PIANO TECHNICIANS JOURNAL

March 1981

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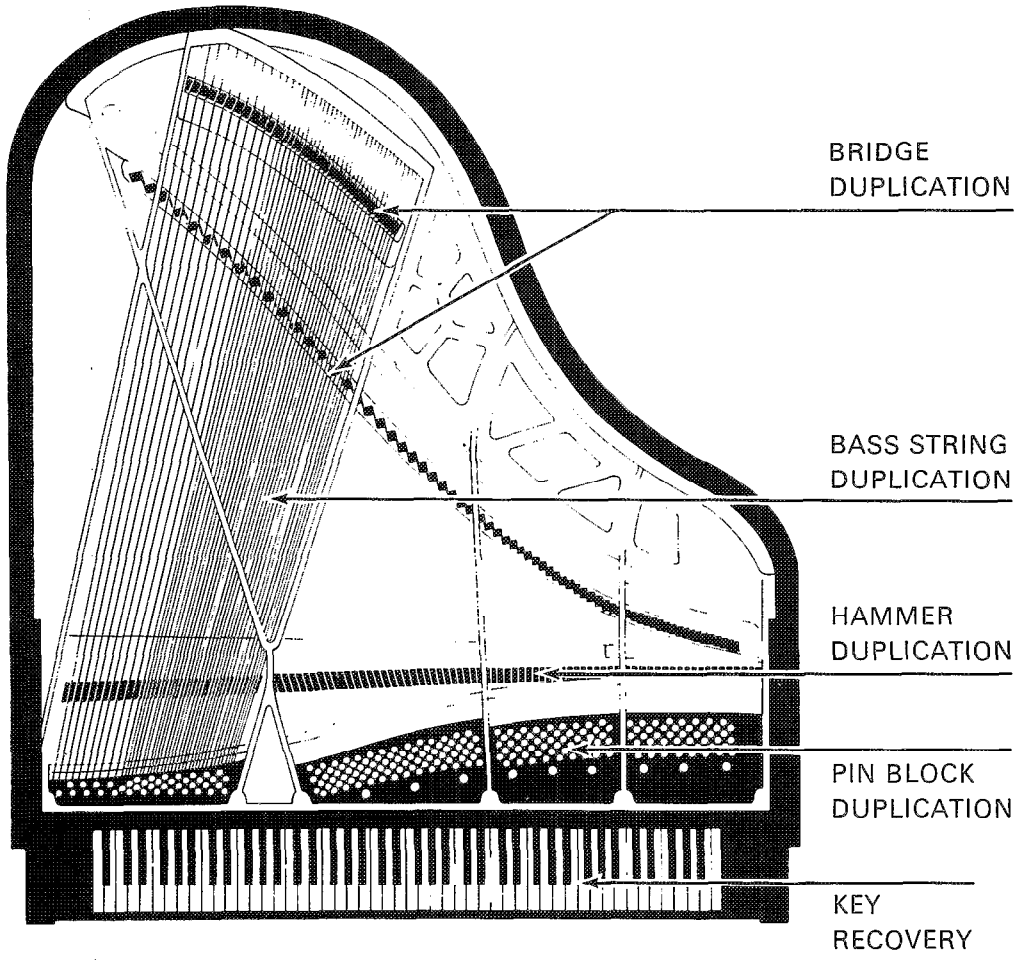

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Official Publication of the Piano Technicians Guild/ March 1981 Volume 24 Number 3

Piano Technicians Journal

CONTENTS

COVER . . . Called The Puritan of Pianists, as much for his looks as for his sober interpretations, Sergei Rachmaninoff studied every piece as a composer as well as a pianist. By the 1920s he was an international pianistic idol, known primarily in this country for his Third Symphony and solo piano preludes (particularly the C sharp minor). Born in 1873, he graduated from the Moscow Conservatory in 1892, receiving its highest honor, the Great Gold Medal. He died in 1943.

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8 am-5 pm
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PIANO TECHNICIANS JOURNAL, the official publication of the Piano Technicians Guild, is published monthly and issued to members. Annual subscription price: $60 per year; $108 for two years; $5.50 per single copy. *Editorial Offices:* 113 Dexter Avenue North, Seattle, WA 98109. Telephone (206) 283-7440 or 682-9700. **Closing date for copy and advertising is six weeks prior to date of publication.** Advertising rates are furnished on request.

Reprints of most articles are available from the Guild home office, 113 Dexter Avenue North, Seattle, WA 98109. Price per page (plus postage): $1.25 for the first page of each *Journal* article researched, $1.00 for additional pages of the same article.

Second Class postage paid at Seattle. US ISSn 0031 9562 Foreign and Domestic.

EDITORIAL

Don L. Santy,
Executive Editor

While rummaging through Guild memorabilia recently I came across two separate but distinct writings that were of interest to me and may be to you.

One was a letter Recording Secretary/Treasurer **Charlie Huether** wrote to Les Hoskins in February of 1972. It read in part as follows:

"Dear Mr. Hoskins,

I love the idea of the Roaring Twenties articles and I would like to suggest that there are many men like yourself who go back to the twenties and perhaps earlier. They have a wealth of knowledge about the old piano industry and about themselves. Their stories about how they survived and succeeded in our unique profession would make great reading. It would be a social commentary about a type of person who is rather unusual. The independent person, of whom there are still many today, is a person with a very different viewpoint from the majority. The rewards he accepts for his work are intangibles which cannot be figured in dollars and cents. What I would like to see develop is "An Oral History of the Golden Age of the Piano," covering the turn of the century up to the Depression. It would be compiled through tape interviews of whatever old timers we could find in the Guild or out of it. Using tape and a questionnaire to start with, the interviews would go in the direction the initial answers pointed or the desire and abilities of the subject indicated.

"There would be a great gathering of technical information, but this would not be what I would look for. The hope would be to gather the personal history and feelings of these unusual people. This would be a project which PTG could sponsor, perhaps initiate. I would love to be involved in something like this. Please let me hear your comments."

There must be some members in some chapter who could take Charlie's suggestion and interview some "old timers" on tape. The information would certainly be interesting and could be of great value.

If you have the ability, the resource and the time to do this job, we would be most happy to hear from you.

The second item I would like to point in the way of general interest is an editorial from the Fort Wayne *News-Sentinel* of October 14, 1971. Entitled, "A Waxing Need for Craftsmen", it brings up an important issue which is as relevant today as it was then.

"There was more to child adoration of the Village Smithy than the muscles of his brawny arms, or the fact that he, in poetic beauty, stood under the spreading chestnut tree, now almost extinct from disease. His veneration, by young and old alike, came from his skill at heating, drawing the iron, and often melding it. A blacksmith did more than shoe horses, although that was very necessary in the days of horse transportation.

"The smith's skill in making a hand-shaped hasp for a door, a pair of hinges, a knob, a door knocker, a step for a buggy or a simple thing like a poker handle twisted, were more often than not a work of art. The blacksmith was an artist and it was fascinating to watch him work.

"We may not have as great a need for home-town blacksmiths these days, but we do need bricklayers, refrigerator repairmen, carpenters and sheet metal workers who can make a seam in two sheets in a way it will last for years without leaking. With America turning from an agricultural population, where most learned by necessity to do things themselves, to an urban people, often without hand tools or skills to use them, more and more people must hire skilled craftsmen for almost all repairs.

"Not only needed, the skills are honorable. Schools turn out Liberal Arts thinkers. We need school teachers, bankers and lawyers, but we need mechanical "doers" also. There is pride in doing a job with one's own hands; a satisfaction in personal accomplishment.

"'Meaningful' careers! What could be more meaningful than wiring a house for electricity or fitting it with copper plumbing, each soldered joint one of which the worker is proud.

"For years in Europe it was not just the castoffs who took up skills and trades. Guilds started in Belgium. Artisans still have a high standing there. It could be that skilled workers are one of the reasons Germany, Japan and other nations are showing us a run for our money economically. They believe, in many nations, that everyone should have a saleable skill.

"But what is really needed is elimination of some sort of a "lower class stigma" often attached to skills, compared to the so-called think jobs, much less productive in many cases, than laying a fireplace, growing corn, welding a broken piece of equipment, or repairing an automobile engine.

"Let's take another look at occupations; a better look; a new look at dignity."

I am not a craftsman. I am helpless when it comes to repairing anything mechanical. The only significant thing I have ever been able to do remotely resembling a craft was an enduring and intense interest in the natural sciences when I was a boy.

Befriended by a local museum curator, I learned taxidermy and the skill of mounting mammals, insects and other of nature's specimens, particularly skeletons for display purposes. The war, college,

The Resemblance Is Obvious!

