometimes rather dramatically, but I still say that the feel of the beginning and end of key travel is more important to the artist. If the balance rail studs are up in the air, or if there is no aftertouch at all, a complaint is virtually guaranteed.

I agree with Cortes that the hammerline should be adjusted after the dip is set at least on the naturals, and that the actual blow distance is relatively unimportant. Comments from our readers are invited.

SOUNDBOARD DESIGN

QUESTION: *"When making a soundboard using the cooker and humidity system a crown is introduced into the ribs resulting in tension across the rib top and compression on the underside, much like a piano hammer. Is this condition conducive to better tone because the ribs are more 'alive'?*

"Braid White, Travis, and John Bloch (in a past issue of PTJ) recognize the practice of sloping the ribs and then pressing the board to conform to rib curvature. It seems to me the opposite condition (probably to a lesser extent) occurs in that now the board wants the rib to conform to its normal flat state, i.e., the rib now has tension along the bottom surface and compression along the glued surface. Which method of construction is more popular or predictable?" — Nick Gravagne, Sandia Park, New Mexico

ANSWER: This is an excellent question, to which there is no simple answer; about all I can do with it is open a discussion on the topic and we will see where it goes.

First of all, it should be noted that whether the ribs are crowned or not, the board must be dried down before they are glued to it, otherwise the board would crack in the first dry season. Crowning of the ribs is, then, not representative of a totally different school of thought, but rather a small

deviation in construction technique. In some circles, rib crowning is considered a kind of insurance policy against loss of crown in dry circumstances; in others, it may represent a way to add flexibility to the edges of the soundboard assembly, particularly in designs which utilize full-length ribs which are notched into the rim. In effect, the ends of the ribs are thinned not only on the bottom, but very gradually along the top surface as well.

In both forms of construction, there would be tension at the top and compression at the bottom of the ribs, at least in normal humidity conditions. The downpressure of the strings, which can be as much as 2000 pounds in some pianos, would then have the tendency to reduce the tension and the compression in the ribs because it would push the rib back toward its original shape. Of course, there could be an instance where the ribs were radically crowned and the board not fully dried down; in dry weather such a design would conceivably have a positive crown on the board but a negative crown of the undersides of the ribs, which would produce the tension/compression reversal Nick is talking about. It would have to be very slight, though, or the ribs could not remain glued to their notches in the inner rim.

Either way, I don't think the tone would be affected simply by the location of tension and compression within the rib. After all, pianos have been made with reverse crown on the soundboard. It wasn't the most efficient design ever conceived, but it worked. And some of the old Julius Bauer grands had ribs both above and below the board, a design which requires a crown on the tops of the lower ribs and the reverse on the upper ones.

A solid spruce board is quite stiff along the grain, but very weak across it; the ribs not only distribute the vibration across the grain of the soundboard, but also stiffen it where it is weak. I don't believe, then, that the board would force the ribs to conform to its former flat state, because of the much greater stiffness of the ribs when placed across the grain of the board. On the contrary, if the board has been dried down before the ribs are glued to it, any amount of humidity in excess of the amount in the cooker will expand the board, bending the ribs to a higher crown.

There is a seeming paradox in the above statement. If the board can force the stiff ribs to bend upward into a crown, why can't it bend them the other way also? The answer is that when humidity is introduced to a board which has been dry, it has to expand, and does so with great force. It is prevented from expanding on the underside because the ribs are glued there, so it expands the only way it can. The top side swells, and the board bellies upward. On the other hand, there is no great force applied to the ribs when the moisture is removed; the board simply relaxes a bit from its swollen state, allowing the ribs to relax a bit from their bent state. The tone may actually improve during the dry season because the board is flatter and more flexible, assuming that there is sufficient bearing for transmission of vibration.

Both types of construction are popular, and there is even a hybrid which uses flat ribs and a bellied press; this could be considered another variation on the same theme. As to predictability, care in construction is the key. It is easier to control the processing than the materials, but close attention must be paid to both. If one board is dried to, say, four percent moisture content and the next one is dried only down to six, we can safely predict that the former will have a higher crown and be more resistant to cracking in dry weather, all else being equal. But, of course, all else is not equal, and never can be so long as we are working with natural materials such as wood. If the grain on even one plank of the first-board happens to be running at a 45° angle instead of straight up and down, and that piano goes into a humid environment, the combination of high crown and heavy downbearing can produce compression ridges which will cause the board to crack within six months. The processing may have been excellent, but the materials were deficient.

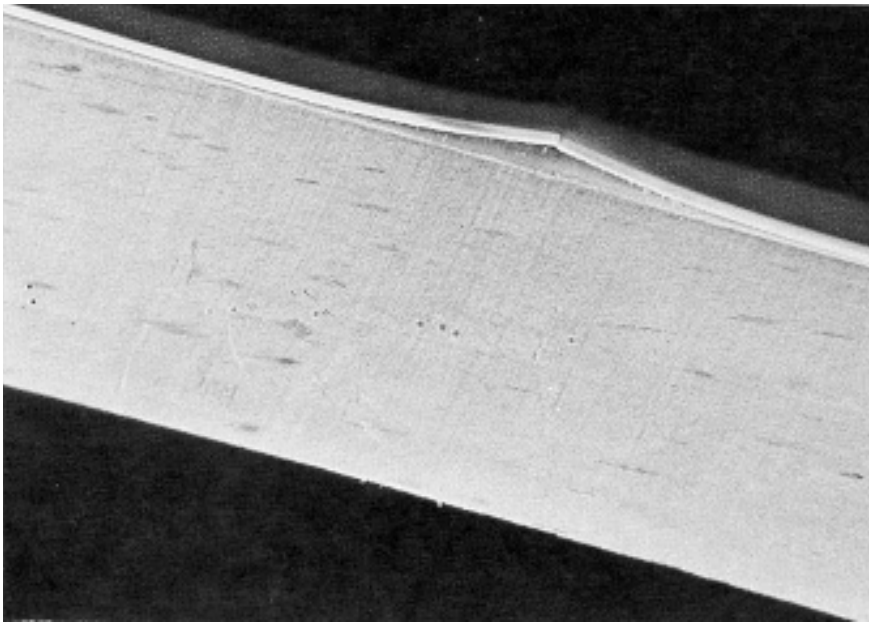


PHOTO 2

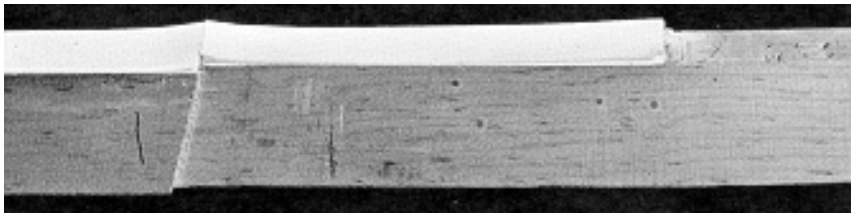


PHOTO 1

FIRE DAMAGE TO KEYTOPS

QUESTION: *"There have been various arguments as to whether or not wood will shrink lengthwise to the grain. Perhaps you might be able to dream up a bit on the subject with the help of the enclosed pictures* (see photos 1 and 2...JK). *There was a fire in the home where this key came from. Little or no water reached the piano*

but it sure was damp there. After the keys and the instrument dried out well I recovered all of the keys, which was necessary..." — Errol P. Crowl, Athol, Massachusetts

ANSWER: I don't think the damage was caused by expansion or contraction of the wood. We know that, except for the small area in the very center of the tree, wood does not change dimensionally along its length whether it is on fire or waterlogged. It will change quite a bit in width and thickness, as shown in **Figure 2**, but not in length. The biggest change is along the annual rings, and the next is across them; the ratio is approximately 9:5 respectively.

The moisture that reached the piano could have weakened the glue joint between the keytop and the keystick, but these photos indicate expansion of the plastic key covering. This expansion was most likely caused by the heat of the fire, not by the moisture introduced when the firemen arrived. The direction of the cracks indicate stress relief and serious deformation of the key covering rather than shrinkage of the wood, in my opinion.

HAMMER CHECKING IN VERTICALS

QUESTION: *"I have an old Ellington upright in my clientele which is in good shape. The tone is very good, and the pinblock is fine. It is regulated to specs, the jacks are escaping, the action is free, dip is correct, and there is no bobbling of hammers. The only problem is that the hammers won't check on a soft blow. Are the springs too weak?"* — Robert Dommer, Eau Claire, Wisconsin

ANSWER: Vertical pianos are designed on a spring/rebound principle, relying much less on gravity than grands. Many of them, including this Ellington, were designed to lean forward at a very slight angle -- not enough to be noticeable to the eye, but a measureable amount. This design feature was primarily one of safety, because the back is by far the heaviest part, and the designer didn't want the instrument to tip over if someone were to lean against it; but it also helps the action to return to its rest position after a soft blow when there is minimal assistance from the rebound factor. If the back casters are missing and someone has replaced them with wooden blocks, the piano might well be tilting back rather than forward as designed. I would also check the floor to be sure it is level, and add caster cups on the rear casters if necessary.

It is possible that the hammer return springs are weak, but it is more likely that they are bearing against gummy grooves or at a point too low on the butts to be effective. Raising the spring rail increases the effectiveness of the springs because the point of application is further from the centerpins. This also increases touch weight somewhat, so a compromise may be necessary. In any event, the springs must bear on the pads if the action is so equipped, or ride in the grooves if pads are not present. A major change in the position of the spring rail is rarely indicated.

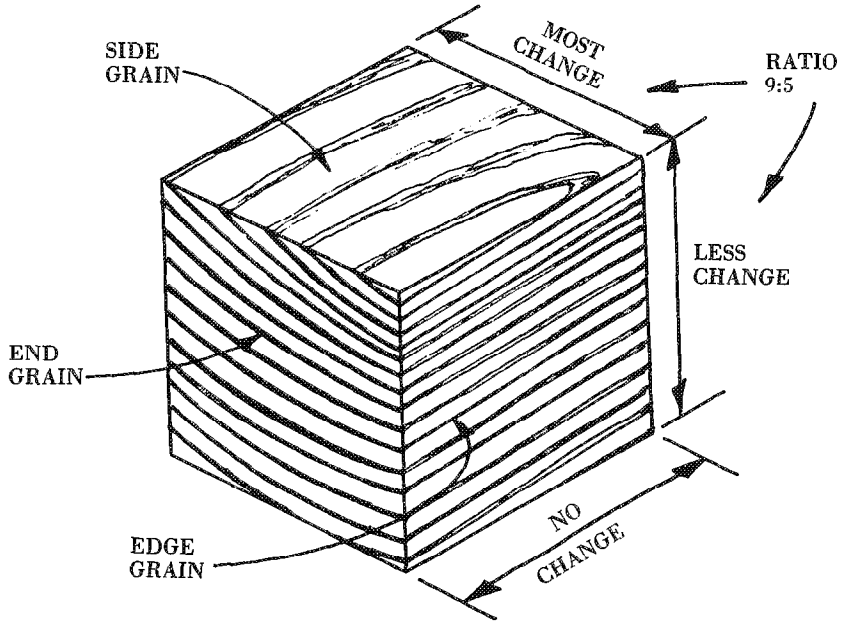


FIGURE 2

TECH TIPS

The following three useful tips are reprinted from the newsletter of the San Francisco Chapter, "In Tune", edited by Rhys McKay:

1. Usually when you buy an assortment of leather scraps, there are some which are too thick and stiff for most piano work. This thick leather is excellent for use as pads to protect wood surfaces when you clamp them. Often they are easier to handle than the small blocks of wood often used for this purpose.

2. Don't set planes down on a shelf with the blade down (i.e. in the normal use position). This puts all the weight of the plane on the cutting edge and contributes to dullness. Also, the shoe or bottom of a plane should be level and square, withough hollows and ridges. Don't assume that the surface is true just because the plane is new -- it's worth a quick check with a straight edge.

3. If you are using a liquid applied to a rag (for cleaning, polishing, etc.) and need to moisten the rag frequently but don't want the fumes from an open container, try this: punch a small hole in the lid of a 35 mm film "can" (they're plastic) and fill the can with the Renuzit or whatever. This can is small and easy to grab and shake out a few drops but won't spill (much) if you knock it over, and evaporation is kept to a minimum.

TIP OF THE MONTH

The best idea this month comes from T. Scott Welton of Bethel, Conneticut. The reader may refer to Figures 3 and 4 which illustrate the text of Scotty's letter:

Dear Jack:

"Referring to Paul Bergan's suggestion to use "T" nuts to repair stripped out screws in bottom boards, I have been using a metal insert which screws into the bottom board from the top side, which eliminates the problem of tilting a piano to get a "T" nut in place. In the case of a pedal bracket problem, simply remove the bracket first. The old holes are waiting for you to enlarge them with a ¼" drill bit. Screw in an insert with a screwdriver and reinstall the bracket using an 8/32 flat head machine bolt of appropriate length (usually ¾"). The inserts hold in the wood extremely well due to the "knife edge" threads around their circumference. They come in three sizes. The larger size works well with resetting lyres and leg plates.

Available from Brookstone, 127 Vose Farm Road, Peterborough, New Hampshire 03458." — T. Scott Welton

Our thanks to Scotty for this excellent idea. Incidentally, Brookstone literature suggests the use of varnish as a lubricant when installing these inserts, and that for greater pullout strength they should be installed 1/16" to 1/8" below the surface. The only disadvantage I can see regarding the inserts is their cost --- about 30¢ each for the smallest size. There are three sizes available, and an assortment of 18 inserts sells for $7.25.

IN CONCLUSION

We have had an excellent response to our July issue request for readers to send in their favorite temperaments, and will begin publishing them in the coming issues, along with a new series on tuning by Carl Root. This will be more advanced than Paul Monroe's series, so we trust there will be something for everyone in every issue --- at least, that is our goal. If you would like to contribute material for publication, whether it be a question, comment or article of a technical nature, please send it to me at 1801 Gilbert Avenue, Cincinnati, OH 45202.