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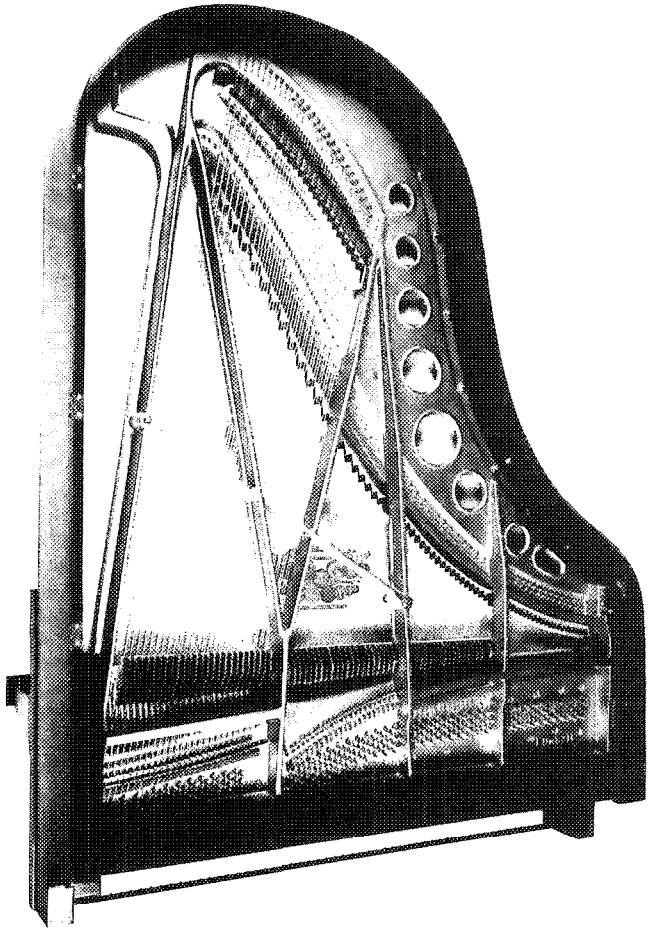
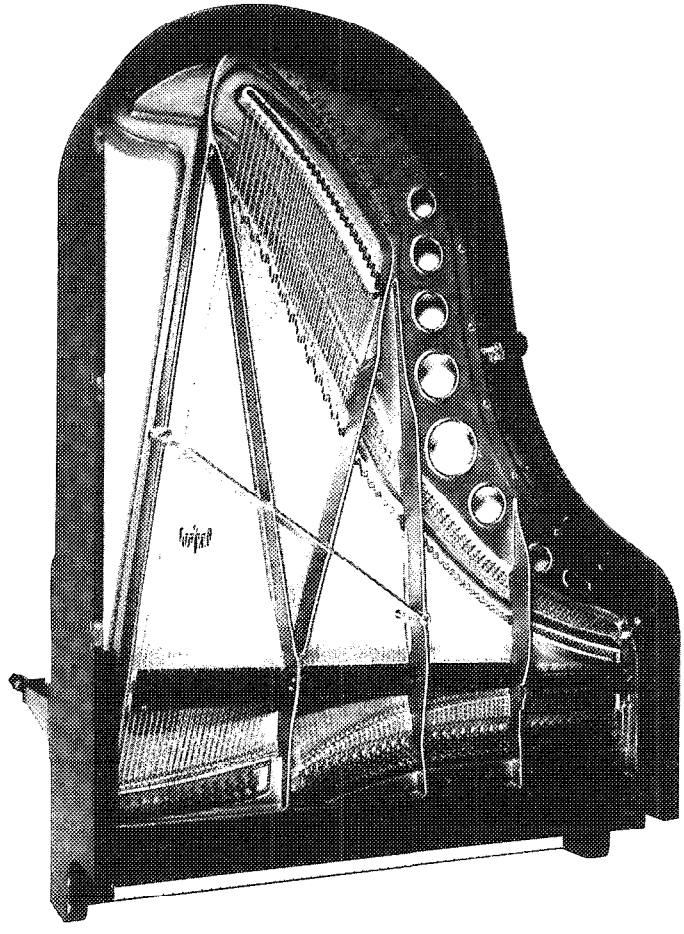


The Bösendorfer 6'7" Grand



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and an education career soon replaced that interest. I still admire and respect those who can "do things", particularly things of a practical nature. There are so many people who can't. For the past few years those of us in the business world have been inundated with work applicants who majored in "political science." When I ask, "What can you do?" I get a blank stare. The sad truth in most cases is they can't do anything.

Piano technicians are handy people. Not only are they skilled and knowledgable in the fine arts and letters, but they are practical people, useful people and far above the average in intelligence.

My Uncle Tony was a piano tuner back in the twenties. He would come to our house in Green Bay, Wisconsin and spend an hour or so plinking on the piano and I can remember watching and listening in fascination. He was an energetic, good-natured little man with a bald head and a ready smile. We looked forward to his visit and it usually turned out to be a day-long affair. The extent of his knowledge and vastness of his experience enthralled me. I would love to talk to Uncle Tony today. I wonder what he would have to say about the state of the art.

We can all learn from History. History is prologue. Have you read this statement from Marcus Tullius Cicero, dated 106-43 BC. "The budget should be balanced, the treasury should be refilled, public debt should be reduced, the arrogance of officialdom should be tempered and controlled, assistance to foreign lands should be curtailed—mobs should be forced to work and not depend on government assistance." □

I mentioned these two articles because they both carry a message. That message tells us that in the frantic race to "stay ahead" and survive in a highly competitive and complicated modern-day business climate it is easy to forget. There is an old Chinese proverb... "those who forget the past are destined to relive it."

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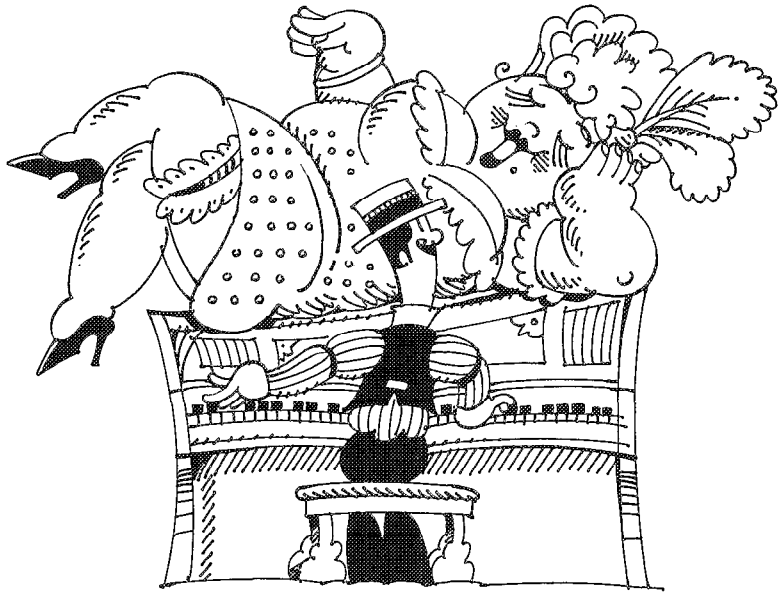

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PRESIDENT'S MESSAGE

Bob Russell, President

Are you a "concert tuner"? . . . Of course you are! Just what is a concert tuning? I'm sure this question will never be answered to everyone's satisfaction, but I would like to inject a few ideas or observations.

To many of us our first reaction to someone who is known as a "concert tuner" is that this person is a technician of great ability who makes a living tuning the finest pianos . . . for superior artists . . . in concert halls of some renown. I agree that this is true to a certain point, but over the years I have found that perhaps there are other types of tunings and tuners that fall into the "concert tuner" category and never set foot on a concert stage.

Let me give you some examples. Mom and Dad purchased the best piano they could afford, however the piano wasn't "the best". The piano had been tuned as suggested by the manufacturer. The child practiced and thoroughly enjoyed this wonderful gift. The day came when her grandparents were coming for a visit. Mom had the piano tuned and asked the tuner to do a great job because they were going to have a concert for grandma and grandpa . . . this is a concert tuning. This performance, in some ways, perhaps meant more than any other concert to these people.

Technicians are asked to tune pianos in a church, school or music studio and many times they don't consider these tunings too important, but perhaps these pianos are for concert use. Sunday service can be a concert to the ears. Some people only have the musical sounds of a school piano to relate to . . . they never get near the "concert stage".

And what musical sound could be more important than a student practicing and trying to play his lesson correctly? The home is really a concert stage every day. I have a customer who has an extremely fine concert grand in her living room. This piano is tuned anywhere from every other day to every three months. The living room is well equipped with recording equipment and microphones, an actual recording studio. This is concert tuning!

Many times I get the impression that some technicians are intimidated by the words "concert tuner" and I'm not sure this should be so. Every good technician, especially when they have a special tuning event, really does the best job of tuning they are capable of and, at this point, are a "concert tuner". It takes a special person who can or will do his best when a piano tuning *only* seems like an average job. I truly admire the technician who will do his best, his *concert tuning*, on every piano regardless of the audience.

Every piano deserves a fine tuning, regardless of its location, be it a home, studio or auditorium. But it takes a person of true character to bring out the best of each. I believe that piano technicians have such a personality and that they will bring to the world the best noble sounds and tones of all pianos. □

Reader Feedback

Dear Mr. Santy:

A few nights ago Tom Reed called me regarding his feelings on Jim Coleman's article in the January *Journal*. After a lengthy conversation I suggested he write to the *Journal* stating his concern.

Some people think I am against the tuning test because I have questioned it on numerous occasions and have in the past and still do champion the cause of the "silent minority."

Be it known again, I am *not* against anything, but I have been concerned about the implementation of this too expensive testing system. I have worked in the past to prepare it, and now that Council has spoken, I am doing all I can to promote it.

Several times there have been articles in the *Journal* explaining and promoting it, but as yet I have seen nothing printed suggesting any opposition to it.

Ernest Preuitt
Independence, Missouri

(Editor's note: Mr. Reed's letter follows.)

Dear Mr. Santy:

I read Jim Coleman Sr.'s article "How to Beat the New Tuning Test" in the January issue of the *Journal*. I have been following the progress of this test as best I could, hoping to see some eventual clarification that would justify and establish it as a good and worthy test. But it would appear from Jim's article that the test is not suited for its main purpose, which—as I understand it—is to determine whether people are qualified for membership in the Guild.

I have great admiration for Jim, he has taught me a great deal in his tuning classes, and he has unselfishly helped the Guild a great deal. Jim has even been patient and tolerant of my 6-6 keyboard, even though it's not his cup of tea. So I do not question his integrity, knowledge or skill. He is an extremely worthy person.

What I question is the new test, and whether it is appropriate for examining prospective members.

This is not the place to go into a thorough critique of the test. I am probably not very well qualified for that, even if this were the place. But I would like to mention a few characteristics of the test which seem inappropriate for the purpose for which it was intended.

First of all, the test assumes that it is possible to establish an ideal tuning on an actual instrument. The very nature of tuning militates against this assumption. Those who would presume to establish an ideal tuning will always be in doubt about whether some other tuner will be able to establish a *more* ideal tuning. Furthermore, would it not be possible to have two or more equally fine tunings?

I appreciate the fact that the reasoning behind the ideal tuning procedure is to have a standard of excellence from which to measure, so that there will be some objective and fair way to determine how far off a tuner is from the ideal, and whether he meets minimal standards. The difficulty is that there *is* no single standard of excellence, and the sooner we accept that, the happier we're all going to be, especially the people who are applying for membership.

If a few (or many) tuners want to test their skill and try to match the tuning standards as set up by the new tuning test, fine. But it seems to me that the nature of the new test has little correspondence to actual tuning conditions in the field, and whether a tuner does acceptable work, which is what the Examiners for the Guild need to know. I understand that the test is given only on a grand piano, and the typical young technician has very few customers with grand pianos. For best results, one needs considerable experience tuning grands. Are we testing for how perfectly a person can tune a grand, or how well he meets Guild membership standards?

I would recommend that the new test be reserved for laboratory work, only, and that other testing procedures be explored for determining membership. I maintain that other forks besides the A-fork can be used correctly in meeting the pitch level of A-440, contrary to what Jim says, and to suggest otherwise will reflect poorly on the Guild and those responsible for the tuning examinations, especially in the eyes of the Bureau of Standards. There is nothing more perfect about the frequency 440 than any of the other eleven equally tempered frequencies based on 440. A-440 is really an imperfect figure carried out to an infinite number of zeros, 440.0000 000. . . just as the other eleven may be carried to an infinite number of places. Infinitely fine tuning is useful for some things, for example in the laboratory, where electronic instruments can be used that can detect smaller variations than the human ear. For the home, the concert hall, the music studio, the human ear is the important judge, regardless of what the strobe says. In testing aspiring new technicians who want to become members of our learning and fraternal organization, they should be tested for what they hope to be doing, tuning in the field, not the lab.

Thomas S. Reed
Kirksville, Missouri

Dear Mr. Santy:

Saint Vincent College has $4,000 it wants to give away!

That's right. Saint Vincent has a $4,000 scholarship that is available for men who wish to study music or music education at the undergraduate level. Funds for this scholarship were provided by the estate of Gabriel Burda, a resident of Latrobe, Pennsylvania and musician who devoted his life to playing and teaching music until his death in 1977 at the age of 88.

The award is made annually based on auditions held here at the college. Anyone wishing further information may write for the Music Scholarship Application and Competition Information from Joseph Bronder, Chairman of the Music Department, Saint Vincent College, Latrobe, Pennsylvania 15650.

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Don Orlando
Latrobe, Pennsylvania

THE TECHNICAL FORUM

Jack Krefting, Technical Editor

This month we present a variety of questions, the first four of which were asked by a newer member who prefers not to be identified.

ALUMINUM VS. WOODEN ACTION RAIL

QUESTION: *"I've noticed that some vertical pianos are being built with aluminum action rails. Are these superior to the wooden kind, and if so, how?"*

ANSWER: Aluminum action rails are very stable in dimension in the usual environment, and they will not split or warp. In addition, the density and quality of the material is identical at every spot along the length of the rail, and it is not sensitive to changes in humidity. These advantages do not, however, necessarily mean that the aluminum rail is superior.

The problems with aluminum rails seem to involve the screw holes in one way or another. Self-tapping steel screws are usually used with aluminum rails, and the two metals have different rates of expansion and contraction when the temperature changes. And if a screw should strip out, the repair procedure tends to be more complex (or at least less familiar to the average technician) than would be the case with a standard wooden rail. Some type of machine screw with a nut would have to be substituted for the self-tapping screw, or a heli-coil device would have to be used.

When discussing wooden rails, a distinction should be made between a laminated rail and a one-piece rail. The three-piece laminated rail is far superior to the solid rail, in my opinion at least, because it tends to be more stable and the grain can be oriented for maximum screw-holding power. **Figure 1** illustrates that the typical one-piece rail has a grain orientation which tends to hold the damper flange screws well, but the butt and whippen flange screws would tend to split the rail. The three-piece rail, on the other hand, offers greater resistance to warpage plus superior holding power for butt and whippen flange screws. The grain is wrong for the damper flange screws, but these are the least important in terms of torque requirements.

The wooden rail is sensitive to humidity changes, so flange screws can loosen during dry weather. This is a definite disadvantage, because the average home environment will show a greater fluctuation in humidity than in temperature. The aluminum rail would be more stable when the humidity fluctuates, and the wooden rail more stable in variations of temperature.

Sometimes the manufacturer makes the choice based upon cost and availability of materials. Right now in the United States, manufacturing costs are virtually identical for wooden or aluminum rails. In some foreign countries

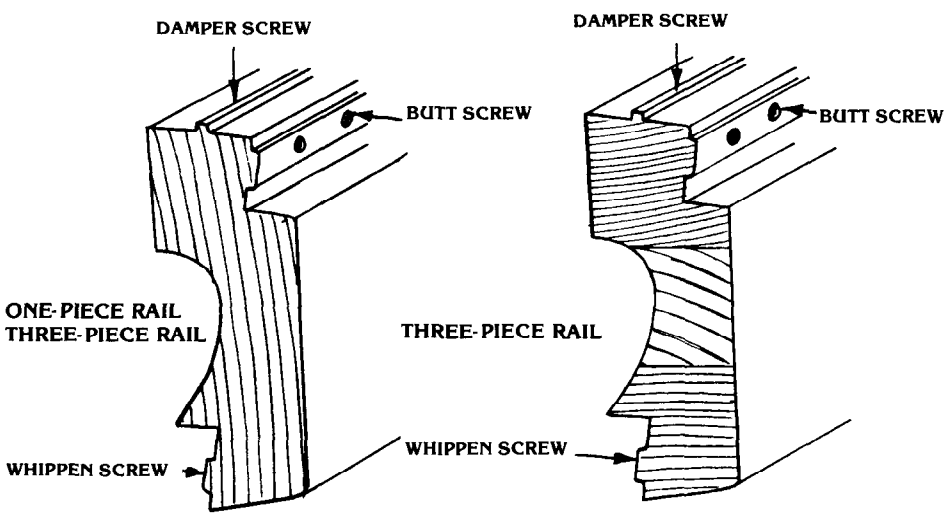


Figure 1

the metallic rail might be somewhat less expensive because of the necessity of importing good maple, which is in diminishing supply even in this country. I would venture to guess that within a few years more and more piano parts, including action rails, will be made of metal or plastic; not that these materials are necessarily better, but because of supply problems. There are thirteen species of maple in the U.S., only two of which are really suitable for making action parts. Those two species, black maple and sugar maple (sometimes called rock maple), are slow-growing and are being used up faster than they can be replaced.

ACTION NOT REMOVABLE

QUESTION: *"One of my customers has a grand piano which needs regulating badly, but the action cannot be removed because the drop screws hit the pinblock. What can be done?"*

ANSWER: First, determine the cause of the interference. If it is happening only in the middle, it is probably a pinblock problem. If the interference is from one end to the other, it is possible that someone has turned the glide studs down too far, thus raising the action so that it cannot be removed from the case. A telltale sign of this is that the adjacent hammers will dance whenever a staccato note or chord is played.

Most often, the technician will find that the pinblock has moved downward in the middle, either because it was poorly fitted to the flange or because it has delaminated. The problem is really twofold, in that the action must be removed to be properly serviced; yet the root cause must also be found and corrected so that the action can be removed again in the future.

If the pinblock is delaminating, the action may be removed if the bottom lamina is removed or wedged upward. This procedure will at least allow the removal of the action, but will not improve the condition of the pinblock. The block will have to be replaced sooner or later, and the piano owner should be informed of that fact.

If the block seems to be in one piece but lower in the middle, it has probably shifted because of improper fitting to the plate flange. The best solution to this problem, short of tearing the piano down and replacing the block, would be to lower the tension and clamp the block back up, tightening plate screws to keep it there. After the action has been removed, any gaps between plate flange and pinblock should be filled with hardwood wedges so the problem will not recur. In an extreme case it might be necessary to lower the drop screws with a needlenose plier, or even to cut them off with a hacksaw blade and replace them later. This would be a big job, but then it is a big problem which might require a drastic solution.

Before doing any surgery, it might be well to try springing the keyframe downward. This is done by raising the glide studs as high as they will go and then prying the hammer rail downward from the block with a screwdriver while pulling the action out of the case. Before replacing the action, the cause and cure of the problem should be found so that it can be removed again in the future.

Sometimes this problem is caused by the rebuilder who replaces the pinblock without regard to necessary action clearance. If the new block is thicker than the old one, or if the plate and block were lowered by a significant amount, it might not be possible to get the action into position at all. In such instances, the rebuilder is faced with the choice of planing the block from underneath, filing down the drop screws, or tearing the piano down again. None of these choices are particularly appealing, but something must be done. Probably the easiest method involves the use of an automotive body grinder (a large disc sander with a 90 degree drive) to remove material from the underside of the block. An ordinary jack plane held upside down will do the same job but will require more physical effort on the part of the technician.

QUESTION: *"What do you recommend for lubricating casters?"*

ANSWER: The requirements of a caster lubricant would be somewhat different than those of most other piano parts. The lubricant must be long-lasting and heavy enough to stay in place for a long time, because the average piano is seldom moved. It must be suitable for metal-to-metal contact, and it must be non-staining to protect carpets.

Most petroleum-based lubricants are good for metal-to-metal contact, but will stain fabrics and carpets. For this reason, I would not recommend any regular automotive grease, graphite grease, plain graphite, or motor oils of any viscosity (pour point) rating.

My first choice, assuming it is possible to apply it, would be a white grease known by the trade name "Lubriplate". This is heavier than differential lubricant but lighter than wheel bearing grease. It is recommended by car makers for use on car door latches and strike plates because it will stay in place and provide excellent lubrication but will not stain clothing or other fabrics such as carpets.

If tight clearances between parts will not permit the application of Lubriplate, then I would suggest SlipSpray, a teflon product made by DuPont. This probably will not last as long, but is easier to apply because it is sprayed on. In emergency situations, or those where a lot of corrosion is present, it might be a good idea to apply a sparing coating of penetrating oil such as WD-40 or Liquid Wrench. These products will creep into the tightest spots and provide temporary lubrication, but might stain a carpet if not used judiciously.