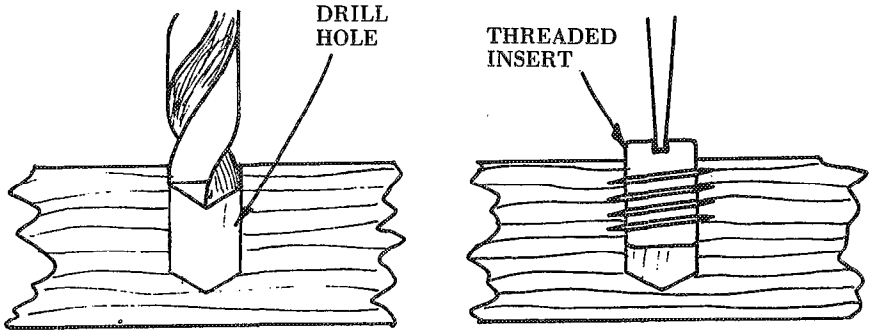


FIGURE 3

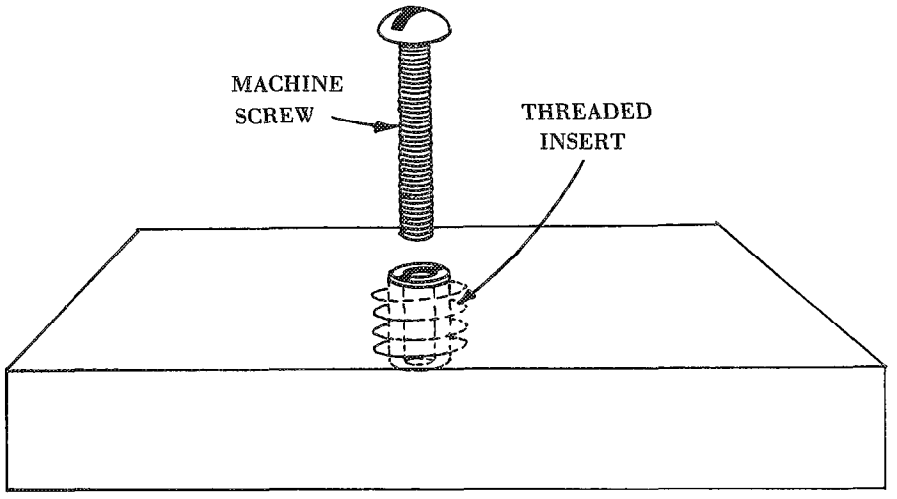


FIGURE 4

Membership Is The Life Blood Of An Organization

Continual growth of this membership is absolutely imperative to the success of this organization! Let us all take part in - and look forward to - attaining the goal of the greatest increase in membership in this, the 25th year of the Piano Technicians Guild.

Getting back in the saddle (so to speak), in San Francisco, was a wonder-trip for me down "memory lane". I have been on a "joy ride" on the membership recruitment train of PTG for many years and particularly in helping new chapters get started and old chapters renew their spirit.

Once again I have been given a chance to ride the "joy wagon". It is with great pride and a sense of commitment that I join it on its way to Washington D.C. next July. It is my fervent hope that we will arrive with our eyes on the capital dome with the greatest number of qualified recruits we have ever had the privilege of joining our ranks.

What can you do to help? Get together with a failing chapter NOW and help to get it back on its feet. When you hear of individual doing some good work for the Guild, contact that person; send a note of appreciation. There isn't nearly enough of those type of positive responses for a job well done. When a newly elected slate of officers comes to office, congratulate them, show your support. They are taking on a tough job. Encourage and motivate them, it all adds up to helping the Guild and our chosen trade.

Give aspiring technicians encouragement when they contact your local chapters for information and technical knowledge regarding the trade. This is an excellent source for membership. Include them in mailing notices for chapter meetings and provide good technical sessions when they do arrive for these meetings. Most of all, show them the friendship and camaraderie of the Guild. Get them involved!

Listening to our Regional Vice Presidents at the San Francisco Convention this past July was a pleasure and truly another trip down "memory lane". Whether they knew it or not, they represent the begining of future leadership for the Guild. These men are not just title holders. They are membership chairmen for their respective regions and a vital part of our organization.

Regardless of where you sit, from the President's chair to the newest recruit - YOU - represent the Piano Technicians Guild. Use that representation to bring those on the outside in, to allow them to be a part of, and contribute to, our 25th successful year as the Piano Technicians Guild.

Jess Cunningham

Know Your Officers

By Ernie Preuitt
Vice President

On one cold, early morning in January, 1911, a beautiful red-headed baby boy was born to Mr. and Mrs. Cleve Preuitt in Higginsville, Missouri. This signalled the beginning of life of "yours truly," Ernie Preuitt, whom you have recently honored as your vice president.

From that time on, I was privileged to spend an enjoyable youth with fine parents, wonderful siblings and many friends and relatives. The subsequent years brought a good marriage that produced four children, unfortunately ending in divorce after 22 years. My second marriage (to Lu) is still going strong after 27 years. I tried various careers during that time, from a foreman in a metal fabricating manufacturing company, to a musician and finally a Piano Technician.

Music entered my life at an early age by imitating my father on the drums. Sixth grade introduced me to the French Horn and seventh to the violin. In the eighth grade, I graduated to the trumpet which stayed with me for years, even making me a few dollars at dances and such.

In high school, I majored in music, athletics and girls, not necessarily in that order. At that age and mentality, I really didn't care less which came first, just so long as algebra, english and history didn't interfere with my pursuits.

After I ended my first career as foreman of the metal fabricating plant, I spent my time hanging around a friends piano store. One day he asked me, "Why don't you learn piano tuning?" My initial reaction was amusement and in passing mentioned it to Lu, who surprised me with, "Why not? I think it's a great idea!"

Well, I took her up on it and started training with accomplished technicians for well over a year. Once, which reading Alfred E. Howe's book, I came across a paragraph stating "and join the Piano Technicians Guild." I wrote to the Home Office and in my prompt reply from Aleen Polard, among other things, was information regarding a mid-winter convention in Wichita, Kansas. I attended in January of 1963 and found myself being examined by Jim Daw, Walter Boshart, and Chuck Burbach. I shall always be grateful for their leniency.

In July of 1963, I hopped a bus for New York with a borrowed fifty dollars to attend the big summer convention of the Guild. It was an impressive and wonderful trip for me. The next year, I took Lu to Houston and haven't missed one since. Due to the knowledge and skill I have gained from attending these conventions, my standard of living has improved so much I no longer need to borrow to attend them.

My church activities have been a real inspiration to me. I have served as Deacon, Elder and I had a mortgage burning ceremony as chairman of the board. Now I get my inspiration as a member of the choir and serving on the budget committee of the "area wide" church.

One of the great pleasures of my life is horticulture. I have been honored to hold several offices in the American Rose Society, Greater Kansas City Rose Council and Greater Kansas City Men's Garden Club. I'm also involved with the Shrine and I currently play in the Shrine band and with a six-piece Polka band, and I'm not even Polish!

My most enriching experience of all has been my affiliation with the Piano Technicians Guild and its wonderful members. Lu's eleven years as Editor of the Auxiliary page of the Journal and her year as Auxiliary President has been a source of great pride for me.

Now after six years of the headache/pleasure/responsibilities of Central West Regional Vice-President, I find myself sitting in the chair of Vice President. I shall carry out my duties and responsibilities to the best of my abilities and I sincerely hope and pray that the Preuitts will be with the Guild in the many years ahead.

SOUND BACKGROUND

EARLY GREEK MUSIC AND SCALES

Jack Greenfield
Chicago Chapter

USE OF MUSICAL INSTRUMENTS

Although music had been performed by ensembles of instruments in Mesopotamia and Egypt, in ancient Greece during the Homeric period (ninth century B.C.) musical instruments had a secondary role being used mainly to provide accompaniment for vocal music or dancing. Professional bards sang the epic poetry of Homer and others while playing a prelude and interludes on the kithara to set pitch and provide breaks between verses. Vocal choruses sang hymns in temples or at weddings, funerals, and civic occasions, accompanied by professional musicians playing the kithara or aulos or both. These instruments were also played for folk dancing or at athletic events.

TETRACHORD TUNING

The earliest Greek melodies were very simple compositions containing a few different notes lying within the range of a fourth. One of the earliest specific tunings mentioned in Greek history is the seventh century B.C. trichord of Olympus represented by: E-F-A. Other tuning series were developed including four notes. In each, the outer notes were a pure fourth apart but the tuning of the inside notes varied. The main types of tetrachord tuning are represented as:

Diatonic:	E-F-G-A
Chromatic:	E-F-F#-A
Enharmonic:	E-E(¼ tone#)-F-A

OCTAVE TUNING

The range of composition was expanded to an octave by combining two series of notes each spanning a fourth. The earliest octave tuning of the lyre in Greek history down to the time of the mythical Orpheus can be represented as (E-A)-(B-E), two open fourths separated by a whole tone. Terpander, a musician-poet of the seventh century B.C. noted for his work in the development of Greek music which included increasing the number of kithara strings to seven, tuned an octave scale composed of a tetrachord and trichord represented as (E-F-G-A)-(B-D-E). The complete octave scale of Olympus, which he is said to have introduced from Asia is represented by B-C-E-F-A-(B). Olympus' tuning was used for the aulos. The combining of tetrachords or smaller groups, separated by a whole tone, to span an octave was known as disjunction. Linking the groups by a common note, for example E in the scale of Olympus, was known as *conjunction.*

SIXTH CENTURY B.C. GREEK MUSIC

Although octave tuning as illustrated by the preceding examples was known, composition was generally conservative remaining within a smaller range. Pythagoras work on tuning intervals helped advance the use of ocatave scales. The kithara was now expanded to eight strings and it and the aulos came into greater use as solo instruments.

PYTHAGORAS-BIOGRAPHICAL SUMMARY

Pythagoras lived at a time when Greek culture was transmitted orally. Details on his life and teachings were passed on by the spoken word for several centuries before they were written down by later Greek scholars. As a consequence, there are discrepancies, vagueness, and questionable statements in the accounts by different Greek writers. He was born during the first or second quarter of the 500's B.C. Historians differ on whether he was born in Samos, an eastern Greek island just off the coast of Asia Minor, but agree that he spent his early life there. There is disagreement on whether he migrated directly when a young man to Croton, a Greek city on the east side of the bottom of the Italian peninsula or after he spent many years travelling. One historical account states that Pythagoras spent twenty-two years in Egypt, twelve years in Babylon, and then wandered through Greece before coming to Croton.

Even though the Egyptian and Babylonian dynasties were in the final stages of political and cultural decline, their culture was greatly admired by the Greeks. The Persians conquered Babylon in 539 B.C. and Egypt in 525 B.C. Regardless of whether or not he did visit the areas, Pythagoras had acquired a thorough knowledge of their astronomy, mathematics and music as well as esoteric religious beliefs before starting his work at Croton.

Pythagoras organized a monastic brotherhood or cult whose members came from aristocratic backgrounds. His disciples followed a rigid ascetic discipline.

PYTHAGORAS' STUDIES OF TUNING

The philosophy of Pythagoras was a combination of natural science, mathematics and religion. Pythagoras' foremost interest was mathematics. He attributed great powers and mystical influences to numbers and believed these were transmitted to music through the numerical relationships of musical tones. He investigated the mathematics of intervals with the monochord. This instrument which he invented, consisted of a stretched string over a scaled sounding board.

Continued on page 31

After Touch

David Pitsch
Utah Valley Chapter

50 Point Guide To Grand Regulation Part XIV Nov. 81

33) Let-off continued

Previously discussed were the regulation steps that affect the point of let-off, namely the jack alignment to the knuckle and the raising or lowering of the whippen either through altering the key height or by turning the capstan. The amount that these changes would affect the point of let-off is marginal. It is far more important to realize that regulating the let-off affects other steps more than the other steps affect it.

The two steps which are affected by regulating the let-off are dip and drop. Remember that in this discussion dip includes aftertouch. Looking first at how let-off affects drop, let us define drop as the amount of downward movement that the hammer has after the point of let-off. Keep in mind that the regulator has to move the key downward very slowly in order to see this drop of the hammer. During normal playing, this drop as such would not be visible, as the hammer would just rebound from the string into check.

If a graph were drawn to show the movements of the hammer versus the slow, downward movement of the key by the technician, the amount of drop and how it is affected by the let-off becomes clear. Such a graph was first shown to me at the Yamaha "Little Red Schoolhouse". In all of the graphs shown, the key dip is set to a specific measurement which will not be changed. In **figure 1** the hammer travels upwards from the point of rest and lets-off (marked "A") at 1/8" from the string. The hammer then drops away from the string let's say another 1/8" (marked "B"), and then rises back up yet another 1/8" (marked "C"). This last upward movement of the hammer coincides with a small downward movement of the key which we will define as aftertouch.

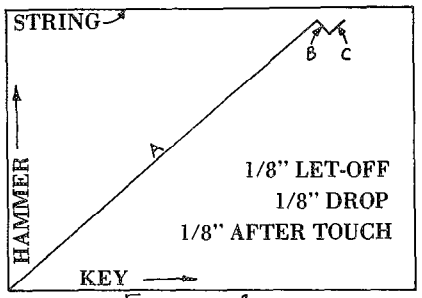


FIGURE 1

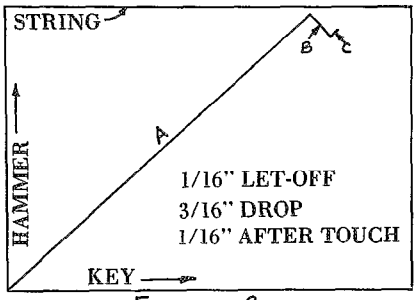
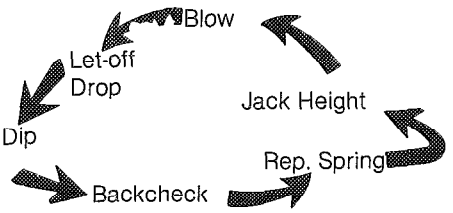


FIGURE 2

Figure 2 illustrates what happens when the hammer lets-off closer to the string, all of the other regulation steps staying unaltered. The point of let-off has changed to 1/16" from the string, the drop increases to about 3/16", and the aftertouch decreases to about 1/2" of what it was in **figure 1.** The aftertouch decreases because it took more key dip to raise the hammer to a higher point of let-off, and it took a fraction more dip for the hammer to drop the farther distance compared to **figure 1.** The pianist will complain that the piano now "plays hard" since there is insufficient aftertouch. The action also feels a bit sloppy because of the excessive drop. He might even notice that when playing very lightly the hammers have a tendency to "bubble".

Figure 3 tells what changes happen when the let-off is too far from the string. Here the point of let-off is 3/16" from the string. The drop now decreases to about 1/16" and the aftertouch increases to about 1-1/2 times as much as in **Figure 1.** The aftertouch increases here for the same reasons why it decreased in **Figure 2.** It took less dip to raise the hammer to the point of let-off, and less dip for the hammer to drop the smaller distance. In this case the pianist will complain that the keys feel spongy, as there is too much aftertouch. I doubt that he would complain of too little drop, as he would not normally be able to feel it. The complaint may be heard of slower repetition.