OLD CHICKERING DAMPERS

QUESTION: *"I have a client with an old Chickering grand. The dampers screw into the top flanges by means of threaded wires, rather than the usual construction where there is a screw in the top flange to hold the wire. The piano needs new damper felt, but the end dampers on each section cannot be unscrewed because the plate is in the way. How do I get them out and back in without mangling the wires?"*

ANSWER: Look at the top flanges. Many old Chickerings and Knabes furnished setscrews in the last two or three top flanges of each section, to eliminate this problem. If the piano in question has those, they may be installed in the usual manner.

If not, then the damper head must be tilted upward ninety degrees as shown in **Figure 2** while the damper wire is being screwed into the top flange. When it is in place at the correct height, turn the head back so it is flat again. If repeated adjustment causes the wire to become loose in the wood of the damper head, remove the head and size the hole with watery glue. The water will swell the wood, decreasing the size of the hole, and the glue will fill the pores of the wood to keep the hole from enlarging again.

In any event, it will be necessary to raise the stop rail as high as possible to provide clearance so the dampers may be removed and reinstalled; the rail is adjusted for proper height at the end of the job, just before regulating the sostenuto, if the instrument is so equipped.

HOWARD KNUCKLES

QUESTION: *"I've been working on a Howard grand. Is the knuckle supposed to be round? Never having seen a brand new Howard knuckle, I'm wondering. And if it is to be round, could it be rounded by inserting a piece of bushing cloth? Or would that be advisable? Or is there some other solution other than ordering all new shanks? . . ."* — **Waldemar Dabrowski, Jamesburg, New Jersey**

ANSWER: The old Howard knuckles (see **Figure 3**) are known as "pear-shaped knuckles" in some circles because of the way they look. They were made as an integral part of the shank, without a separate core. The critical surface, which is the area touched by the jack, should be smoothly rounded. If it is not, it would be entirely proper to bolster these knuckles with bushing cloth as shown in **Figure 4**. That procedure is better, in my opinion, than bolstering with wool yarn, which has a tendency to make the buckskin somewhat lumpy.

New shanks with pear-shaped knuckles are no longer available anyway, at least not from Baldwin. The standard Baldwin shank with the round knuckle will work as a replacement part, though, because

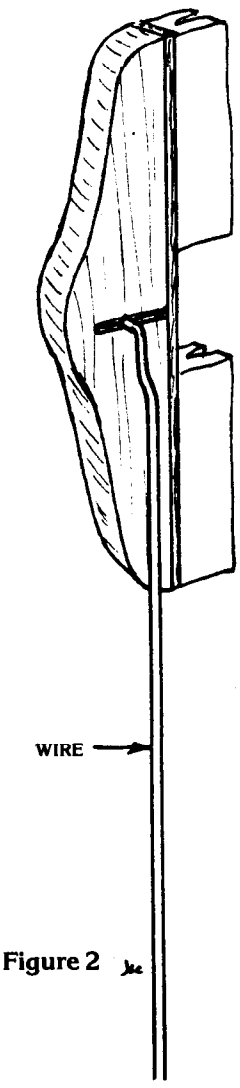


Figure 2

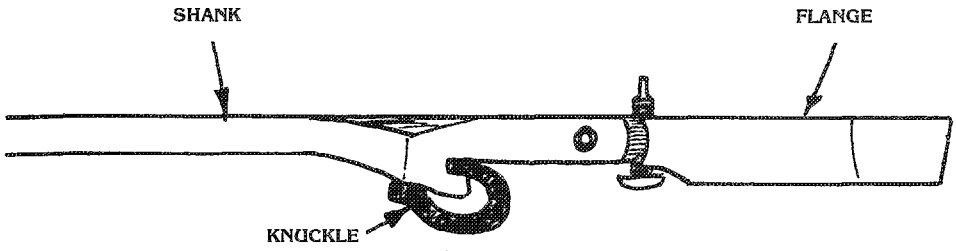


Figure 3

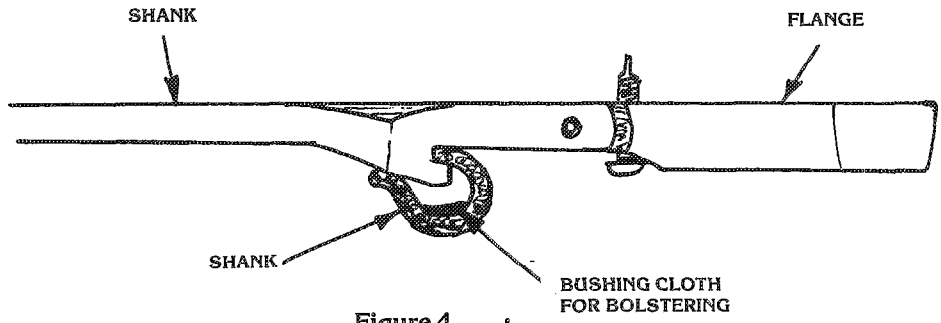


Figure 4

the critical dimensions are the same. But if the buckskin is in good shape and not contaminated with gummy lubricant, I would try to save the existing shanks unless they have become brittle with age.

As a general rule, I replace shanks and flanges anytime I rebuild a piano or replace the hammers, on the theory that if the hammers are worn out the shanks probably are also; but there are always exceptions to rules, and my experience with pear-shaped knuckles has been that they tend to hold their shape even better than standard knuckles. The decision is usually made on the basis of three factors: condition of the centerpinning, condition of the knuckles, and brittleness of the wood. If the wood is brittle, the decision is automatic; if more than one of the other critical components need attention, then I would also decide upon replacement. But if the pinning is good and the wood solid, I would seriously consider bolstering the knuckles.

Parenthetically, I would like to caution against the use of graphite, grease, vaseline, or other lubricants which may become hard or gummy on the buckskin. If lubrication is needed, talc or soapstone will do the trick without ruining the knuckles.

ROACHES IN PIANO

QUESTION: *"... I service a console piano at a local state institution which has become infested with roaches. I have found nothing in the literature that deals with this problem. Can you comment or direct me to a source of information to solve this problem?..."* — **Gene Martin, Hampton, Virginia**

ANSWER: If roaches are in the piano, they are probably in the rest of the building as well. The exception would be if there were a source of food and/or water in the piano which might be attracting them. Roaches are different to exterminate because they feed so infrequently that they might hide away and even reproduce during the time any application of poison is losing its effectiveness. They can go for three weeks or more without food, although they need water more frequently.

I hesitate to recommend the application of standard poisons to the interior of a piano, because of the possibility of harmful side effects. Some chemicals used in pesticides are potentially damaging to piano parts, especially plastic parts such as keytops. There is a product on the market called a "roach motel" (bugs check in, but they don't check out, goes the advertising line) which traps roaches and waterbugs without poisoning them. The bugs are attracted into a small box, apparently by scent, and are caught in lines of glue. When the "motel" is full it can be thrown away and replaced with a new one if necessary. I would try these in and around the piano, but I would also recommend a general extermination of the entire building.

GADGET OF THE MONTH

Roland Grittani of London, Ontario, recently sent me an Olfa knife, which he describes this way:

"A very handy tool I carry always is this ever-sharp knife, from any hardware store. I was shown its use by a lady student at the neighboring college where piano rebuilding is taught. I don't know why I hadn't bought one years ago. I has at least 50 applications and more, depending on the user's needs and imagination. If you already own one, give this to someone you like a lot..." — **Roland Grittani**

As it turned out, I had discovered the Olfa knife three or four years ago when visiting a wallpaper store.

The knife, which is made in Japan, has an extendable blade with scored lines in it (see **Figure 5**) so that the dull point can be broken off with a special slot in the removable end of the handle. As Roland says, it is very handy, and Willard Sims was always borrowing mine to cut off bushing cloth when rebushing guide rails; so I gave him the knife Grittani sent me, and got mine back.

The cost of this tool, complete with a spare set of blades, is under $2 at most hardware or wallpaper stores, and I join Roland in recommending it to all technicians.

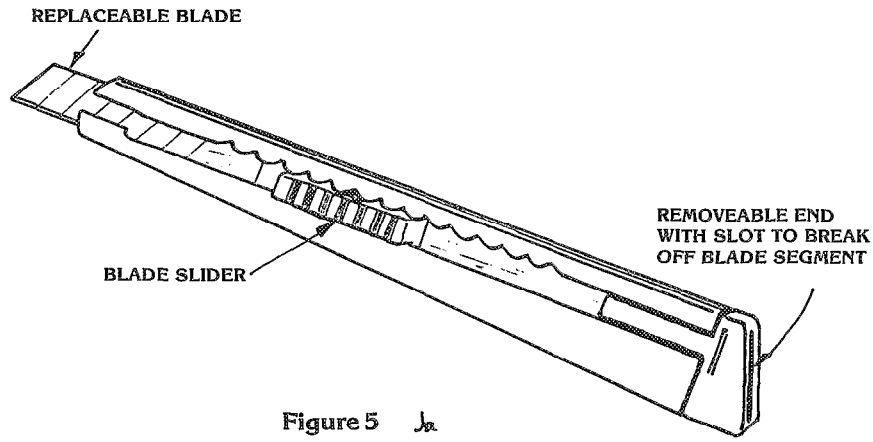


Figure 5

TECHNICAL TIPS

Yvonne Ashmore of Grass Valley, California, suggests that a glue pot can be made from an old electric percolator. Find a tin can that will fit inside, place some kind of collar around and over the heating element so the can sits in the water instead of directly on the heat source, and remove the glass percolator window so a brush can be placed through the hole in the lid. Keeping the lid on helps to prevent a skin from forming atop the glue and the glue from drying on the brush, according to an article in "In Tune", San Francisco's Guild newsletter.

Another tip from the same newsletter will serve as a sort of follow-up to our recent mention of the Osrow "Princess" travel steamer. A similar item is available for less money ($12–$13, according to the letter) and is called "Wrinkle Away". San Francisco's Peter Rossman checked it out and reports that this tool, in conjunction with undiluted wallpaper remover, enabled him to remove an entire set of key bushings, front and center, in only 45 seconds. He used a large syringe to inject the wallpaper remover, allowed that to soak in for 30 seconds, and then applied steam with his "Wrinkle Away" steamer. The bushings fell out in his lap within 7 to 10 seconds.