As can be seen from these graphs, a change in the point of let-off can really affect another regulation step. I will explain now why it is important to know that almost nothing affects let-off while let-off definitely affects drop and especially the aftertouch portion of the key dip. Remember the circle of five steps? By adding let-off and drop to this circle all seven main steps of section IV The Touch portion of our 50 point checklist are shown in their relationships to each other.



If it were your job to regulate an old action that had just had new hammers/shanks/flanges installed, where would you start regulating on this circle? Let us assume that some years

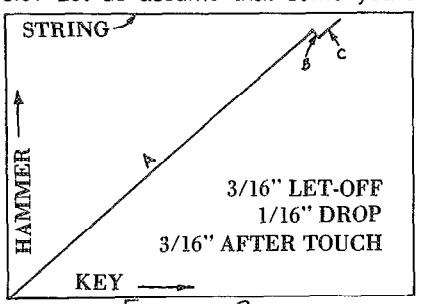


FIGURE 3

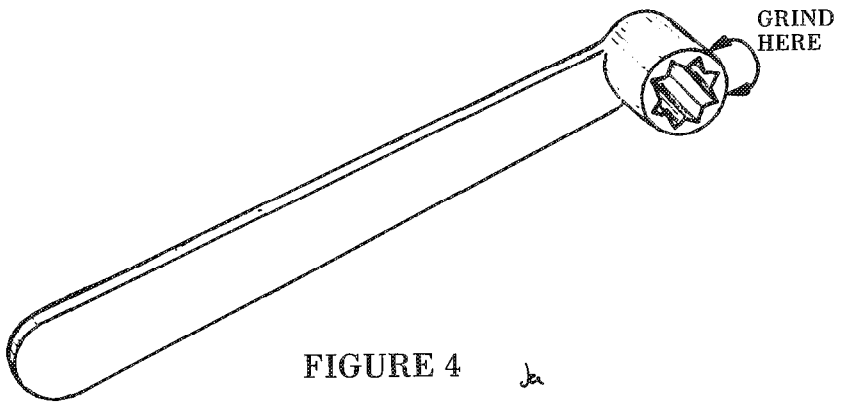


FIGURE 4

previous this action had been regulated to compensate for the wear which had then taken place. It is reasonable to expect that the capstans, let-off buttons, and drop screws had all been tuned up. Now with new hammers and knuckles these screws would be too high. The hammer line is too high as well as uneven. Because the escapement is set too high most of the hammers block upon the strings, or with the action out of the piano, the hammers "bubble" on top of the jacks.

The repetition springs are also weak from hours of playing. You could start regulating by setting the hammer line back down to about the correct blow distance, but you can not even begin to set it perfect since the repetition springs are weak. The springs can not be strengthened yet since the backchecks are out of regulation. The backchecks can not be set because the escapement is so high the hammers will not go into check, but rather "bubble" on top of the jacks. The dip could be set with a dip block, but correct aftertouch could not be proved out. So, what do you do?

I would suggest that in such circumstances, once the key height has been established, the place to begin is with the escapement. Yes, that is right! Let-off and drop can, indeed sometimes must, be set first. It has already been stated that changes in the capstan and jack alignment minutely affect the point of let-off. The only step which affects drop is let-off. So by regulating the let-off and drop first and then continuing through this circle of seven steps, a very accurate regulation can be made almost the first time through. I realize that if you are used to regulating the backchecks last that this method may seem a little strange. However, it is the only way out of the maze.

When turning the let-off screw, check to make sure that the drop screw is down far enough in order to see the hammer let-off. Otherwise the hammer will continue to rise right past the point of let-off if the drop screw is up too high. Since regulating the let-off must always be done in the piano, double check your work previously completed. As the hammer is seen to rise against the string, recheck the hammer to string alignment. When looking under the pinblock inside the action as you turn the let-off screw, recheck the jack tender to let-off button alignment. After a while rechecking your work in this manner becomes second nature.

If you are wondering what special tool is used to set the let-off with the action inside the piano, take a Mason & Hamlin screw stringer tuning lever (still available through all supply houses) and grind the tip so that it fits well between the let-off screw and the let-off rail (see figure 4). This is of course the tool used on regulating screws as found for example on Steinways. On pianos with let-off dowels, use a special tool made to fit the hole in the dowel. Yamaha for example sells a tool made to fit the holes in their dowels. A regular capstan tool will not work unless the tip is ground down to make it smaller in diameter. I once purchased a ratchet-type Mason & Hamlin let-off tool which was supposed to make it easier to set the let-off screw where you wanted it without having to keep taking the normal tool off the regulating screw. I tried this new invention, but quickly went back to the original tool, as it is faster for me to use.

Continued next month.

A Half Century Of Progress

by Virgil E. Smith
M. Mus. & RTT.
Chicago Chapter

I recently took the new PTG tuning exam, and I must admit, not without considerable apprehension. It's scary putting your reputation on the line in that situation. I must say that I am most impressed with the exam. I found it very thorough, most fair, and capable of evaluating any tuning when properly administered. I would highly recommend that every craftsman member take the exam if at all possible. It will help him/her to know just how he/she stands in the tuning world. It may well be that this tuning exam may prove to be the crowning achievement in the Guild's program to raise tuning standards.

By 1982 I will have been tuning pianos for fifty years, and it has been most interesting to see the strides that have been made in that time in the understanding of what is involved in expert piano tuning. Of course PTG has been the principle factor in this dramatic development. How fascinating to think back over these years and recall the various steps in that development.

I had a good tuning teacher. He was the best tuner in the area for miles around. He taught an F to F temperament starting with C and tuning around the circle of 5ths, leaving a slight beat in each interval---no reference to the relative speed of the 4th and 5th, just a slight beat in each so that the last interval wouldn't be a bad one. There was some concern for a smooth progression of 3rds, but no checks or procedures for achieving such a progression other than trial and error. Once past the temperament everything was strictly beatless octave and unison tuning, nothing about octave checks or octave stretching. Somehow, with these limited guidelines and a lot of hard work we managed to come up with acceptable tunings. I can still remember often working an hour on temperament that refused to work out, only to finally discover that that beautiful slow beat in the F 5th was from an expanded rather than contracted 5th.

As we became more aware of the importance of an even progression of 3rds in the temperament we also became more aware of the limitations of the 4th 5th temperament. The real problem with the temperament was that one had to tune through almost the entire temperament before he/she knew whether the 3rds would work out or not, and if they didn't it meant starting over again adjusting every 4th or 5th either faster or slower until the 3rds would even out. This led to much experiment with other temperaments, the most significant contribution being the temperament with the three "stacked" 3rds within the octave. This temperament became very popular and is still used by many tuners as it was simple to learn, and it made it much easier to achieve a smooth progression of 3rds.

The beat-speed tables that appeared in Dr. White's and other text books on tuning was the next factor to influence our tuning. These tables listed the exact frequency for each note, and the number of beats each interval should be altered to produce equal temperament. There was no questioning the validity of these tables, this was mathematics, and it couldn't be wrong. Consequently, these charts became the absolute authority for tuners who began to use their watches and other devices to tune the F 5th at 3 beats in 5 seconds, and other intervals accordingly.

These tables opened doors that made possible many advances in the understanding of the tuning process, even though years later we were to realize that they were based on a pure 1:2 octave, and therefore could not be applied to piano tuning without some modification. The beat tables provided the first hint that many of us had that the 4ths and 5ths should not beat at the same speed, but rather the 4th should beat faster than the 5th with a common top or bottom note. What a difference in the sound of the piano when tuned with the 4th faster than the 5th throughout. I can still remember tuning a Steinway B this way for the first time for a musician colleague of mine for whom I tuned regularly. The difference in sound was too great for him to accept at first, so he asked me to tune it half way between the two ways the next time. Today he accepts without any difficulty a tuning in which there is even a greater difference in beat-speed between the 4th and 5th.

The use of beat tables as an aid to better tuning soon led to the era of beat countings. Tuners turned to all sorts of gadgetry to enable them to measure and arrive at exact beat

speeds: metronomes, stop-watches, swinging pendulums, and various phrases such as, "From Mil-wau-kee to Chi-ca-go" (8 bps.), and "From Mil-wau-kee to Ber-lin", (7 bps.). The era is not over yet as some are still inventing electronic devices to accurately measure beat speeds.

Another result of the beat charts was that the 4th 5th temperament became practical again. It was no longer necessary to tune almost the entire temperament before knowing if the speed of the 4ths and 5ths would produce an acceptable progression of 3rds. All we had to do now was tune F3 to C4 at 3 beats in 5 seconds, the F3 to B flat 3 4th to 1 beat per second, the F3 to A3 3rd at 7 bps., and everything would fall right in place, so we thought. It was many years later before we realized why it often didn't. It was now possible to tune an F to F temperament beginning with A rather than C. Greater flexibility was also possible with other temperaments as to starting point and range.

Probably the greatest and most lasting benefit from the beat tables was the elaborate check system that became possible by comparing beat speeds. We now had at least one, and often several, tuning checks to check out and verify each tuning step. These checks included intervals that beat the same speed, such as the lower 4th and its inversion the upper 5th within the octave, the lower minor 3rd and its inversion the upper major 6th within the octave, the 3rd 10th and 10th 17th octave tests, the major 6th and major 3rd when the bottom note of the 3rd was a step higher than the bottom note of the 6th, the minor 3rd and major 3rd when the bottom note of the major 3rd was a step higher than the top note of the minor 3rd. Other checks included the 3rd 6th test for checking the 4th, and the minor 3rd major 3rd or the major 6th 10th tests for checking the 5th. These checks are still useful today although they generally must be modified slightly because of inharmonicity. Also involved in checking tuning are the ascending and descending beat patterns of any given interval, gradually increasing in speed as it ascends, and gradually decreasing in speed as it descends. This new awareness of beat-speed progressions soon divided tuners into two camps: those who gave octave tuning priority, and those who gave consistent beat progressions priority. In tuning away from the temperament it often became necessary to choose between a smooth beat progression or a beatless octave. This was a frustrating decision to have to make, so what a great day it was when we learned to tune accurate enough temperaments that would allow us to have consistent beat progressions and clear beatless octaves.

By this time the term "inharmonicity" was being tossed about rather freely wherever tuners got together to discuss tuning, but it took several years for us to recognize the full significance of the phenomenon. It helped us to understand the necessity for tuning the upper octaves sharp, and later for tuning the bass octaves flat. Each one had a point in upper octave tuning, usually about two octaves from the top, where we would begin stretching octaves. Some of us found it necessary to tune beats in the upper octaves in order to avoid the tops of arpeggios sounding flat. At this point in time it was still considered impossible to tune the upper notes so that they were beatless with both the single and double octave. Inharmonicity did help explain the discrepancy between aural tuning and early electronic tuning which dealt only with the fundamental pitches.

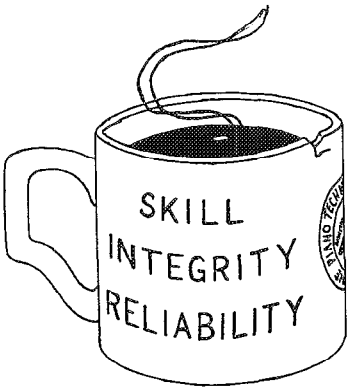
It finally penetrated our thick skulls that inharmonicity did not only affect the extreme treble and extreme bass tuning, but was a factor in every aspect of tuning, even the temperament. This realization had many ramifications. Probably the most significant was that a correctly tuned temperament octave would not be a pure 1:2 octave, but a stretched octave, and a natural result of a stretched temperament octave would be a slight stretching of every interval within the temperament octave. Since the beat speed tables in the various text books were mathematically computed from the premise of a 1:2 octave, they do not really apply to piano tuning. Furthermore, since the amount of inharmonicity varies from piano to piano resulting in a different amount of stretch in the temperament intervals of each piano, it would be impossible to establish one table of beat speeds that would apply to all piano tuning situations.

The effects of this new concept in temperament tuning were far reaching. It now meant that there was no one correct speed for any interval. Instead of working for a specific beat speed for each interval we must now find the speed for each interval that will work best for the piano being tuned. This explains why so many temperaments would not work out with the F 3rd at 7 bps. The F 3rd has no superior sound beating at 7 bps., the only reason for the 7 bps. was to create consistent interval progressions within the temperament. However, if because of inharmonicity an F 3rd at 7 bps. will not lead to consistent beat progressions, then a formula for finding the correct beat speed that will lead to smooth interval progressions must be found. Obviously, this makes all the beat counting technics of little value since we no longer know what exact speed to strive for.

Expanding the intervals of the temperament octave affects the intervals differently depending on whether they are expanded or contracted intervals. Expanded intervals such as the perfect 4th, major 3rd, and major 6th tend to beat faster, and contracted intervals such as the perfect 5th and minor 3rd tend to beat slower. Again, just how much these intervals beat faster or slower depends on the amount of inharmonicity which determines how much the temperament octave is stretched. Checks comparing expanded intervals with contracted intervals are the most affected. This includes the 4th and 5th with the common top or bottom note. The more these intervals are expanded the faster will be the 4th and the slower will be the 5th. We started out tuning them relatively the same speed, changed to a faster 4th as a result of the beat tables, and now with the temperament octave expanded beyond a 1:2 octave there will be a still greater difference between the two. This also affects the two important octave checks, the lower minor 3rd and its inversion the upper major 6th, and the lower 4th and its inversion the upper 5th. The intervals will beat the same speed in both cases within a pure 1:2 octave, but as the octave is expanded the minor 3rd will beat slower than the major 6th, and the 4th will beat faster than the 5th. Obviously, these checks are no longer valid as octave checks in the original sense.

The expanded temperament octave will also affect other checks. Since the 4th is more expanded the difference will be greater between the 3rd and 6th in the 3rd 6th check, and since the 5th will be closer to pure its checks, the minor 3rd major 3rd, and the 6th 10th, will be closer to the same speed. In octave tuning the 10th will tend to beat faster than the 3rd, and the 17th faster than the 10th.

To be continued next issue



Shoptalk

Susan Graham
San Francisco Chapter

GRAND HAMMER REPLACEMENT

Of all the aspects of rebuilding a grand piano, replacing hammers can have the most noticeable overall effect, for hammer condition affects not only the voice but also the touch of the instrument. Proper voicing helps maintain the shape and resilience of the hammer but there comes a time when wear, compaction and climatic changes have taken their toll and the instrument no longer has the voice it should. Filing also reduces the size so that eventually the hammer is overcentering as it contacts the string; it can reduce the weight to the point that the key weighting is thrown off. Fortunately, a good job of hammer replacement does not require a large shop or expensive equipment; every technician who is willing to pay attention to detail is qualified to install hammers.