Our next tip has been published before also, but bears repeating. Cliff Geers inserts a cloth front rail punching into his socket (see **Figure 6**) before tightening hex-head rim screws around the perimeter of the plate. The punching prevents damage to the newly refinished head of the bolt. There is a corollary to this tip, which I have used many times and will pass along for whatever it may be worth: It has been my experience that the socket will scratch a circle around the bolt, right on the surface of the plate, if the technician isn't careful. This can be avoided by placing a stack of punchings in the socket, enough so the rim of the socket cannot protrude below the bottom of the bolt head. If it can't reach the plate surface, it can't mar it.

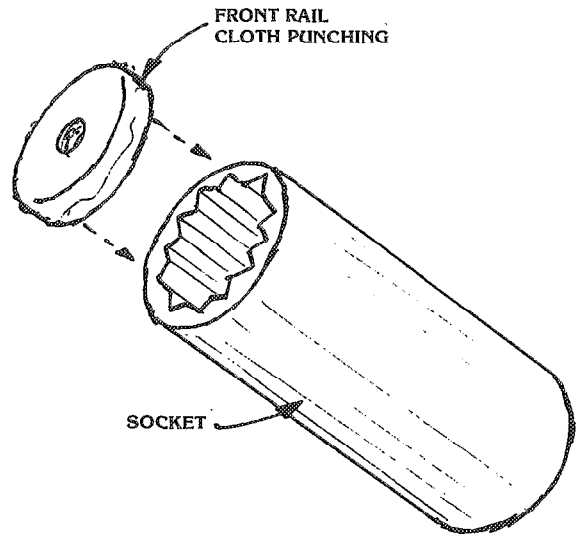


Figure 6

VERTICAL DAMPER SPOONS

QUESTION: *". . . I have had a problem with a studio piano in a practice room of a college. The piano is less than two years old, but would not repeat all the time except when the damper pedal was down, the opposite of the usual circumstance. That led me to think that the connection must be somewhere in the damper system, and I did find the spoons digging into the damper lever felt. Why did this happen and, short of bending all the spoons and replac-*

ing all the felt, what can be done about it? Will replacement of the felt do the trick, or must I bend the spoons?"

ANSWER: Our correspondent, who wishes to remain anonymous has given us a good clue when he stated that the repetition problem was only evident when the pedal was not depressed, and he is correct in saying that this is the opposite of the usual situation. Usually if action centers or key bushings are tight, or just marginally tight, the action will repeat only when the damper pedal is not depressed, which means that the damper springs are pushing against the whippen spoons and helping the action parts to return to their at-rest position. Depress the pedal on such a piano, and suddenly the action will not repeat reliably.

In this case, the problem can most likely be isolated to one of two causes; the spoons are burred, or the lever felts have wicked up their glue. To take the first possibility first, let's assume that the spoons are burred around their edges as shown in **Figure 7.** In the beginning, when the piano is new, everything works anyway because the surface of the damper lever felt is smooth and relatively hard. But in time the rough edge of the burred spoon will dig into the felt, eventually creating a trough. When this happens, the spoon catches in the felt and inhibits the return of the whippen.

The first thing to do is to inspect the spoons. If the plating is all right but the edges are burred, smooth them with a three-cornered rat-tail file and replace the lever felt. If it happens to only one or two dampers in the field and new felt is not readily available, the felt may be removed and turned upside down so that a new surface is touching the spoon.

If an entire set of spoons is defective, the technician might decide to replace them rather than repair them by filing off rough edges. Removal of the spoons is easily and quickly accomplished by the use of a modified snap-ring plier. This is a tool designed for removing snap rings on automotive transmissions, kind of a reverse plier. Instead of pinching things together, it forces them apart. File a groove in the tips, and the tool will remove an entire set of spoons in about two minutes (see **Figure 8**).

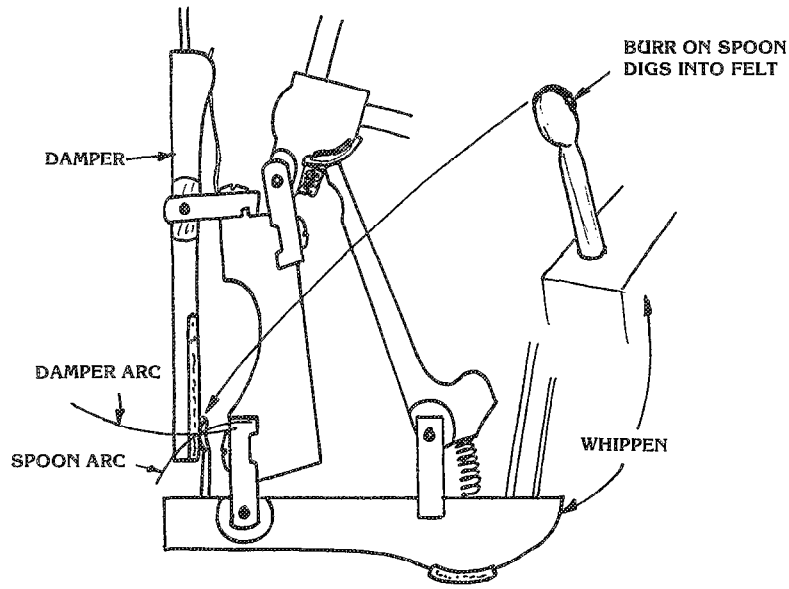


Figure 7

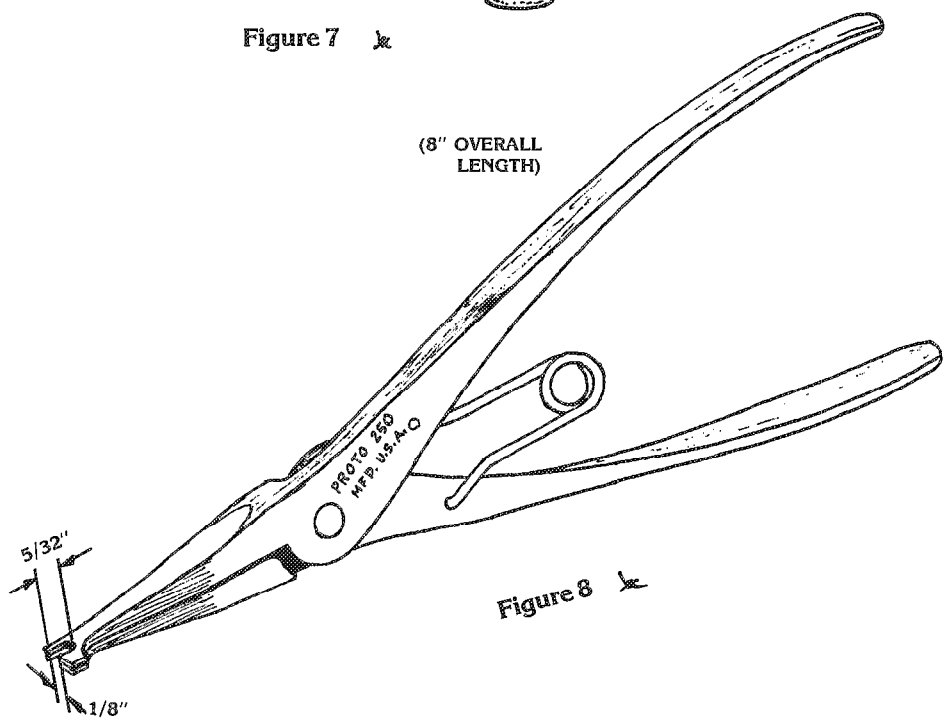


Figure 8

Replacement of spoons does involve more work, however. The new spoons must be inserted, and then regulated. Whenever possible, I will recondition a spoon rather than replace it.

The second possibility involves glue wicking, which almost invariably requires replacement of spoons as well as damper level felt. Too much glue was applied to the lever felt at the factory, and excessive moisture in the air subsequently softened the water-soluble glue. The glue wicked its way into the felt and onto the surface of the spoon. This condition is easy to diagnose, because the spoons will be coated with felt fibers and will be very rough to the touch. Any attempt to remove the felt and glue from the spoon is likely to also remove the plating, which spells the end of the spoon's useful life. If this condition is present in more than two or three key assemblies, I would recommend replacement of all spoons and all damper lever felt. It's a big job, but at that point there is no reasonable alternative.

NEWSLETTER TECH REPRINT

The following article on aftertouch was written by Jim Moon of the Cleveland Chapter about five years ago, and was recently reprinted in the newsletter of the Southwest Florida Chapter. We think it bears repeating here:

Aftertouch seems to be a subject that gets neglected in spite of its importance. First it might well be worthwhile to propose a precise definition; precise, that is, in terms of just when aftertouch begins. For the purposes of this discussion we will think of it as beginning at the point when the hammer begins to fall away from the strings. This assumes that the key is being depressed very slowly so that the hammer begins to fall the moment the jack (fly) ceases to drive it toward the strings so that if the escapement is properly regulated, the hammer will fail to reach the strings by 1/16". It is also necessary to point out that this point is not the same as that when the tender contacts the regulating button but is instead somewhat later. When the tender contacts the button, the hammer is still considerable distance from the strings.

The next point we'd like to consider is the mechanical function of the aftertouch. It seems that the most valuable mechanical aspect is the movement of the jack out of the way so that when the hammer rebounds from the strings, the knuckle is not slammed onto the corner of the jack. The resultant damage to the knuckle can soon cause the action to produce the feeling of two distant escapements and, if let go long enough, the buckskin can be worn beyond reclamation.

The following remarks are of a more subjective nature and not so well-defined. Everyone who has been involved in any kind of athletics knows the importance of follow-through. In baseball, even when bunting, the batter has to follow through. Of course, he doesn't follow through to the same extent as when he hits a home run, but if he doesn't do it, he won't get anything. Aftertouch plays just as important a role in piano playing. Without it, the pianist has no real control. Even in pianissimo playing it's necessary to depress the key through the point of escapement, but not necessarily to "hit bottom". In fortissimo playing, the full aftertouch is utilized. In addition to the control factor there is the "recovery" factor. Muscular action, especially fast muscular action, requires a certain amount of time to be reversed. This time is required for the muscles that are involved in the first movement to relax so that the muscles that work in the opposite direction can take over. Aftertouch provides this time which allows the fingers to be lifted so that the keys can be returned to a position so they can be played again. An action that doesn't have adequate aftertouch tires the player because he unconsciously substitutes excessive pressure on the front rail felts in an effort to try to get the sound to come sooner. The better the player is, the more disturbing this condition is.

How much aftertouch should be enough? This question is the real problem. Even after deciding on a definite amount, one finds himself compromising as we shall soon see. In general an aftertouch of .060" to .080" should take care of most pianos. However, there are certain variables that may force one to go outside these limits.

These variables can be best illustrated by describing a useful technique for establishing aftertouch. First, regulate the escapement. Then place a washer under a key and slowly depress the key. Should the key hit bottom while the hammer is still rising, the capstan should be turned up until the point at which the hammer begins to fall away from the strings. If the key has aftertouch, the capstan is already too high and should be turned down. (NOTE: This assumes that the keys are level and the key dip is correct.) Depending on the condition and shape of the knuckle, the hammer may just slowly drop or it may completely drop off. Now if the hammershank is on the felt rest, it's obvious that the capstan will have to be turned up so that the hammershank is up from the rest felt. However, it is important not to get the capstan so high that there is not an undue strain on the tender. You see, there are limits both ways.

The use of a washer (I use two: one of .060" and one of .080") is helpful in two ways. First, it is more stable than a punching, and second, it is easier to handle. The use of the washer for more than a sample hammer will cause much trouble because the piano action is not made accurately enough to produce a consistent hammer line in that manner. Finally, it is necessary to report that I service one piano that requires an aftertouch of OVER .100" just to get the shanks off the rest felts.

It should be pointed out that I treat grands and verticals the same way. If the hammershank happen to be off the hammer rail felt, then it's necessary to add some extra felt to the support blocks of the rail. Remember, these felts have compressed since the piano was made and so have the hammer rail felts; consequently the hammer travel distance is no longer what it was originally. And if you add to that a hammer shaping job, it's easy to see how things have changed.

All of this has a great effect on the tone of the piano so it might be of some interest to report an experience I had with a piano teacher's studio some years ago. This teacher had two older upright pianos, a Haddorf and a Hobart M. Cable. After doing a complete action reconditioning job on both pianos, the two instruments had different hammer travel distances. The strange thing about it was that the piano with the shorter distance had the more brilliant tone. I believe that aftertouch is the real key to a good "feel" in the piano action.

IN CONCLUSION

Our thanks to this month's contributors. As always, we need more technical material on an occasional basis, and we could use one or two more regular contributors as well. If you have an article, comment, question, technical tip, or an idea for a series of articles, please write to me at this address:

Jack Krefting
Baldwin Technical Service
1801 Gilbert Avenue
Cincinnati, OH 45202

After Touch

David W. Pitsch

(Ed. Note: In paragraph three of the following article, Mr. Pitsch states that letoff and drop are affected by the hammerline. This statement appears to be incorrect, but the author is referring to extremely minute differences which would ordinarily go unnoticed. — J.K.)

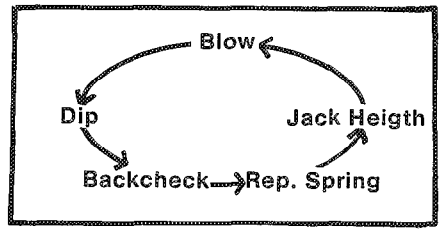
50 POINT GUIDE TO GRAND REGULATION PART VII MARCH 1981

Last discussed in the 50 point guide to grand regulation were the two main methods to regulate. One is called the Blow Priority method, the other is the Dip Priority. To determine whether a given procedure is Dip or Blow Priority, just look to see which of the two is regulated first in the order of steps listed. Once the dip or blow has been adjusted, all of the other action regulations are then set based upon this first measurement.

To explain this further, there are seven main steps in section IV, The Touch portion of the 50 point checklist. These seven are: 1) Blow, 2) Dip, 3) Let-off, 4) Drop, 5) Backcheck distance, 6) Repetition Spring strength, and 7) Jack Height to the balancier. Again, as in the past, the dip includes the correct aftertouch measurement. Let us take the example of a Blow Priority system first. If the repetition spring is strong enough to support the hammer, first adjust the jack height in order to insure that as the blow is set that the hammers will always return to the same setting. Step two then would be to set the predetermined blow distance. Depending upon how worn the whippen felt is, how flattened the knuckle has become, and how much the hammer has been filed, the capstan will need to be raised further to compensate for greater wear in order to achieve the desired blow distance.

Raising or lowering the capstan affects directly or indirectly all of the remaining steps. Raising the capstan raises the whippen assembly, which causes the jack tender to become closer to the let-off button, and the balancier to become closer to the bottom of the drop screw. Once the let-off and drop are correctly set, changing the capstan will necessitate readjusting the let-off and drop. If the corect aftertouch is to be achieved, the dip measurement is predetermined by the blow and let-off distances selected. The amount of dip will affect the backcheck angle. And, as we all should know, we set the repetition spring strength based upon the hammer's release from the backcheck. So out of the seven main steps in section IV The Touch, changing the capstan will affect one way or another all seven steps: To eliminate any unnecessary doubling back to reregulate a step already performed, set the blow distance right in the first place, and all of the other six steps will come out correct the first time through.

Remember the "circle of five steps" as explained in the May 1980 article?



This illustration helps to show how each step affects the others. Adding the let-off and drop in between the blow and the dip completes the circle with all seven steps. Of these seven, only two can be places of compromise to compensate for action wear. The let-off, drop, backcheck distance, repetition spring strength, and jack height can only be regulated to specific tolerances or distances, with very little room for variation. Only the dip and blow can compensate for action wear. The Dip and Blow Priority methods are the means of setting one of these variables in the beginning, making any compromises needed with the other variable latter.

One school of thought amongst piano technicians is that the dip is not a variable. In other words, there is a specific measurement that the key is supposed to go down, that measurement being standard throughout the world, and no variation from that measurement (usually 3/8") is acceptable. This of course leaves only the blow distance as a means of compromise as the action wears. I believe this school of thought to be a little narrow minded. There *are* times when the dip should be altered a little. When I say a little, I mean within + or − .030" at the maximum. Next month we will discuss just how "standard" this measurement is.

We have already discussed what the main areas of wear are: 1) the compacting of the whippen cushion felt from the force of the capstan against it, 2) the flattening of the knuckle from the force of the whippen, and 3) the wearing of the hammer felt as it becomes grooved and out of shape from hitting the string. As these forces take their toll the amount of aftertouch, which is mainly a safety factor for this purpose, decreases to the point of being nonexistent. Once the action has worn to this point, if a technician has not yet made adjustments to compensate for wear, the piano becomes very hard to play. The pianist will complain that the keys feel like they are "bottoming out". Raising the capstans to bring the blow distance back to the original measurement will help restore aftertouch. Keep in mind that we are only discussing here the wear that takes place in the upper part of the action mechanism.

I assume that any settling of the keys at the balance rail will have been corrected and restored back to the original level.

What do you do then, if after raising the capstans the amount of aftertouch is still insufficient? Many times this is the case. Aftertouch can be obtained by either:

1) raising the capstans more, reducing the blow distance even more, and thereby reducing the amount of power available to excite the string, or 2) increase the key dip, leaving the blow distance to what it originally was. Increasing the dip, of course, decreases the speed of repetition. Torn between a loss of power or a loss of repetition, what do you do? This will not be discussed at this time. However, the choice should be made depending upon the pianist's preference and the circumstances under which the piano is being played. At this time we *will* go on to discuss the Dip Priority method of regulation, and then make some comparisons between the two methods. In a few months ahead, we will discuss power and repetition when regulating the worn action.

In the Dip Priority method, the dip is set first with a key dip block to exactly what you want the *white* key dip to be. Forget about the black keys for now. As step two, again assuming that the repetition springs are strong enough to support the hammers, set the jack height. Steps three, four, and five will have to be adjusted slightly to get the correct results for aftertouch. Step three is blow, four is let-off, and five is drop. If after setting the drop the aftertouch is either too shallow or too deep, raise or lower the hammer line (blow) until the correct aftertouch is obtained. Once the blow is altered, the let-off and drop must be readjusted, too. Next set the dip on the black keys. Later I will explain in detail how to do this. Finally set the backcheck distance and then the repetition spring strength.

Now we can compare the two methods. Some doubling back may occur in steps 3-5 in the Dip Priority method, whereas no doubling back was needed in the Blow Priority method. This is minor and will cause little time to be wasted if sample keys are tested in each section before regulating the whole piano. The major difference as I see it, is that in the Blow Priority methods the aftertouch is set after the blow and let-off, thereby obtaining a uniform amount of aftertouch on every key, regardless of any discrepancies in the action parts. However, in the Dip Priority method, the aftertouch can vary with each key as a result of these same discrepancies in the action parts. Of course this variance in aftertouch is easily corrected by adding or removing punchings, but then this means more doubling back for the Dip Priority method. Besides, as I understand the school of thought, the dip should be set exactly the same for every white key by means of the key dip block. What is wanted is uniform key dip. Some artists insist upon a piano which has uniform key dip, others insist upon one with uniform aftertouch. In short, the Blow Priority method results in uniform aftertouch, the Dip Priority method in uniform key dip. There is a distinct difference between the two. Next month we will discuss the two decisions that have to be made before the process of regulation can begin. □

Calculating Technician

Part XIX

Dave Roberts

During the past few months, I have attempted to put our year-long discussion of piano scale evaluation/modification into perspective and also describe an efficient method for carrying out the necessary calculations using any one of three programmable, hand-held calculators: the Texas Instruments model TI-59 or the Hewlett-Packard HP-67 or HP-41C.

In case you still have some doubts as to what math or other specialized knowledge is required to use one of these calculators, the answer is *none*. As I explained last month, Lou Day (Denver Chapter) and I have done all the specialized work for you. All you have to do is follow a ½ to 1 hour long keybutton pushing sequence, as illustrated in the December 1980 *Journal*, where each key designation is given by its row/column location on the calculator keyboard.