In this 2-part article I will outline the steps I take in a basic hammer hanging job; obvious limits prevent me from exploring complicated theory or unusual jobs. I will try to cover the subject in enough detail to be of real assistance, though, and will point out the areas which lead to trouble if tampered with when not fully understood. Hammer-hanging is an essentially simple task which, although surrounded by a great deal of complex design and thought, can be efficiently and skillfully done by following a few basic rules and knowing a few good hints (and practicing). This month I will cover the initial stages of grand hammer installation - evaluation, selection of parts, and other preparation for the actual gluing-on.

I. EVALUATION

So, you go into the home to tune a piano and as you insert your temperament strip you notice the molding is visible through what's left of the felt on the top 10 hammers and as you tune the instrument sounds like a cross between an unplugged electric harpsichord and a 2 x 4 hitting an oil drum. What do you do? Announce that the piano needs new hammers and disappear with the action for 6 months? You could, but if you plans things a little the customer will get more use out of the instrument and you will be able to do a better job. First, as with any service call, be sure the piano is structurally sound enough to warrant any work. Then go ahead and tune: this is the best way for you to become really familiar with the piano. It will give you and the customer a chance to become acquainted and to discuss his or her expectations and your recommendations. Although you will want to inspect the action carefully before you commit yourself to doing the job or giving an estimate, find out if there is any interest on the part of the (paying) customer first.

After you have checked the rest of the piano and either no other major work is needed or you have decided to undertake hammer replacement first, the next step is to pull the action. Look at the shanks - condition and type of knuckles, condition of the centers and pinning and overall appearance of the wood. You may be tempted to save the customer money and think to save yourself trouble by hanging new hammers on old shanks, but be honest about it - is it going to hurt you in the long run? Don't sabotage a beautiful hammer-hanging job by using worn-out old shanks with flat knuckles and troublesome centers, for you will never be able to regulate the action. If the customer is that worried about the money, reconsider whether you want to do the job at all.

Okay, you've looked at the shanks. Next, if possible, sandpaper file #88, to get as good a shape as possible, and use it to be sure the hammers are striking the strings at the correct point. This is done by playing the note rapidly as you slowly pull the action toward you and push it back in place; then, using a screwdriver to lift the front edge of the keyframe, tilt the action slightly so the hammer strikes closer to the bridge, continuing to play the note. (Be careful not to damage the keybed.) Listen for the best and most complete tone; sustain may be a better indication of proper location than loudness. If you find that the hammer should strike in a different point, check to see that the overall action placement hasn't been monkeyed with, or that the hammer hasn't been broken off and reglued incorrectly.

Observe any other signs of non-factory work: action brackets raised, rails moved, non-original hammers installed. Take these into consideration in determining how much time the job will take, as well as determining the correct striking point. If you find it necessary to change the striking point, mark on the keybed the new, correct position of the frame and then replace the frame in its old position; measure the difference between the two locations and record the measurement. Attempting to reposition the whole action creates other problems, so you will want to transfer this measurement to a change in the actual position of the hammer on the shank when you hang the new hammers. If the tone is so poor there seems to be no correct striking point, accept it where it is, or look again for other factors which affect sound quality: bridge deterioration, loss of crown or insufficient downbearing, problems in the capo area.

While you have the action out, raise the shanks on a long straight-edge (or the keyslip if you are careful) and quickly eyeball the hammer line. Does

it curve? Do the hammers appear to be at 90° to the shanks? The action may have been tampered with, but variations can be part of the origianl scaling, so check carefully. Remember that unless you are bringing the whole piano into the shop you must recognize these things and determine appropriate repairs before you remove the action.

After you have looked carefully at the action, you will be able to estimate the price you need to charge to do a good job: for the proper parts, the time and labor and extra work, and for the guarantee implicit in your professional reputation. If you and the customer decide to go ahead with the work, you will want to prepare some sort of written contract (I also request 1/3 payment in advance to cover the cost of parts).

However, if you are confident the job is decided, you may wish to remove sample hammers and/or a shank to order replacement parts now. Obtaining the parts first and picking up the action later when you are ready to begin work is a good alternative to having the action sit idle in the shop for a month or so. Whether you need samples or not depends on whether you are ordering parts from the original manufacturer or from an independent source, and whether you plan to prepare the new hammers yourself or to have the supplier bore them, etc. If you need samples for ordering, try to have on hand some substitute hammers still on shanks which can be pressed into temporary service. It is a good idea to take the first and last hammer of each section, and a sample where any radical boring angles changes occur. Number and mark with the piano name and customer name any part you remove before you toss it in the toolcase! The last thing you may want to check is the boring distance. Again, if ordering parts from the original manufacturer this is unnecessary, but if you are ordering from an independent source and wish to have them bored you may want to estimate how much wear the old hammers have had and therefore what the original boring distance was; it becomes especially important to note if non-original hammers have been installed. The boring distance can also be determined by measuring from the keybed to the string (string height) and then from the keybed to the center of the hammerflange center pin, and subtracting that figure from the first, and usually adding 1/8 safety factor. What you are doing is finding the distance from the string at which the shank is parallel to the string and in a plane with its flange, so the hammer will be at 90° to the shank and the string. This complex topic affects regulatibility of the action; if you are unfamiliar with this subject you do best to make notes of any unusual circumstances and communicate them to a professional hammer supplier/borer when you send in samples.

While we are on the subject, let's consider the question of where to get parts. I am a believer in using the manufacturer's hammers if the piano is a "name" - Steinway hammers on Steinways, Baldwin on Baldwins, etc. The hammer is the principal tone generator and if you deviate from that hammer you change the basic tone of the piano. While there may be reasons of ease of obtainability or expense to consider, this is a rule I do not vary unless circumstances are very, very unusual. You must remember that if the customer is having such extensive work done he or she probably likes the way the piano is designed to sound. You may also affect the market value of such an instrument by putting on a different brand of hammer. Even if as a technician you feel that another hammer is better you may be interjecting yourself where you do not belong and can get in trouble. As far as getting hammers for less famous but equally deserving instruments, this is something you need to research. Take time to ask more experienced technicians. Consider acoustical and usage factors and remember that although hammers fall into categories such as "American" or "European", there are differences within each group.

Pay attention to the sound of new pianos and learn which hammer they use. If you have an opportunity to examine different sets of hammers, such as at a convention, do so. What to look for in examining hammers? Do they closely match in size the originals? Not only in overall length and width, but in proportion of molding to felt? Does the hammer have a good-sized layer of felt over the molding, all the way to the treble? Is it symmetrical? Is the molding straight, is the glue joint tight, do the shoulders resist twisting? How well does the hammer

bounce if dropped strike point down on a hard surface? If you own the set, sandpaper-file an extra. Do layers of fibers peel off or does it "sculpt" into a powder? Some technicians use a single needle to probe the hammer, looking for density and feeling if the wool has enough "spring" to grab the needle. (Don't destroy those extras with all this - you may need them.) Yes, it's complicated and no, there's no sure way to evaluate a hammer without installing and voicing and playing it: but common sense can guide you in the right direction.

With shanks there are also things to look for. Distance from flange screw hole to center pin is critical, as is placement of the knuckle core (although some difference can be tolerated here). Your main concern is not to change the "action spread" - the distance from the center of the hammer flange center pin to the center of the wippen flange center pin. If no shanks are available which match well, it is possible to refurbish the old ones with new knuckles and pinning (and bushings if needed) or sometimes new shanks can be pinned to old flanges. Otherwise you may have to move rails to maintain the spread, which, again gets trickly. It is useful to order one of every kind of shank available, mark identification on them and keep them in the shop for comparison.

Another thing to look for in a shank is correct pinning - there is a simple test for this which I learned from Jack Krefting: hold the shank by the hammer end and tap it lightly just over the knuckle. Start with the flange hanging down at 45°. The flange should creep up as you tap the shank - if it falls down the pinning is loose; if it doesn't move, it is too tight. You can fix a few which are off but if the whole set is bad it should be returned. Obviously shanks must be straight and the grain oriented a particular way - look at some good quality shanks and you can see what it is easier than to decipher how it sounds described in print. Finally, be sure to select shanks before you have the boring done!

II. PREPARATION

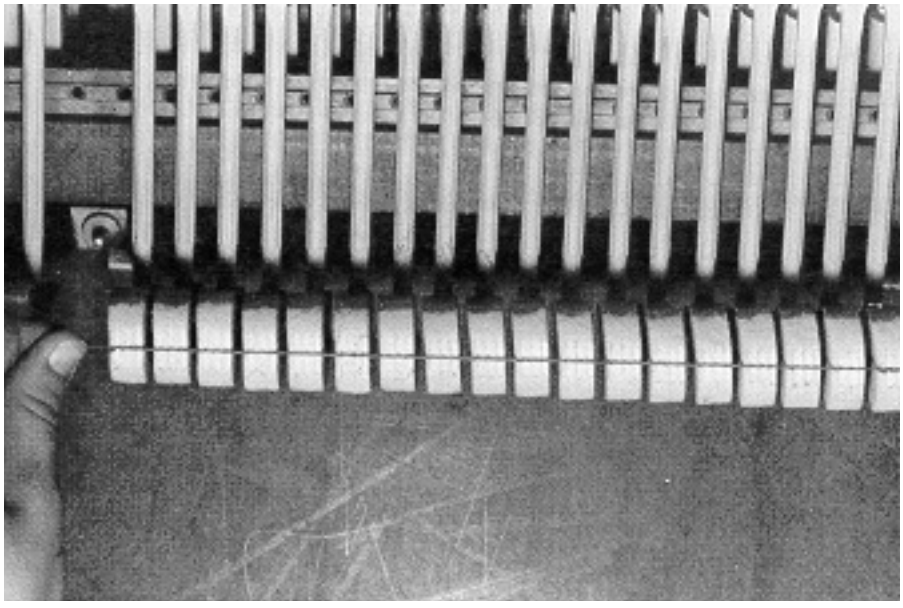
After parts have arrived and the action is in the shop, reexamine it closely to make notes on any unusual features. Keeping notes not only helps me to remember to check all the things I should, but in case I'm interrupted and not able to get back to the job for a while or if someone else has to finish it, written notes are very useful. The most efficient and accurate gluing methods involve removing all but a few sample hammers, so you must note any special circumstances while the originals are all in place.

Prop the shanks up on a long straight-edge and use a tightly stretched piece of string (colored is most visible) to check the hammer line. It is helpful to draw lines on both sides of the old hammers at the end of each section (the usual strike point lines, which may already be there) and then connect these two lines across the crown of the hammer. Check the hammer line from #1 to #88, and from end to end of each section. If there is a curve in the line you should decide if this is factory installation; look for any "pivotal" hammers in the middle of sections. Unless you are experienced and have good reason for doing otherwise, duplicate the original hammer line when you install the new hammers. You may wish to retain more than just the end hammers for samples in the curve. Often I find that the individual sections of hammers are straight but that the sections do not all fall on a straight line from 1-88. If you check this by the strike point you will not be fooled by dimensional changes in the shoulders. For the next examination you need some sort of small square. I use a steel gauge Baldwin but it is easy to make one from a piece of Masonite or thin stock. Be sure it is a true 90°, and glue a piece on at right angles to the lower leg to make a shelf so the gauge will sit on the shank. Use this to check two things: are the old hammers glued on at 90° to the shank, and do any of them tilt left or right (referencing from the supporting straight-edge)? Note these and determine the reason for any variations, if possible.

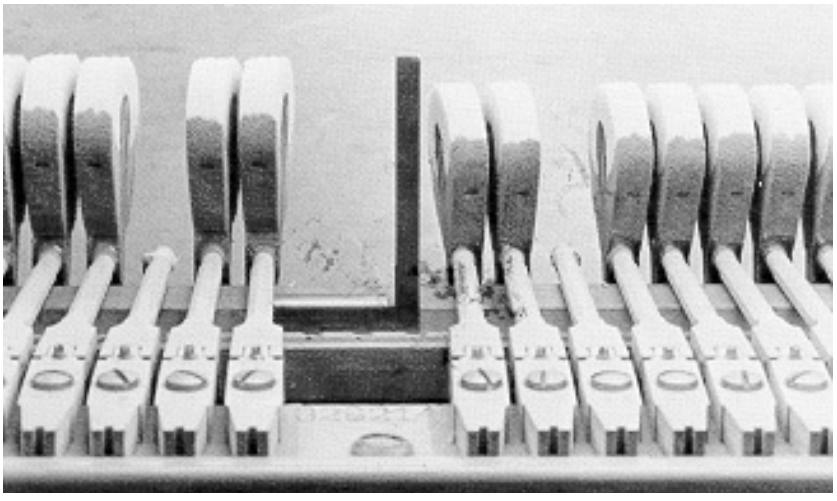
The last thing you do before removing the old hammers is to prepare the new ones. Helpful hint #1: NUMBER the hammers in pencil AS SOON AS YOU OPEN THE PACKAGE. For now just number consecutively; you may need to change the numbers later but if you just lay the hammers out you're sure to trip over something trying to answer the phone and the whole set will be on the floor - and it isn't that easy to sort them again. I lay the hammers on a sheet of plate glass I keep clean for this purpose, and compare the new ones to the old. I usually determine the extras by removing the extreme hammers at each end, but if the extremes look better than the next few up or down, use them. Of course, you must be sure to have the correct number of bass- and treble-sized hammers. I number and separate the new ones into sections to match the orginals, and determine the boring and do that. I do not shape the tails at this point but I do taper the sides (suppliers will do all this if you prefer). I shape the tails on a drum sander mounted on a table, using a very simple jig cut from a block of wood and guide lines drawn on the table. The jig is cut to match the taper of the sharpest-angled hammer, and then strips of veneer are inserted as the angle decreases.

The last thing to do to the new hammers is draw on guide lines. These lines bisect the hammer, intersect the

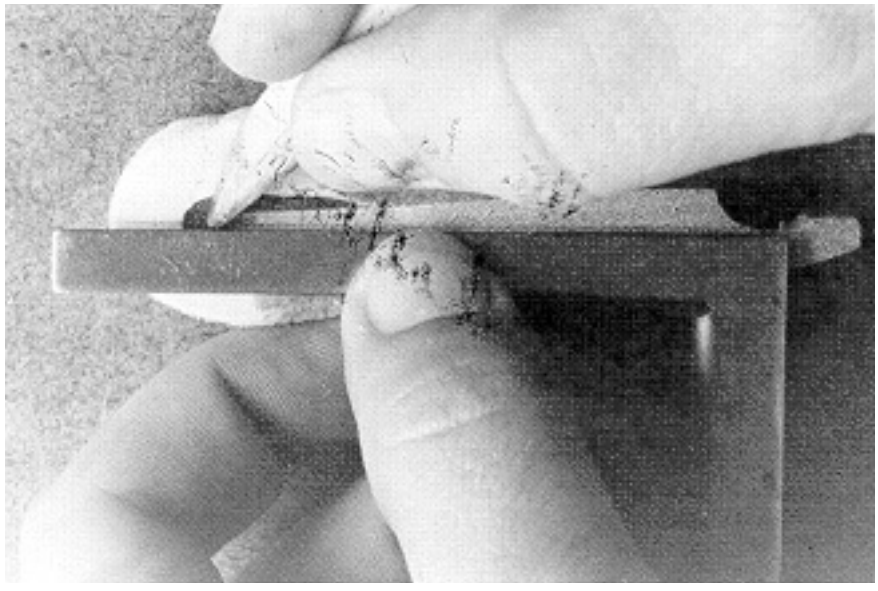
1. Using string to check hammer line for straightness.



2. Using square to check angle of hammer to shank. Notes shelf on square so it rests on shank.



3. Checking bass hammers with tinsnips.



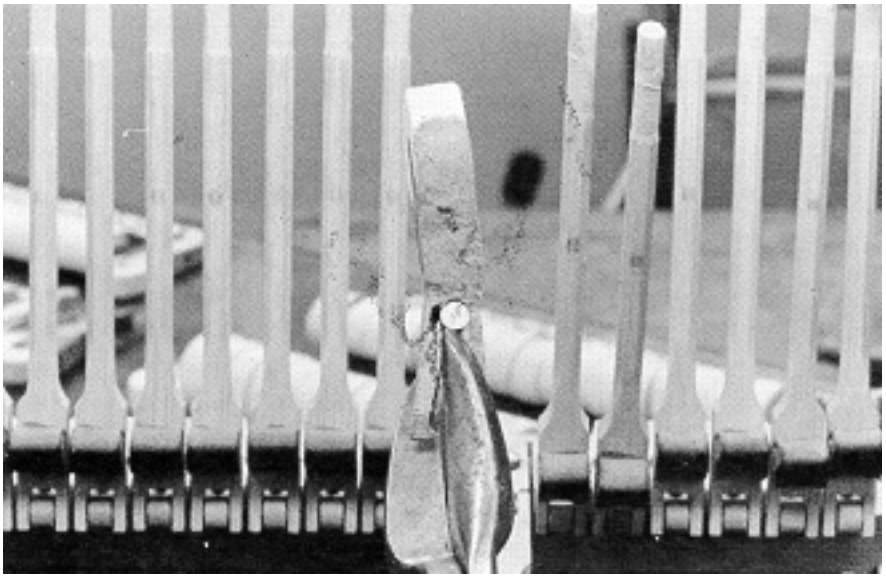
6. Drawing strike-point lines on new hammers.

tip of the molding and the striking point of the hammer, and are the most useful thing you can do for a good job. It is unreliable to try to find the correct location by referencing from a particular point in the tail; it is more accurate to eyeball the center of the hammer about halfway down the molding, draw a dot there, and draw the line to intersect that point and the tip of the molding and crown. I leave the second hammer from the end of each section for samples so I line and use the new end hammers as guides, but this can be done the other way around. At any rate, helpful hint #2 is to draw those lines, carefully and with a sharp pencil.

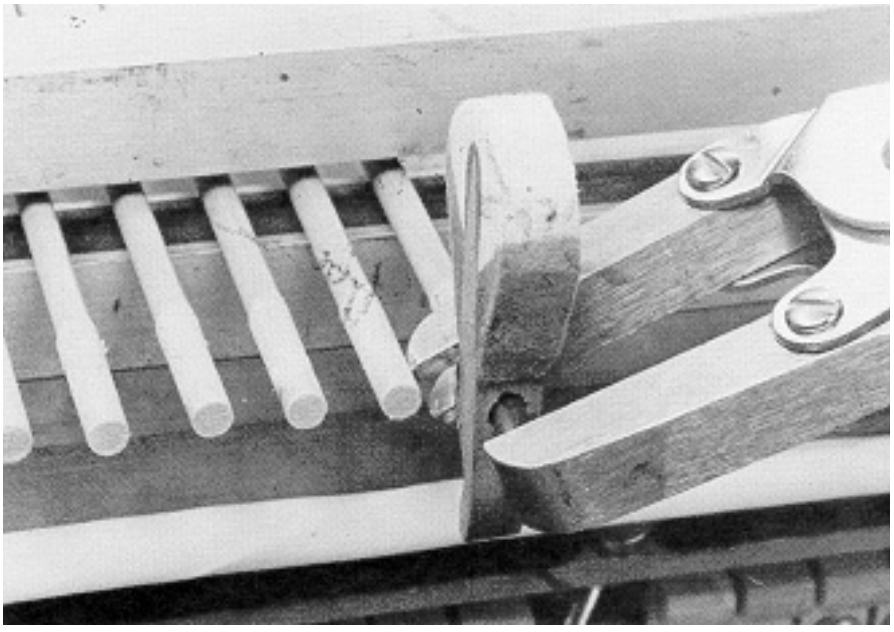
I do not gang-ream hammers, either by hand or with the reamer in an electric drill. Many times the boring angle must be improved, and individual reaming gives an opportunity to do this, as well as fit each hammer to its individual shank. Therefore, the last thing I do before beginning to glue is prepare the shanks.

If the shanks are being replaced, remove all the old ones except the samples; take the precaution of keeping the flange screws in order (a piece of corrugated cardboard with 88 holes works fine). If the sandpaper or felt on the rail is worn, replace it with 120 grit paper. Space the new shanks to the wippens and be sure the flange screws are tight, but do not overtighten them. Willis Snyder sometimes replaces hammer flange screws on old Steinways with #10 coarse self-threading sheet metal screws (flat head) and although I've never done this I pass it on since it sounds like a good solution to the problems which occur in those brass-bound wooden rails. Tap-test the shanks as you put them on and if you detect any variation, put the loose ones in the treble and the tight ones in the bass. Repin any which need it before travelling. Sometimes the drop screw surface where it contacts the repetition lever is coated with something I assume has to do with manufacturing, but it should now be polished off. If the old treble shanks are thinned down, you may wish to duplicate this.

If you are using the old shanks, you must remove the old hammers without destroying either the flange or the shank. I have found two methods which work well. First I use the heat gun to "fry" the glue collar - or use a knife to break the collar off. Then I either use a tinsnips to cut the hammer through the molding, which usually



4. Breaking off old hammers with tinsnips.



5. Removing hammers with pliers-type extractor. Note clamp holding shanks.

breaks it free from the shank, or I use a pliers-type extractor which not only keeps the hammer intact but removes the remains of the glue collar as well. It is important not to use anything which spreads or crushes the end of the shank, for it will throw off the fit of the hammer. Depending on how easily the hammers come off I either clamp the shanks in a long clamp or just support them with my free hand. Then I use the shank-reducer (available from supply houses) to clean off any remaining glue (but not to reduce the shanks). Here again, be careful of the centers, especially Teflon which is prone to distorting if stressed sideways.

Next, whether you are using old or new shanks, they must be travelled. This is necessary to ensure that the shank is rising to the string in a straight line from its resting place, and is done by raising a group of six or so shanks on a straight-edge and watching to see if any wander to the left or right (I actually find it easier to watch the spaces between them rather than the shanks themselves). It is advisable to check a few with a square set on the bench (if the action is square to the bench) or on the flange rail itself (sighting the shank as it rises). This is done to avoid travelling all the shanks uniformly but off in one direction or the other. I used gummed paper tape (not masking) cut into strips of varying width - the wider the paper, the more effect it will have when applied to the underside of the flange. Incidentally, it is the flange which is travelled, not the rail, so glue the paper to the flange. Garnet paper can be used, which is useful since it comes in different thicknesses; if applied with a moistened finger it will stick. A shank travelling to one side needs to be papered on that side of the flange. In effect, this tilts the center pin so it is exactly parallel to the rail and the shank will then move in the correct pathway. I do this operation quickly, trusting my eye to tell me immediately if a shank is off rather than watching a group of shanks over and over - you really can get crosseyed. Then I turn the action around and I check it again from a different perspective; it's surprising how helpful this is.

Well, this is where I stop for now; ready to glue the hammers on. If all the preparation has been done correctly, this is where the fun begins - if not, I'll soon find out!

MEMBERSHIP POINTS

Five (5) points will be credited for bringing in a new registered technician, four (4) for an apprentice, three (3) for an allied tradesman and one (1) for all other memberships.

PRESIDENT'S CLUB

Those who achieve 15 points will receive the President's Club ribbon. At the Awards Banquet each will be presented with the 1982 President's Club pin, and the member who has the most points will be announced and honored.

RESTORER'S CLUB

Those who bring in a former member will receive the Restorer's Club award ribbon in addition to the point credits.

BOOSTER CLUB

Everyone who brings in a new member will receive the Booster Club ribbon at the convention.

NOTE:

Your name and your own chapter should be shown IN PRINT on the candidate's application on the line "recommended by", for your guaranteed full point credit. (Sometimes credit cannot be applied because the sponsor's name cannot be deciphered).

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Should there be a need for correction on the Booster Club or other lists, please notify the Home Office promptly. We want you all to receive full credit at all times.

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Paul Monroe
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The "TEMPERAMENT"; to me, one of the most difficult subjects to explain in words so as to provide a clear and easy understanding to the beginning tuner. So a word to the beginners; read as many books as you can on this subject, put in to practice what you read and then go back and read it again. Consult the June 1981 issue of the *JOURNAL* for a synopsis of some of the books available.

Consult the same issue and read the definition of temperament found on page 9, written by Mr. Jim Coleman Sr. The more you know about this subject, the easier it is to understand what you are doing and why you are doing it.

The following three rules may help you. Rule #1 - Know what you are doing. Rule #2 - Know why you are doing it. Rule #3 - If you don't know the answers to #1 & #2, ask questions. With this in mind let us start with piano wire and the temperament.

As the hammer strikes a string, the string divides into 37 different frequencies called partials. The first one is called the fundamental, the next one the 2nd partial etc. etc. To help you hear my point, slowly press and hold down note C1 so as to pull the damper away from the string. In a staccato fashion strike C2, G2, C3, E3, G3, A#3, C4.

This little experiment is meant to convince you that a string does divide, sub-divide and generate frequencies other that the fundamental. Try the same procedure with other notes, making sure you keep the sequence of the octaves, fifths and thirds the same. Refer to Dr. Braid White's book "Piano Tuning and Allied Arts", page 42 for a technical explanation.

Having very briefly introduced partials as a way to have a better understanding of the temperament, see Fig 1 for the complete temperament with cross checks and tests to check your accuracy. These cross checks and tests are but a few of the many that can be used. As you progress and mature as a tuner you will find more on your own.

Before starting to tune and memorize your temperament you must know the following:

Expanded Intervals	Contracted Intervals
Major third (M3rd)	minor third (m3rd)
Major sixth (M6th)	minor sixth (m6th)
Fourth (4th)	Fifth (5th)

Start tuning the temperament with interval F3-A3 with a beat rate of approximately 7BPS (Beats per second). What causes you to hear 7BPS? If you know, read quickly. If you don't know, read carefully.

The following assumes the piano is at standard pitch. The frequency of the fifth partial of F3 is 873.07038. The frequency of the fourth partial of A3 is 880.00000. The differential is 6.92962. Therefore the differential in the frequencies of these "coincidental partials" creates the beat rate you hear. To the craftsman these are known as the 5/4 coincidental partials and they exist in all Major 3rd intervals. An amazing coincidence; the frequency ratio of A3 to F3 is also 5:4. Read Braid White's book for a detailed explanation.

Your question at this point should be "how do I know what 7BPS sounds like?" The following explanation is not original. I was introduced to this method at a State PTG Convention.

Place your metronome on 103.9. As you hear each click of the metronome, count 4. Click, 2, 3, 4; click, 2, 3, 4; click, 2, 3, 4 etc. etc. What you are counting is a beat rate of 7BPS. Listen, count, practice and practice until you have that beat rate programmed into your subconscious.

The metronome setting for the next interval, F3-D4 is 119.8. Again as you hear each click count click, 2, 3, 4, etc.

The next interval is A#3-D4 and the metronome setting for this interval is 138.7. Count again click, 2, 3, 4, etc. etc.

When you have these beat rates programmed into your subconscious, you are well on your way to setting a temperament aurally.

To help you hear the beat rate of F3-A3 more clearly and without the influence of other unwanted characterisitics, hold down F3 & A3 releasing the dampers from the strings and in staccato fashion strike A5. Listen. The beat rate you hear is the true differential between the 5/4 coincidental partials. In my experiences I have sometimes found a difference in the beat rate of the true 5/4 coincidental partial rate and the beat rate you hear when you play the interval. If this does happen I choose to stick with the true beat rate I generated by sympathatic resonance. A word of caution when you strike A5 - If you have the piano muted and the dampers are not on the strings, push the hammer of A5 against the string to dampen the tone. This will allow the partials to ring out loud and clear. To help you hear the beat rate of F3-D4 more clearly, strike A5. For the interval A#3-D4, strike D6.

This may be the appropriate time to let you in on an astounding fact. The "proper" beat rate varies from one piano to the next due to variables built in to the piano. So therefore to say that all F3-A3 intervals on all pianos should be 7BPS is in error. The beat rate of 7BPS is the starting point. In your tuning maturity you will be able to set the ideal temperament for the piano you happen to be tuning.

We will continue our discussion of

the temperament in the next article. Remember rule three. If you don't know the answers to rules #1 & #2 - ask questions.

F3-F4 TEMPERAMENT

TUNE	TO	BPS	TESTS
F3	A3	7	
D4	F3	8	A-D 4th should be slow roll up to 1BPS.
A#3	D4	9.2	F-A# 4th to have slow roll.
C#4	A3	8.7	Should be about .5BPS slower than A#-D M3rd.
G#3	C#4	.9	F-G# m3rd should be slightly faster than A#-D M3rd. (9.31BPS to 9.2 BPS)
C4	G#3	8.2	Should be slightly faster than D-F M6th and slightly slower than A-C# M3rd.
F#3	A#3	7.3	Slightly faster than F-A M3rd.
D#4	F#3	8.4	Slightly faster than F-D M6th and slightly faster than G#-C M3rd and slower than A-C# M3rd.
B3	D#4	9.8	Slightly faster than A#-D M3rd. F#-B 4th should have a slight roll.
G3	B3	7.7	G-C 4th should have a noticeable roll. G-D 5th should be less than the 4th. Beat rate to be in between its neighbors.
E4	G3	9	C-E M3rd to have a beat rate .5BPS faster than B-D# M3rd. Beat rate to be faster than A-C# M3rd but slower than A#-D M3rd.
F4	F3	0+	G#-F M6th to be slightly faster than G-E M6th C#-F M3rd faster than C-E M3rd. F-G# m3rd a little faster than G#-F M6th.