Furthermore, you only have to go through this boring procedure once, because the calculator (or its accompanying magnetic card) can remember this program sequence for a lifetime. Once the program is in the calculator memory, the rest consists simply of keying-in string length and diameter measurements and union number for a unison of interest and then waiting a few seconds for the calculator to do all the necessary calculations for you, automatically.

Of greater concern to some of you is whether the formulas programmed into these calculators can be trusted as a guide to scale evaluation or modification. I developed these formulas over several years and, yes, they have changed slightly since I first started this effort due to additional empirical as well as theoretical inputs and also critiques from a number of pianists and other piano technicians. I attempted to illustrate the validity of the formulas by evaluating what is generally acknowledged to be one of the better scales in the industry (January 1981 article).

The results were perhaps surprisingly convincing, especially in light of the fact that the scale evaluation formulas are indeed relatively simple compared to the enormous acoustical complexity of the piano itself. Although such simple equations cannot possibly account for all the subtle aspects of piano inharmonicity, loudness, etc., nevertheless these formulations do account quite well for those physical phenomena which affect piano sound and tunability in a regular, predictable fashion.

As for the random and virtually unpredictable phenomena, such as bridge movement (particularly that due to soundboard resonances) and non-uniform wires, etc., it is still far more efficient to use the predictable acoustic behavior as a point of departure and then go from there, although I think you will find that it is rarely necessary to introduce any further refinements. Certainly, our (January 1981) evaluation of the Steinway concert grand did not indicate that any significant scale changes are called for, so I don't think you should be too concerned with the usually minor perturbing effects of physical phenomena which are not taken into account by these formulas.

Many of the random deviations from the simple theory can be minimized by applying good technique to the manufacturing or rebuilding process, such as having uniform, solid string terminations. It is also important how you string a piano and bring each string up to pitch. The detailed nature in which a string bends near its terminations affects inharmonicity, particularly in a newly strung instrument, so subtle inconsistencies in the stringing, chipping and tuning procedures can give corresponding inconsistencies with calculated values of inharmonicity.

For instance, if you have to resort to much string leveling, this may indicate that the stringing operation was not carried out with meticulous consistency and that the direction of natural curvature of some unison wires ended up different than that of the majority due to an occasional inadvertent twist in the wire when forming the becket or pulling the string around the hitch. Ironically, levelling such strings will not necessarily make their inharmonicities more like that of their unison mates.

Those of you who would like to use the inharmonicity formula for doing 'paper tunings' (David Merrill, November 1980 *Journal*), your results will be in the right ballpark if you do the math correctly. This is because wire stiffness is by far the most important factor contributing to inharmonicity, and stiffness is the one thing we are able to account for reasonably well, mathematically speaking, in a well designed and constructed piano, especially in the treble. It is, however, of more practical interest to use the piano's *own* inharmonicity to do 'paper tunings'. Jim Coleman, Sr. (Phoenix Chapter) and Dr. Al Sanderson (Boston Chapter) have done some interesting and impressive work in this regard, as well as 'paper tunings' using an inharmonicity formula.

Now let's examine the scale of a typical small grand and see how it measures up to our rules for good scaling. The first thing I generally do is make a quick examination of the treble scale to see whether it conforms reasonably well to Braid White's rule for wire gauges and speaking lengths (Calculating Technician, April, 1980). The original stringing scale is as follows:

section #1	section #2	section #3
4 – 13½ ga.	8 – 16 ga.	8 – 18 ga.
4 – 14 ga.	4 – 16½ ga.	8 – 18½ ga.
6 – 14½ ga.	4 – 17 ga.	4 – 19½ ga.
2 – 15 ga.	6 – 17½ ga.	
4 – 15½ ga.		

As you can see, there is nothing particularly unusual about this scale. If we were to add a couple more unisons of 15 ga. wire and subtract a couple of unisons of 16 ga. wire, then the stringing would conform more closely to White's rule of 5 unisons per half-size music gauge. However, this stringing conforms reasonably well to his rule already, and the speaking

lengths are within 3 percent of those of a concert grand down to about middle C. Below middle C, foreshortening of the speaking lengths begins to be more significant due a reversal of curvature in the treble bridge. This reversal is not as severe as you find in some other small pianos, but it put me on the alert for a potential problem, particularly since there were no wound strings on this treble bridge.

My initial inclination, therefore, was to leave the treble scale as is, except possibly at the bass end where I felt it was prudent to do some calculations backed up by careful listening tests. My philosophy, generally, is to leave a scale alone unless there is really an obvious problem. It is true that many scales were simply 'borrowed' from other pianos, possibly with little consideration for the differences in the pianos themselves. Even so, you will find that most treble scales conform fairly closely to Braid White's rule (except at the bass end) and there is a good chance that small deviations from this rule were carried out deliberately in order to compensate for acoustic deficiencies in some other aspects of the piano design (a 'dead' spot, etc.).

When I played repeatedly a descending chromatic scale straddling the bass/treble break on the original scale (it had new strings), I noticed a problem common to many pianos smaller than about 7', namely, an increasing stridency as I approached the break, followed by a relative mellowness in the wound unisons. Even if this tonal mismatch could be minimized by a good hammer voicing job, you would still experience trouble tuning or setting an extended temperament across this break. Sound familiar? The problem, as is usually the case, is due to the aforementioned foreshortening of the speaking lengths near the bass end of the treble bridge. This is confirmed by the calculation results summarized in Table I.

TABLE I. 5'4" Grand Near the Bass/Treble Break.

m	N	I_4	Z	NT/H	E_L
23	2C	2.7¢	1485	79	—
24	2C	2.7¢	1438	81	—
25	3C	2.8¢	1568	115	—
26	3C	2.8¢	1546	120	.18
* * * *		bass/treble break		* * *	
27	3P	3.8¢	809	66	.10
28	3P	3.7¢	838	73	—
29	3P	3.5¢	870	80	—
30	3P	3.4¢	903	88	—

Refer to the November 1980 article if you have trouble remembering the meanings of some of the symbols in this table. What I do hope you remember, however, is how smoothly inharmonicity I_4, loudness Z, hammer/string contact time factor NT/H and speaking length elongation E_L change across the bass/treble break in the Steinway concert grand which we analyzed in the January 1981 article. Not so with this scale. The inharmonicity I_4 jumps 36% across this break compared to no more than 10% for the Steinway grand. Likewise, the loudness factor Z and hammer/string contact time factor NT/H jump 91% and 82% compared to only 6% and 0%, respectively, for the Steinway. Finally, the speaking length elongation changes 80% across this break, compared to only 10% for the Steinway, which explains the tuning instability problem near the break in the original scale.

I think the root of the problem was lack of understanding of inharmonicity in the late 19th and early 20th centuries, which was the development heyday for the smaller pianos. Even Braid White himself did not have a good handle on this phenomenon until at least the 1940's and, unfortunately, the usual trial and error development techniques, which worked so well for other aspects of piano design (especially in the larger instruments), failed most of the industry in this respect, even some of the biggest names in the business.

It is interesting to note how the manufacturer of this 5'4" grand attempted to minimize the problem we see here. As you can see from Table I, he added a third string (i.e., N=3) to the 2 top bichords on the bass bridge, apparently to *increase* loudness and *decrease* hammer/string contact time (larger NT/H), both of which would tend to give these lower inharmonicity unisons a little more 'oomph' and a little more 'edge' to match-up tonally with the strident lower treble unisons. This, of course, is not an ideal solution, but it works after a fashion.

Today, we have the understanding of piano acoustics to correct this problem properly. Also, the more progressive manufacturers have been implementing these principles in the design of the newer instruments. Next month, I'll describe the calculations and reasoning involved in order to arrive at a suitable scale modification for this small grand so that it conforms much more closely to our rules for good scaling... that is, within the limits which its small size dictates. I certainly can't make a concert grand out of a 5'4" piano! So stay tuned to this column... □

SOUNDBOARD WOOD

Jack Greenfield

A primary function of the piano soundboard is to radiate the sound generated by hammers striking the strings. A string alone with no resonator would set very little air in motion and produce a barely audible tone.

But when string vibrations transmitted through the bridge force vibrations of the soundboard, the large surface area of the vibrating soundboard sets a much greater volume of air in motion thereby creating much louder sound.

Different kinds of wood or alternate materials which might be considered do not respond with the same degree of accuracy and efficiency. All other things being equal, the difference between a good piano and a bad piano could be merely a difference in the soundboard. Important characteristics for a good soundboard include:

1. That it transmits sound very rapidly to minimize difference in phase of sound waves in various parts of the soundboard,
2. That it has low acoustic resistance — transmits sound with minimum loss of energy, provides good sustaining power, and
3. That it has uniform response to different keys.

Throughout most of the history of piano-making and for several centuries earlier in harpsichords, quarter-sawn spruce has been considered the most desirable material available for soundboards.

Shortly after World War II, laminated-wood soundboards manufactured by a new process were introduced and have proved commercially successful. The number of pianos with laminated soundboards has increased considerably in recent years.

EUROPEAN SOUNDBOARD WOOD

During the 16th century in Italy, where they originated, harpsichords were built with cypress soundboards. The wood of the cypress growing in abundance in Italy, *Cupressus sempervirins*, is straight and close-grained. The southern or bald cypress of the United States, *Taxodium distichum*, is an entirely different tree.

During the next century as harpsichord building advanced, builders in other European countries and some Italians adopted spruce. The use of spruce soundboards was carried over into pianos. The only other type of wood used to any extent for soundboards was fir.

The identification of soundboard wood in some older and foreign references differs from the present botanical usage in the United States. Spruce, genus: *Picea*, and fir, genus: *Abies*, resemble each other in many respects. In the past they were sometimes grouped together under the "spruce-fir" classification. Some wood now identified as spruce was reported as "fir" in older references. Spruce and fir have also inaccurately been called "pine." *Picea* and *Abies* are members of the botanical *Pinaceae* family but wood from true pines, genus: *Pinus*, was found to be inferior for soundboards.