Coming Events

November 7-8, 1981
BALDWIN/STEINWAY SEMINAR
Sponsored by Baltimore Chapter
Towson State University
Baltimore, Maryland

Contact: Morris Millman
8326 Scotts Level Rd.
Baltimore, MD 21208
(301) 655-6527 or
(703) 442-6165

January 8-9, 1982
ARIZONA STATE SEMINAR
Arizona State University
Tempe, Arizona

Contact: Jon K. Allen
3025 S. Stewart
Mesa, Arizona 85202
602-839-6078/839-8570

February 19-21, 1982
CALIFORNIA STATE CONVENTION
Pasadena Hilton

Contact: Raye McCall
1078 East Third Street
Pomona, CA 91766
(714) 622-8826

March 26-28, 1982
PENNSYLVANIA STATE CONVENTION
Pittsburgh, Pennsylvania

Contact: Robert W. Wagner
1225 Saxonwald Ave.
Pittsburgh, PA 15234
(412) 884-8222

Notices of seminars will be accepted for insertion in THE JOURNAL no sooner than six months before an event. In addition to the listing below, your seminar may be publicized through one free display ad, two columns by two inches deep. It is the responsibility of the advertiser to submit copy for the ad to the Home Office. Material must be received six weeks prior to the publication date of THE JOURNAL.

Note: All seminar dates must be approved by the *Conference Seminar Committee*. Please submit the appropriate information on the Request for Seminar Approval Form **which may be obtained from the Home Office.**

UPCOMING CONVENTIONS OF THE PIANO TECHNICIANS GUILD

1982 *July 4-9*
Washington, D.C.
Capitol Hilton

1983 July 4-8
New Orleans
New Orleans Hilton & Towers

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PRESIDENT'S MESSAGE

Dear Members and Friends
of the Auxiliary,

November is an important month for all of us who are related to the piano service business. It is a time for us to work at maintaining harmony and a relaxed attitude even though the service calls may be coming in at a frantic pace. Many customers will be calling at the last minute to have a piano tuned for a special program or party.

It is fortunate that so many piano technicians have as much business as they could possibly want during this part of the year, but it is important to remember that a service person can easily become overworked. As someone who cares about the technician and who can see him/her saying yes to too many customers and trying to accommodate too many last minute requests, you are in a position to help a technician manage this busy time of year. Perhaps you will decide to help by making plans now for a special relaxing getaway vacation once the Christmas rush is over. Perhaps there are some things around the shop that you could handle to help the technician manage the extra workload. Perhaps you will want to lend your support and understanding with a special meal, a back rub, or a quiet evening at home.

We try to make the holiday season special by marking off a day well in advance on the appointment book. This day is reserved for ourselves so we can go downtown to shop, to see all the holiday decorations, and to have a leisurely lunch together. We found that if we didn't reserve this special time the holiday season would be over before we got a chance to enjoy it.

Please plan some special times for yourselves during this holiday season. Have a good Thanksgiving. May we all be thankful that piano service businesses bring us extra money during this season when we seem to need it the most.

With my best regards,

Julie Berry
President, Piano Technicians
Guild Auxiliary

HONORARY LIFE MEMBERS

The May 1981 issue of the *Piano Technicians Journal* — the Directory Issue — has a special section with a full listing of the Auxiliary Membership, the Auxiliary Officers, the Executive Board and the names and addresses of our roster of Honorary Life Members. It is in behalf of this group that I write.

Some years ago, when our organization was a struggling infant and toddler, there were women who worked and applied themselves with such vigor, and on a national scale as well, that the Piano Technicians Guild Auxiliary sought to recognize and honor them in a very special way. The Executive Board, acting in Council, incorporated into its Bylaws (under Section 6 of Article III) the provision of Honorary Life Membership to be conferred by the Council, upon a member who has rendered an outstanding service for the Auxiliary. Members of the Auxiliary have been so designated since the 1966 Bylaws.

At this time the number of honorary members has reached ten; they reside across the country, from Massachusetts to California, and range in age from seventy to ninety-plus years. A sensitive, somewhat shy group, and generally self-effacing, they wear their Honor with quiet dignity. Many of the women are widows, but their interest, friendship, and pride in the profession of piano technical craft and related industries have never waned. How do I know this? As corresponding secretary of the Auxiliary, it is my role to send these women "Greetings" in behalf of the Auxiliary officers and members. These cards and little notes are sent at holiday times and at periods in between, when especialy appropriate. Many of these women write to tell me how pleased they are that the Auxiliary "thought" of them.

They generally share some news about their family, their health, activities, and invariably refer to their days of yore, when they were active in the Auxiliary, busy assisting their technician husbands, and enjoying ongoing friendships with other ladies in the Auxiliary.

Our Honorary Life Members also keep in touch with each other to the degree that health permits. When one of their number receives a special achievement or commendation, such as in 1972, when our Ruth Pollard was named "Queen for a Day" at the Portland Convention, there were messages of greeting and congratulation sent to her by our oldest member, Camille Gearman, and Hazel Feaster, Millie Stein, and our youngest member to join the ranks of honorary membership, Dessie Cheatham. These women have many memories rich in the recollections of happy times, shared efforts, achievements and intrinsic rewards.

We must salute these women more often. They helped to make our Auxiliary grow and endure. Each of us can send them cards and notes, in between special times as well. Please note if the addresses are correct if you live in the area of one of these members. Do keep your corresponding secretary apprised of changes of address, the general well being of our Honorary Life Members, and any special information you may know about one of them so that suitable correspondence with them can be made.

Our Bell phone company recommends that we "reach out and touch someone." Many of these Honorary ladies who can no longer attend meetings love to receive mail, letters and cards which they can look on over and over, show to friends, and prop on a mantle. We are the beneficiaries of their earlier hard work. It is our privilege to thank them for their well done jobs.

Agnes Huether
Corresponding Secretary,
Piano Technicians Guild Auxiliary

BUSINESS TIP

Do you realize that YOU may be the first and most important contact that a customer has with the piano technician? The person who says "hello" when the telephone rings gives the first and probably the most important image of the piano technician. The customer makes a mental image of the piano technician and his/her efficiency with that first contact. So, be sure when you answer the telephone you are pleasant and efficient. It really pays off!

— G.R.

NORMAN ROCKWELL PRINTS FOR CHRISTMAS

If you would like a few prints of Norman Rockwell's "The Piano Tuner," please send $3.50 for each 8 by 10 print (check payable to P.T.G. Auxiliary) to our Second Vice President, Shirley Truax. Her address appears at the beginning of this column. Perhaps you should order now to avoid disappointment in case they sell out early.

CHAPTER PROGRAM IDEAS from Ginny Russell

Does your Auxiliary chapter need some ideas for programs? It can be difficult to plan programs for small groups, but I have found it very challenging to discover and create interesting programs. Every month I would like to contribute an interesting and exciting program idea for you to share with your chapter.

Is your chapter planning a banquet? The Auxiliary can get busy and make interesting favors for everyone attending. Working with styrofoam provides easy and inexpensive favors. Use large styrofoam cups; place them on a cookie sheet upside down; bake them in a 300 degree oven for about 2 minutes. (Keep a careful eye on them; they must not overcook.) They will shrink up and make very interesting "hat" shapes. Each one will be a little different. Bring these "hats" to the meeting and decorate them with odds and ends of material and sewing extras, i.e., sequins, felt, feathers, small buttons, piano parts if you want. Glue these decorations on and — presto — the banquet has the extra added touch of your Auxiliary and every favor is different and exciting.

FROM THE TREASURER... Ginny Russell

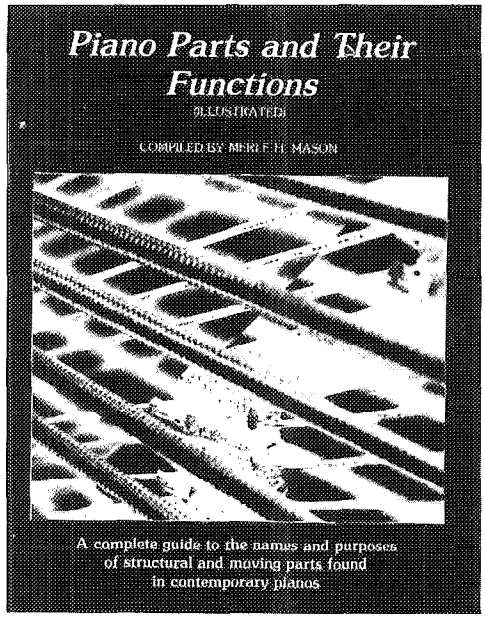
Have your dues been paid? If you have neglected to take care of this now is the best time to do it! Send me a check today and expand our membership to add strength and growth to our organization.

Please take a few minutes right now to check your technicians directory and be sure your name is spelled correctly, your address is correct, and you are placed with the correct Auxiliary chapter. We need to get our directory as correct as possible, and you can help. If there are any mistakes, please let me know, right now.

Millie Berman, a very active member of the Auxiliary for many years on both the national and local levels, passed away recently. Our thoughts and prayers go to her husband Ben, a charter member of the Piano Technicians Guild, who is himself recovering from surgery.

ANNOUNCING A NEW EDITION. . . .

PIANO PARTS AND THEIR FUNCTIONS (ILLUSTRATED)



The official publication of the Piano Technicians Guild continues in its original 8½ × 11 format, completely reillustrated for easier reference and understanding.

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DIAGRAMS of the many separate parts of different types of pianos, accompanied by the English names commonly used to designate these units.

AN ALPHABETICAL list of these names, together with the assigned numbers by which the corresponding parts in the drawings may be located.

A GLOSSARY consisting of:

1. Names of various parts of a piano not readily open to visual representation;
2. Names and descriptions of various mechanical functions of concern to both piano technicians and performers;
3. A list and definitions of many musical terms that are found in vocabularies of piano technicians and/or musicians at large; terms which often need clarification.

PIANO PARTS AND THEIR FUNCTIONS, The Piano Technicians Guild, Seattle, 1981

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Sound Background
Continued from page 15

Working with ratios including the numbers 1, 2, 3, and 4, he studied the musical intervals produced by a divided string if the point of division gave segments whose lengths were in simple numerical ratios. He observed that the simpler the ratio, the more perfect the consonance of the two sounds. His conclusion that intervals be judged intellectually rather than on an aural perception was disputed by later scholars of music theory.

Pythagoras standardized the tuning of intervals in mathematical terms. The Pythagorean diatonic scale was based on a continuous cycle of pure fifths and octaves derived from monochord string length ratios of 3:2 and 2:1. The following table shows interval ratios between each note and the key note, and width of their intervals measured in cents.

Note	C	D	E	F	G	A	B	C
Ratio To Key Note	1	9/8	81/64	4/3	3/2	27/16	243/128	2/1
Cents Above C	-	204	408	498	702	906	1,110	1,200

Pythagorus died in the first quarter-century after 500 B.C. He is recognized as an important figure in music theory because he was the first person in history to do scientific research in acoustics. Also, he developed a systematic scheme of study and set up an organization that assisted him and continued after his death. Pythagoreans were foremost among those that helped develop the elaborate system of Greek music theory.

During the next seven centuries after Pythagoras, other scholars including Archytos, Aristoxenus, Eratosthenes, Didymus and Ptolemy conducted research with the monochord and made other investigations. They developed scales with what they considered to be improved intonation. The tuning patterns of the Pythagoreans were based primarily on mathematical or philosophical principals. A later school of theorists based their tuning on a combination of aural perception and mathematics.

As time went on, musical instruments and performing skills also continued to advance. In contrast, after reaching its highest level in the latter half of the 400's B.C., the quality of Greek musical composition began to decline.

In Memorium

With the passing of Ben Berman goes a living part of PTG's history.

In PTG he was a defender of the right to minority opinion and fair play. He served for several years on the Minorities Committee of PTG.

Publicly, he was the author of letters printed in the New York Times, all having to do with correcting misinformation about the economic and professional status of the piano technician. Business-building pamphlets now used by many of our members are products of his imagination.

An early member of the old NAPT, he remained with the New York Division when it seceded from the National and became the New York Piano-Tuner Technicians Association. This later became the New York Chapter of the American Society of Piano Technicians and finally, with the 1958 merger with NAPT, the New York Chapter of PTG. Through all these changes, Ben was an innovative and constructive member among his colleagues.

One thing that contributed to his long and constructive life was a warm sense of humor and a love of the outdoors. Fishing in the ocean and hunting in the wooded mountains of New York's Catskills were among his chief pleasures.

His many customers and friends among the tuners in PTG will sorely miss him. His passing, with that of his wife, Millie, leaves a gap that will not be easily filled.

Arthur Berson, RTT
New York Chapter

177 Golden Parl
Liberty, N.Y. 12754

Correction

Convention Awards

The October issue of the Journal shows a typesetting error under the list of awards presented at the convention in San Francisco.
The awards were as follows:

HALL OF FAME AWARDS
Bob Burton
Ray Feaster

Golden Hammer Award
Don Morton

Man of Note Awards
Jackie Sprinkle
Herman Koford

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Send check or money order (U.S. funds), made payable to the Piano Technicians Guild, to Classified Ads, THE JOURNAL, 113 Dexter Avenue North, Seattle, WA 98109.

The Journal does NOT provide blind box service. Please include a mailing address and/or telephone number with your ad.

Ads appearing in this journal are not necessarily an official endorsement of the services or products listed.

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PIANO TUNERS ARE GRAND AND UPRIGHT PEOPLE. Send $3 for this special 3½" x 15" bumper sticker in attractive calligraphy: **Jacky Briggs, 1013 Fairmont Ave., W.E., Jamestown, NY 14701.**

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Miscellaneous

AT LAST! Tuning, technician courses at The Piano Shoppe, Inc., evening sessions. **Victor A. Benvenuto, 6825 Germantown Avenue, Philadelphia, PA 19119, (215) 438-7038. Call or write.**

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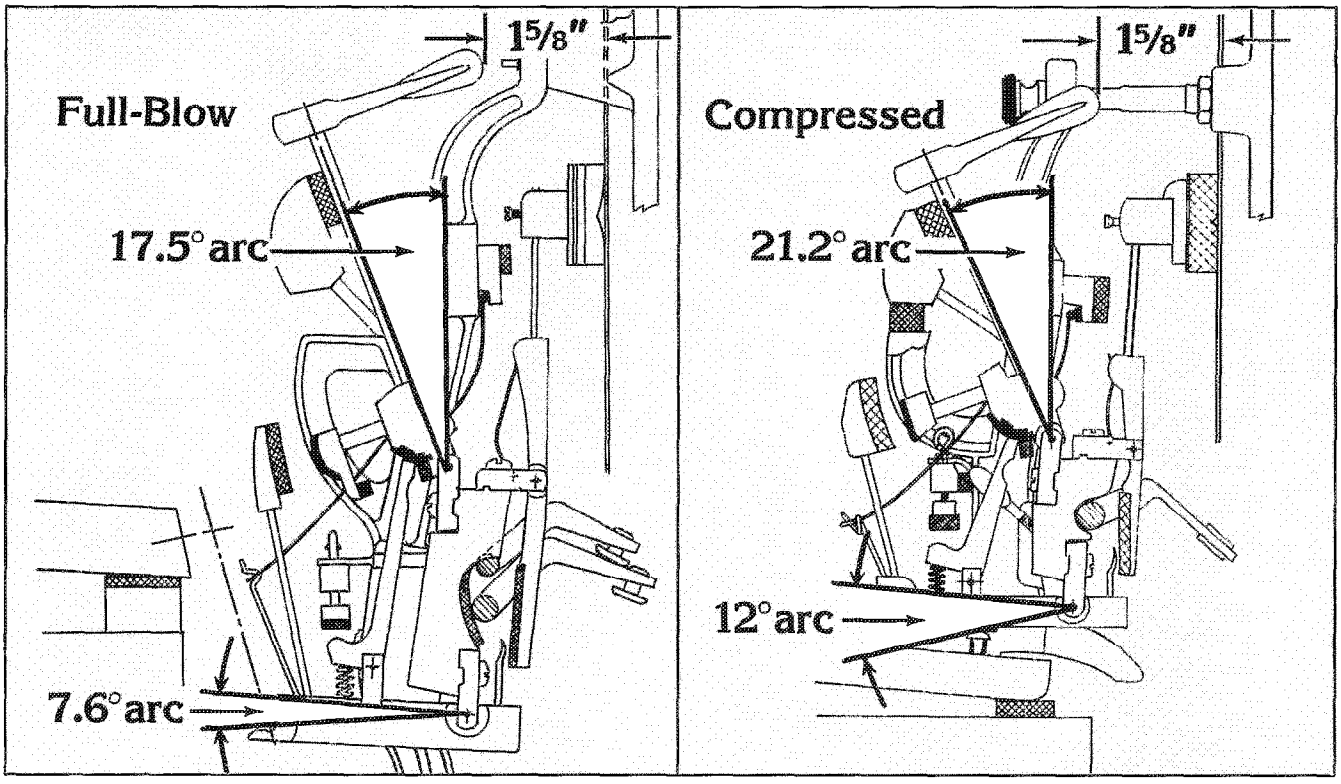
True, the compressed action is somewhat easier to remove and replace. But it has the built-in disadvantage of operating on greater arcs of motion, with added rubbing friction. That means less dependability and far more frequent service. In our Full-Blow Action our full-size parts travel on smaller arcs of rotation so there is less wear on the action centers.

Again, because of the greater arcs of motion, the compressed action has a reduced rate of repetition. In contrast, our researchers have found that our Full-Blow Action repeats at an average rate that is 23 percent faster than a compressed action.



In summary our Full-Blow Action adds up to a very impressive advantage when it comes to tonal performance — consistent full-power blows from full-sized parts, reduced wear on action parts, and an extremely fast repetition rate.

Sixth in a series of informative ads on piano tone published by Baldwin exclusively for the benefit of piano technicians.

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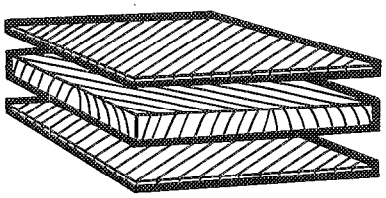


The grain of the wood in both top and bottom layers of the new soundboard runs parallel to the general direction of the treble bridge. The fine grain of the inside layer runs in the direction of the ribs.

Picture below shows relationship of crowned rib to soundboard. Putting a crown into the underside of the ribs holds a crown in the soundboard. This soundboard is of uniform thickness throughout.

Pencil point proves performance of new Wurlitzer Soundboard

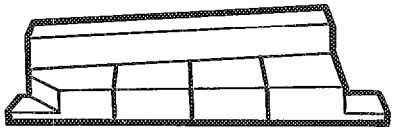
Wurlitzer's new all-spruce Duraphonic Multi-radial™ Soundboard transmits string vibrations more efficiently than any other.
To prove its responsiveness, touch the point of a sharp pencil to any area of the board and strike a note as you hold the pencil gently against the surface. Test it top, bottom, sides and center. You will feel vibrations that are both strong and evenly distributed.

That is because Wurlitzer now uses three separate layers of mountain-grown spruce in all of its finer pianos. These layers are placed at scientific angles so they transmit string vibrations (which travel mostly with the grain) to all corners of the board. The result is more volume, richer tone, and greater dynamic range. Crowning of the soundboard is achieved by crowning both ribs and soundboard liners. The soundboard itself is of equal thickness throughout and is therefore more capable of equal response in all areas.

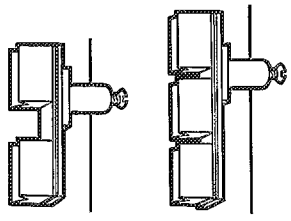
Of still greater interest to technicians, this new soundboard is more stable, with a coefficient of expansion/contraction that is 80% lower than that of solid spruce. This means truer tuning and fewer problems caused by moisture or temperature variations.

If you would like assistance from Wurlitzer technical staff, call 800/435-2930 toll-free between 8:00 AM and 4:30 PM. For parts, call Code-A-Phone 800/435-6954. In Illinois call 815/756-2771.

Further enhancing tone production is a new Quadrasonic™ bass bridge built in four sections. Low notes do not oscillate the whole bridge, but transmit more directly into the soundboard.



Dynamic response of the new soundboard is so much greater, Wurlitzer has increased the damper size by 30% to control the greater tonal output.



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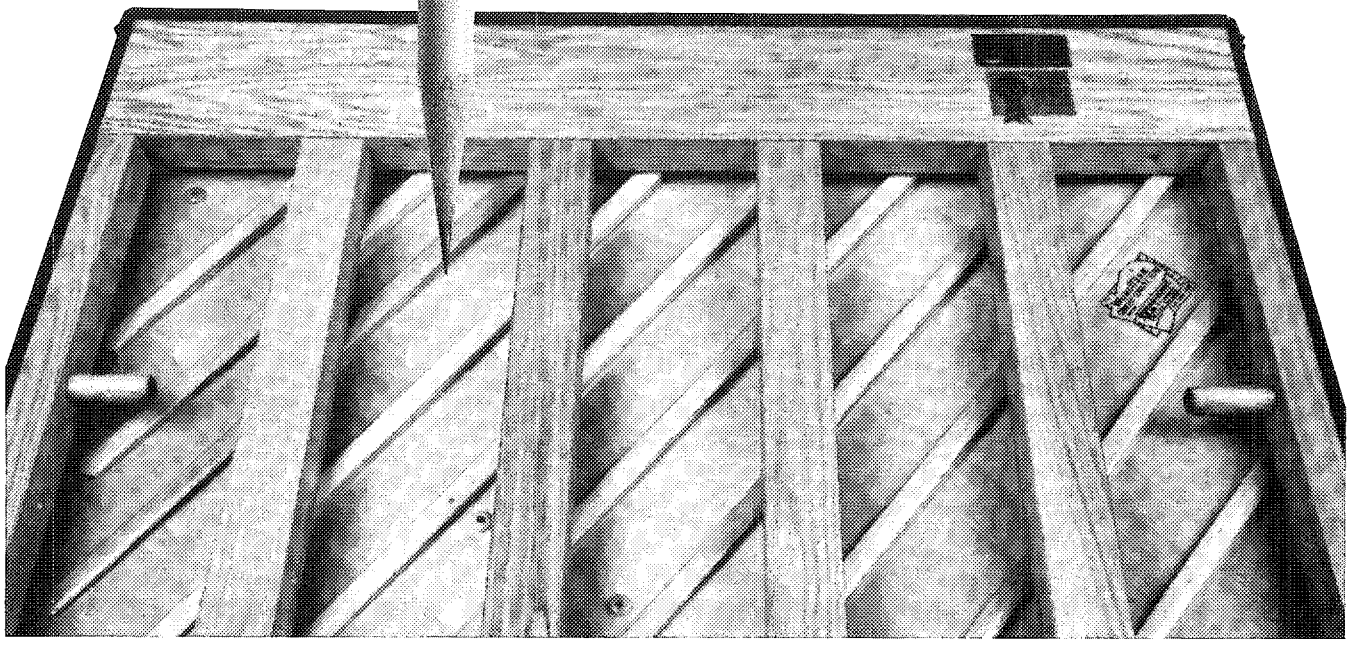

PIANO TECHNICIANS GUILD

1981

November Update

Newsflash From China!

Correspondence from
Sid Stone President,
Piano Technicians Guild

Today we are in Beijing (Peking) and enjoying every minute! It is usually more complicated to arrange a tour to China but of Alice's connections it can be done. At the end of this trip I'll be able to recommend where and how long for the pre or post IABPT Japan meeting tour.

September 22, 1981

On to the People's Republic of China, and especially Shanghai! Between Alice's brother, two sisters and their families, she hasn't stopped talking since she arrived.

There are 12,000,000 people in Shanghai (est.), and we saw 11 million Sunday afternoon on the streets and sidewalks, about half on foot and half on bicycles.

If the Journal had as many pages as the Los Angeles phone directory, there might be space enough for me to write half what I would like to say. Until then--

Sincerely,
Sid Stone

1982 Hall of Fame Award

Chapters are invited to submit names and qualifications of nominees for the 1982 Hall of Fame award.

For eligibility to the Hall of Fame, the member must have demonstrated:

(1) A definite contribution to upgrading the piano industry.

(2) Outstanding personal and professional integrity to the point of being an inspiration to others.

(3) Long-term dedication to the causes, ideals and purposes of the Guild.

(4) Outstanding contribution and implementation of ideas, programs, etc., resulting in a definite improvement of the piano industry.

All names and qualifications submitted will be considered by the Hall of Fame Award Committee and their selection will be completed by March 1982.

If material about or photos of a nominee can be made available for the Hall of Fame book, please enter information with your nomination.

Send nomination and other information to Dick Bittinger no later than December 31.

PTG Calender

1981

October 23	Deadline for reporting changes on the computer printout of all members sent to each chapter last month. Notify the Home Office of any address changes, new telephone numbers, transfers, new members, etc. Call the Home Office if you have any questions.
October 23	Deadline for requesting collection of chapter dues by the Home Office. Use pink form sent to chapters last month.
December 1	Mailing of membership billings for 1982 to all members on the Guild roster. Note: Students are sent billings before the anniversary date of their entry into the Guild.
December	Official request for nominations for election of PTG officers will be printed in the December Journal.
December 15	Current PTG officers and committees reports due into the Home Office for inserting in the midwinter board meeting agenda.
December 31	Deadline for nominations to the Hall of Fame to be sent to Dick Bittinger, Committee Chairman.

1982

January 23-24	Midwinter Board meeting in Seattle, Washington.
February 9	Deadline for submitting proposed amendments to the PTG Bylaws, Regulations and Codes. Send copy to Charlie Huether, Bylaws Committee Chairman.

MEMBERSHIP DUES - NOTE

There will be no provision for partial payment of dues for 1982. This was approved by the delegates at the 1981 Council Session.

Please be prepared to send your dues in one payment which will be due January 1, 1982, Delinquent date, March 31, 1982, and Drop date, May 1, 1982.

Dues

Registered Technicians, Apprentices, and Allied Tradesmen	$114.00
Associate Members and Affiliate Members	$ 57.00
Chapter Sustaining Members and Chapter Dues Waivers	$ 38.00
Membership Insurance Pledged to the Guild	$ 57.00
Students (due on anniversary date of entry into Guild)	$ 60.00

Chapter dues are included in individual billing if the chapter has arranged with the Home Office to do so. The full amount of Guild and Chapter dues must be paid at the same time.

Chapters have until October 23, 1981 to make arrangements with the Home Office to collect chapter dues.

TEST CENTERS FOR OFFICIAL PTG TUNING TESTS

NE REGION

BOSTON, MA
Albert Sanderson

NEW HAMPSHIRE
Frank Hanson

MAINE
Paul Rice

MARITIME PROVINCES
Joseph Steele

VERMONT
Thomas Roby

TORONTO, ON
John Lillico

OTTAWA, ON
Robert Smit

CONNECTICUT
Christopher Robinson

NEW JERSEY
William Marciano

NEW YORK CITY
Evan Giller

LONG ISLAND-NASSAU
Gary Schultz

CAPITOL AREA, NY
Rand Reeves

SYRACUSE, NY
Paul Simkin

SOUTHERN TIER, NY
Wade Alexander

BUFFALO, NY
Laverne Griffith

PITTSBURGH, PA
Robert Wagner

CENTRAL PA
William Kinser

PHILADELPHIA, PA
Hilbert Felton

READING-LANCASTER, PA
Leavitt Keener

SE REGION

WASHINGTON, D.C.
Ruth Ann Jordan

CENTRAL FLORIDA
Robert Carr

SOUTH FLORIDA
Larry Wicksell

SOUTHWEST FLORIDA
John Phillips

EAST TENNESSEE
Don Strong

SC REGION

NEW ORLEANS
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N. CENTRAL LA
Elizabeth Terrell

EL PASO, TX
Dean Howell

HOUSTON, TX
James Geiger

OKLAHOMA
Don Stephens

DALLAS, TX
Olan Atherton

FORT WORTH, TX
Cecil Parsons

TEXOMA, TX
David Hale

SAN ANTONIO, TX
Lee Sankey

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Clair Davies

CLEVELAND, OH
Kevin Leary

CINCINNATI, OH
Connie Chesebrough

INDIANAPOLIS, IN
Ronald Berry

DETROIT-WINDSOR, MI
Steve Hornbeck

MADISON, WI
Mark Kreitzer

CHICAGO, IL
Mark Foss

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Ray Hopland

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Franklin Lundak

TWIN CITIES, MN
Marlyn Desens

KANSAS CITY, MO
Dean Garten

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Richard West

DENVER, CO
Donn Miller

W REGION

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Terry Halleran

VANCOUVER ISLAND
John Wiley

SALT LAKE CITY, UT
Ralph Barrus

PHOENIX, AZ
James Coleman Sr.

LOS ANGELES, CA
Richard Davenport

SOUTH BAY, CA
Stephen Schell

POMONA VALLEY, CA
Francis Mehaffey

SAN DIEGO, CA
Brian DeTar

ORANGE COUNTY, CA
Brian DeTar

SAN FRANCISCO, CA
Sidney Stone

SANTA CLARA VALLEY, CA
Thomas Gorley

REDWOOD, CA
Daniel Gurnee

PORTLAND, OR
Kenneth Serviss

SEATTLE, WA
Edward McMorrow

OLYMPIA, WA
Wayne Matley

COMMITTEES

1981 - 1982

BUDGET, WAYS AND MEANS

Members of the Board of Directors are the members of this Committee

AWARDS (Member of Note, Golden Hammer

Eaton, Wendell ..... 8615 Mayfair Pl., Silver Spring, MD 20910, (301) 588-6333
Galt, Don, Chairman ..... 9229 15th Ave. N.E., Seattle, WA 98115, (206) 522-3363
McKlveen, Ben ..... 6448 Graceland Ave., Cincinnati, OH 45237, (513) 531-3758
Sanderson, Albert ..... 70 Forest Park Dr., Carlisle, MA 01741, (617) 369-5907
Russell, Bob ..... 1414 Lander Road, Mayfield Heights, OH 44124, (216) 449-5212

BYLAWS AND REGULATIONS

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Nickerson, Kathryn ..... 1412 "U" St., Omaha, NE 68107, (402) 734-5906
Nock, Samuel ..... 10421 Signal Butte Circle, Sun City, AZ 85373, (602) 933-8591
Oliver, Stanley ..... 1965 E. Outer Drive, Detroit, Mich. 48234, (313) TWI-9226

CHAPTER ACHIEVEMENT

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Hansen, Charles ..... 504 N. Walch, Porterville, CA 93257, (209) 784-5382
Rodgers, Thomas A., Chairman ..... 4006 First St., Stevens Point, WI 54481, (715) 344-4384

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McKlveen, Ben, Chairman ..... 6448 Graceland Ave., Cincinnati, OH 45237, (513) 531-3758
McLuckie, Ian ..... 2821 Sandpoint Road, Fort Wayne, IN 46809, (219) 747-0622

CHAPTER NEWSLETTER

Duncan, David ..... 1552 Ann Arbor Ct., High Point, NC 27260, (919) 882-6002
Seabern, Paul, Chairman ..... P.O. Box 515, San Dimas, CA 91773, (714) 599-1470

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Huether, Charles, Chairman ..... 34 Jacklin Ct., Clifton, NJ 07012, (201) 473-1341
Jamison, Philip III ..... 104 Price St., W. Chester, PA 19380, (215) 696-8449
Seise, Jeffrey J. ..... 59 Schuler Ave., Waldwick, NJ 07463, (201) 447-5971

COLLEGE AND UNIVERSITY FORUM

Jones, Joel A., Chairman ..... 5914 Tolman, Madison, WI 53711, (608) 271-6090
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Neblett, Norman H. ..... Box 7000-65, Redondo Beach, CA 90277, (213) 316-3993
Phillips, John C. ..... 9491 - 110 St. N., Seminole, FL 33542, (813) 391-5062
Wiley, John ..... Box 2503, New Westminster, B.C., V3L 5B2

PUBLIC RELATIONS AND BUSINESS PROMOTION

Allen, Jon K. ..... 3025 So. Stewart, Mesa, AZ 85202, (602) 839-6078
Clopton, John ..... C&O RR Station, P.O. Box 415, Crozet, VA 22932, (804) 823-5289
Greenfield, Jack ..... 259 Riverside Dr., Northfield, IL 60093, (312) 466-9193
Monroe, Paul, Chairman ..... 5200 Irvine Bl. #310, Irvine, CA 92714, (714) 730-3469
Wagner, Robert ..... 1225 Saxonwad Ave., Pgh., PA 15234, (412) 884-8222
Bryant, Jim

RECOGNITION

Heindselman ..... 3802 No. 12th, Tacoma, WA 98406, (206) 752-7695
Jacobs, Roberta, Chairman ..... 4835 David Ave., Sarasota, FL 33580, (813) 355-8278

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Miller, Norman, Chairman ..... 1917 Graylock Ave., Monterey Park, CA 91754, (213) 721-4130
Prueitt, Ernest ..... 4022 S. Fuller, Independence, MO 64052, (816) 252-2885
Willis, Charles P. ..... 311 Midland Ave., River Edge, NJ 07661, (201) 262-1369

TECHNICAL INSTITUTE EVALUATION

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Defebaugh, George, Chairman ..... 2742 East Ave., R-12, Palmdale, CA 93550, (805) 273-4273
Juhn, Ernest ..... 109-01 72nd Road, Forest Hills, NY 11375

TEACHER RELATIONS

Fornwalt, Fred, Chariman ..... 1333 Logan Blvd., Altoona, PA 16602, (814) 942-1489
Truax, Richard A. ..... Rd 8, Box 40E, Heather Dr., York, PA 17403, (717) 792-4194
Zimmerman, Terry L. ..... 411 N. Nottawa, Sturgis, MI 49091

TRADE RELATIONS

Block, John ..... 2655 So. Leyden, Denver, CO 80222, (303) 757-0004
Davies, Clair ..... 848 Arrowhead Dr., Lexington, KY 40503, (606) 277-2264
Russell, Bob, Chairman ..... 1414 Lander Rd., Mayfield Hts., OH 44124, (216) 449-5212

VISUALLY HANDICAPPED

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Sprinkle, Jack, Chairman ..... 6033 N. 19th Rd., Arlington, VA 22205, (703) 538-2728
Sprinkle, Paul ..... 1530 Winston Dr., Macon, GA 31206

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Hawkins, Marshall ..... P.O. Box 10386, Oxon Hill, MD 20745, (301) 567-2757
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Russell, Bob ..... 1414 Lander Road, Mayfield Heights, OH 44124, (216) 449-5212

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Brady, Steve ..... 22808 35th Avenue W., Brier, WA 98036, (206) 771-7781

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NE Region: Robinson, Chris ..... 190 Long Hill Road, South Windsor, CT 06074, (203) 528-6991
SE Region: Jordan, Ruth Ann ..... 4 East Granville Drive, Silver Spring, MD 20901, (301) 587-7757
SC Region: Atherton, Olan ..... 302 North Travis Street, Sherman, TX 75090, (214) 892-2524
CE Region: Kreitzer, Mark ..... 329 East Bluff, Madison, WI 53704, (608) 249-5274
CW Region: Finger, Chris ..... P.O. Box 356, Niwot, CO 80544, (303) 447-9623
W Region: Matley, Wayne ..... 28610 S.E. Mud Mountain Rd., Enumclaw, WA 98022, (206) 825-6921

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Coleman, Jim Sr. ..... 4 West Del Rio, Tempe, AZ 85282, (602) 966-9159
Sanderson, Dr. Al ..... 70 Forest Park Drive, Carlisle, MA 01741, (617) 369-5907
Morton, Don ..... 19501 Mayall St., Northridge, CA 91324, (213) 349-3736
Wiant, Benjamin (Bench Test) ..... 865 Bryden Road, Columbus, OH 43205, (614) 464-4343

HALL OF FAME

Bittinger, Richard, Chairman ..... 107 West Main St., P.O. Box 51, Brownstown, PA 17508, (717) 859-3111
Eaton, Wendell ..... 8615 Mayfair Place, Silver Spring, MD 20910, (301) 588-6333
McKlveen, Ben ..... 6448 Graceland Ave., Cincinnati, OH 45237, (513) 531-3758
Mehaffey, Francis ..... 1031 Northwestern Dr., Claremont, CA 91711, (714) 624-7140
Morgan, George ..... 6037 39th Ave. S.W., Seattle, WA 98136, (206) 932-8080

HONORARY AND SUSTAINING MEMBERS

Board of Directors

INTERNAL CODE OF ETHICS

Berg, Harry E., Chairman ..... 2612 Gill Ave., Bakersfield, CA 93306, (805) 871-4600
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Denham, Doug ..... 4366 Candlewood Lane, Ponce Inlet, Daytona Beach, FL 32019, (904) 767-7538
Lillico, John E. ..... 200 Queen Mary Dr. - 605, Oakville, On L6K 3L1, (416) 842-2776
Odenheimer, Fred, Chairman ..... 15358 Wyandotte St., Van Nuys, CA 91406, (213) 785-8402
Utsunomiya, Kenzo ..... 578 N. Sycamore Ave., Fullerton, CA 92631, (714) 879-5236

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Cunningham, Jess ..... 25 Lewis Lane, Pearl River, LA 70452, (504) 863-7532

MINORITIES

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Juhn, Ernie ..... 109-01 72nd Road, Forest Hills, NY 11375
Sankey, Pat ..... Rte. 5, Box 5181, Boerne, TX 78006, (512) 336-2268

NOMENCLATURE AND SERVICE MANUAL

Heischober, Norman ..... 295 W. Shore Dr., Massapequa, NY 11758, (516) 799-1656
McCall, Raye, Chairman ..... 1078 E. 3rd St., Pomona, CA 91766, (714) 622-8826

NOMINATING

Juhn, Ernie, Chairman ..... 109-01 72nd Road, Forest Hills, NY 11375
Jordan, Ruth Ann ..... 4 East Granville Drive, Silver Spring, MD 20901, (301) 587-7757
Berry, Ron ..... 6520 Parker Lane, Indianapolis, IN 46220, (317) 255-8213
Finger, Chris ..... P.O. Box 356, Minot, CO 80544, (303) 447-9623
Crabb, Larry ..... 4566 Ginson Drive, Tucker, GA 30084, (404) 491-1433

Alternates on Nominating Committee

Morgan, George ..... 6037 39th Avenue S.W., Seattle, WA 98136, (206) 932-8080
Whitting, Ed ..... 7891 Rhine Drive, Huntington, CA 92654, (714) 847-4858

PTG BYLAWS REVISION

The revised edition of the PTG Bylaws are to be printed shortly. In view of the high cost of paper and printing the Board of Directors has decided that one copy will be sent to each chapter and individual members may obtain a copy on request.

A nominal fee of $2.00 will be charged for additional copies for chapters and for individual members who wish to own a personal copy of the revised bylaws.

The printing will be a short run and orders will be filled until the supply is exhausted.

In Memorium

SIDNEY BROWN

Sidney Brown died July 15, 1981, in his hometown of Galveston, Texas. He was a very early member of the Houston Chapter, PTG, and was proposed for membership by the late Harry Hughes of Houston. Sidney tuned pianos and electronic organs all his life, and also serviced televisions. He was a member of the La Marque, Texas, Elk's Lodge, where he played the organ for the initiation of new members and special events. Sidney attended many national PTG conventions and had a great respect for this organization. He was a widower and leaves two sons and a married daughter who live in Galveston.

Submitted by Paul E. Bergan, RTT
Houston Chapter, PTG

CHAPTER EXAMINATIONS FOR APPRENTICES

New members can join the Guild at the Apprentice level without taking the new tuning test.

The chapter can give the usual written and bench tests and also the regular chapter tuning test. If the applicant passes these chapter tests at 50% or better the chapter can accept the new member as an apprentice and send the application form and entry fee to the Home Office.

A student may be reclassified to Apprentice by taking the same chapter examinations and passing at 50% or more.

Only those who wish to be classified as registered technicians are required to pass the new tuning test. This test is only given at an approved tuning test site under the direction of a certified tuning examiner.

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NEW on ADDRESS CHANGES

If you are moving south for the winter or making an address change for a few months only and plan on returning to your permanent address within twelve months or so, please note:

The home office is no longer able to handle this kind of frequent address change and still guarantee your Journal delivery.

If you have a regular or permanent address which you use for approximately half the year we shall maintain that address in the files and on the computer listing. It will also be used for any updating of the membership roster.

You are asked to make arrangements with the local post office for your Journal and other PTG mail to be forwarded to you.

We regret that we are not able to guarantee a duplicate copy of a missed or undelivered Journal. Due to high costs of printing and paper we have reduced the overage of Journal copies each issue.

Chapter Notes

The September meeting of the Phoenix Chapter was a business and technical meeting with 13 RTT's and 5 students present which made for a quorum. The meeting was held at Schroeders Piano Store, 1945 E. Indian School Road, Phoenix, Arizona.

The technical session was presented by Carl Bates, Vice President, on "How To Avoid Back Problems When Working On Pianos". Carl is a physical therapist and the presentation was most worthwhile.

Joe Allen reported on the plans for the forthcoming Arizona Seminar scheduled for January 8th and 9th, 1982 to be held at Arizona State University. So far the Kawai Piano Corporation will be represented by Jim Harvey. Jim Coleman, Sr. will have a session on installing hammers in a grand piano. George Defebaugh has agreed to give a presentation but his subject has not been established. There will be still another nationally known technician, however, the arrangements are still being negotiated.

The Wichita Chapter sends many thanks to the Baldwin Piano Co. for two telephone sessions for technicals last month. Willard Sims and Jack Krefting were the hosts for a slide presentation and question and answer sessions on properties of wood, and a second presentation on a grand piano factory tour.

For a few laughs, in the last issue of "Musical Merchandise Review", an ad ran that follows: "Piano Tuning and Technology, $25 to $40 per hour. Videotapes explain note by note. Audio Cassettes available too. Complete training by Master Tuner and leading author in this field. 'Hands on' with a pro at your side. Certification available. Bankers hours. Professional pay. For full details, send SASE to Victory Institute, Inc., 211 Council St., Lewiston, Ohio."

The September 1st meeting of the Atlanta Chapter at the new Cecil White facility on Peachtree Industrial Boulevard was a huge success not only in content but in numbers. 45 members, former members, future members, hosts, guests and presenters made this the best turnout in recent memory. Bill Brandom, Customer Service Administrator for the Everett Piano Company gave a most interesting technical and factory tour Presentation. The meeting, the food, the fellowship and the impressive surroundings made this a most rewarding evening.

A new chapter was formed in Southern New Jersey on June 23, 1981. Chapter officers are Walt Yakabosky, President, Fred Raudenbush, Vice President, Treacey Thompson, Treasurer, and David Forman, Secretary. Most of the members were former members of the Philadelphia chapter. For the July meeting, Fred Raudenbush gave a technical session on setting tuning pins and tuning stability. In August, Victor Benvenuto presented a session on hanging grand hammers. The new chapter presently consists of 22 members.

The San Diego Chapter's July meeting featured an impromptu discourse by Lou Berger - Aeolian's Marketing Director who recently moved to the San Diego area. Our August meeting featured a film by Yamaha Piano Company. The September meeting's technical session was given by Jerry Foye (chapter member) on sharpening cutting tools and related items.