The most important European tree for piano soundboard wood for centuries has been *Picea excelsa*, now most commonly known as Norway spruce. This is the same type of wood used in the top of many fine European violins; the back was usually made of maple. A section of soundboard from a 17th century Ruckers harpsichord recently examined in a United States Forest Products Laboratory is believed to consist of *P. excelsa* wood. *P. excelsa* grows on mountain ranges from the Pyrenees north throughout most of Europe. It was given a number of other names including *P. abies*, Alpine pine, Bavarian Pine, Swiss Pine, Rumanian pine, red pine and others.

The best soundboard wood was obtained from forests growing at an altitude of 3,000-4,000 feet in the mountainous regions of central Europe between latitudes 45° to 50° North. Optimum conditions occurred in dense forests where trees grew straight and tall without lower branches at a slow rate of growth induced by the cool climate and absence of sunlight. This caused growth with a long section of close-grained, knot-free wood in the lower trunk.

Exposure of the trees to mountain winds and snow induced elasticity. Trees from 70 to 100 years were found to have the most desirable combination of strength and elasticity. *P. excelsa* grows to a maximum height of 150 feet.

The early piano makers were able to get acceptable wood from nearby Alpine and Bavarian forests. As these sources were exhausted, it was necessary to get lumber from locations further east. The Carpathian mountains of Rumania became an important region supplying this wood but in time the amount available from here also dwindled.

The only type of European wood other than *P. excelsa* which had some fairly general use was silver fir, *Abies alba*, also known as *A. pectinata*. This tree is found in the northernmost sections of Europe. It also grows with a straight trunk reaching a maximum height of 150 feet.

As the wood available from European forests continued to diminish, European manufacturers began to import wood from the United States where the industry was rapidly growing through the 19th century.

UNITED STATES SOUNDBOARD WOOD

The early United States builders obtained excellent soundboard wood in the native white spruce, *P. alba*, growing in the White Mountains and the Adirondacks to a maximum height of 100 feet. Although some prominent piano makers preferred to import European wood, the quantity of soundboard wood shipped the other

way from the United States to Europe increased to a much greater volume.

At present, lumber from *P. alba* (white spruce), *P. rubens* (red spruce), and *P. mariana* (black spruce), is grouped together as "eastern spruce" in the United States lumber industry. These species grow in New England, the Lake States, and the Appalachians. Their use in soundboards has continued.

Early in the 20th century, western spruce was found to be an excellent soundboard material. Sitka spruce, *P. sitchensis*, as it's known, grows in a long narrow area stretching from northern California into southern Alaska near the Pacific Ocean. It is a majestic pyramidal tree growing as tall as 180 feet. Sitka spruce has achieved major importance for soundboards not only in North America, but in export for foreign use as well.

SELECTION AND PREPARATION OF SOUNDBOARD LUMBER

Even in the early days of the industry, selection of trees, cutting, and other steps in preparation of wood for soundboards received special attention not given to ordinary lumber. It was considered best to cut trees in winter before the sap began to rise. For especially critical selection for acoustical properties, some of the bark about three feet above the ground was peeled down. The exposed area was struck with an axe. A pure bright tone indicated good qualities, a deep dull tone indicated poor qualities.

Only the lower part of the trunk was used for soundboard lumber. In the earliest times it was thought that splitting the log instead of sawing produced better tones but as piano production increased, sawing became a necessity.

Seasoning of soundboard wood was a long, laborious process. A letter by Mozart describes the procedure he saw in 1777 in the shop of Johann Andreass Stein. After assembling the soundboard, Stein placed it outside for a long exposure to rain, snow and sun. Splits that occurred during seasoning were filled with shims.

During the nineteenth century the selection and preparation of soundboard wood became a specialty business. More rapid methods of seasoning which included exposure to steam and drying in heated chambers were developed.

In modern manufacturing, 6"-thick quarter-sawn spruce boards are cut into ½"-thick pieces and dried to less than seven per cent moisture content. They are then bonded edge-to-edge with water resistant adhesive using high frequency gluing equipment. For fine pianos the color and grain patterns are matched for the sake of appearance. The assembled board is then planed down to the desired thickness.

PROPERTIES OF SPRUCE

Traditionally, selection of wood for acoustical quality has been guided by its appearance. The traditional index is regularity and closeness of the annular ring lines in the grain of the wood and absence of blemishes. Closer spacing, a result of slow growth, is believed to indicate more desirable acoustical properties. According to present standards wood with eight or more rings per inch is selected for better pianos, wood with four to eight rings per inch is used for lower grade pianos.

Spruce has the following characteristics:

1. Soft, evenly grained,
2. Light in weight but stronger than steel for its weight,
3. Flexible and very elastic, very responsive to string vibrations,
4. Transmits sound along the grain about 15,000 feet per second but at only one-third this rate across the grain; the ribs of spruce, attached to the back of the soundboard perpendicular to the grain line, help equalize sound transmission.
5. Relatively uniform response to different keys,
6. No deterioration of tone quality as wood ages under normal conditions.

The acoustical properties of quarter-sawn spruce have been attributed to the specific fibrous structure of the close-grained wood. However, plain-sawed spruce has been found inferior for soundboards.

Wood hardness is considered a factor in the acoustical response of the soundboard. Spruce has optimum softness for fairly even response. Harder wood may be more selective to different frequencies. Softer wood may be generally less responsive.

It is difficult to distinguish between eastern spruce and Sitka spruce by visual appearance. Lumber identification charts show eastern spruce as nearly white and Sitka spruce to be light reddish brown. However, identification by color is uncertain because of variations in shade due to differences in content of minerals, resins, and pigmentation.

The most serious objection to spruce is the dimensional change that occurs during exposure to fluctuations in humidity. Expansion and contraction of soundboard wood produces tuning instability and under especially unfavorable conditions, the board may split. While this may have negligible adverse tonal effect, the appearance would be objectionable to the average owner of the instrument. It should be noted that conditions leading to a cracked soundboard could cause deterioration of other parts of the piano as well, for example, the pinblock.

Research studies thus far with non-wood materials that would not split have not disclosed any

that would be acceptable. Metals transmit sound rapidly and evenly in all directions but are impractical because of greater weight and other properties. Nylon and other plastics tested thus far have inferior acoustic response.

LAMINATED WOOD SOUNDBOARDS

The use of laminated wood for soundboards to avoid the problem of splitting was considered as early as 1771. An instrument maker in Brunswick, Germany, Friedrich Carl Lemme built several harpsichords with two-ply soundboards. The instruments were considered satisfactory.

In 1900, the Mathusek Piano Company of New York made experiments with laminated soundboards and found the tone to be comparable in quality to tone with solid spruce boards.

In 1919 further investigations with three-ply, laminated soundboards were reported. The object of the study was to determine if such a board could be made strong enough to eliminate use of ribs. The acoustical results were unsatisfactory.

One of the problems in developing an acceptable laminated soundboard was to find a better adhesive than the animal glues of the past which were not waterproof. Just before World War II, the Kimball Piano Company began tests with newly developed resins. During the war, the new adhesive processes were turned over to make plywood war products. Work on laminated soundboards was resumed after the war ended.

In 1950, after completion of field tests of pianos with laminated soundboards, the Kimball Piano Co. announced its use for all Kimball pianos. A trend to laminated soundboards has developed in the industry, and it is likely that at least 50 per cent of the pianos now manufactured, primarily in the middle and lower price range, contain laminated soundboards.

There are several differences in the make-up and assembly of laminated soundboards that may have some influence on their performance:

1. A large proportionof the laminated boards now produced contain three layers of spruce. However, other woods, including mahogany and maple, have been used for outer and inner core layers either alone or in combination with spruce. Also, some wood with irregular grain line patterns has been used.

2. The modern standard practice is to mount solid spruce soundboards with the grain line pattern running diagonally approximately parallel to the treble bridge. Some laminated soundboards are mounted with the grain line pattern similarly on the diagonal. Other methods of mounting include: grain lines running perpendicular to the bridge and grain lines running horizontal or parallel to the action rails, an alignment found in some old straight-strung European pianos.

From the standpoint of lumber quality, straight-grained wood gives a plywood board with good dimensional stability. Boards composed of layers of wood with grain irregularities may not remain flat and may warp and distort with changes in atmospheric moisture.

SOUNDBOARD RESEARCH

The early builders of pianos had to work by trial-and-error, depending on the aesthetic judgment of what they heard in their efforts to improve the performance of the instrument. During the 20th century, the possibilities for more scientific acoustical research was widened tremendously by the introduction of electronic equipment and instrumentation making it possible to analyze complex sound waves very quickly.

We now have a much better general understanding of the physics of piano strings as a result of the studies published during the past few decades. The physics of soundboards has received much less attention, however. Here's what a few studies have found:

1. Paul Bilhuber and C. A. Johnson in 1940 developed an improved soundboard design based on changes in structure and mounting to give a more uniform distribution of vibrational energy. A panel of pianists and musical experts showed a decided preference for the new soundboard and described the tone it produced as more "lively." Physical measurements made showed vibration was more evenly distributed in the new soundboard. The increased response gave a small increase in sound intensity and a definite increase in duration of tone.

2. Daniel W. Martin in 1947 compared decay rates of tones from "an upright piano, a baby grand, and an electronic spinet." The electronic piano was a conventional instrument with the soundboard removed and replaced with electronic amplification. The decay rate in the conventional pianos was approximately twice the decay rate in the piano without the soundboard.

3. G. A. Briggs in 1951 presented data showing differences in soundboard response for E8, A49, and C65 in a 51-inch upright and in a 90-inch grand. Observations were made with an installation which included a pick-up mounted near the center of the soundboard. Output fed into a sound level recorder was passed into a harmonic analyzer. The curves obtained, showing relative strength of partials, illustrated the weakness of the fundamental of E8 in the upright, barely detectable, while it was fairly strong in the grand.

There has been more recent research with modern equipment by some of the manufacturers who have adopted new soundboard designs but very little information on these studies and data on the acoustical characteristics of the new types of soundboards has appeared.

There are two important purposes which could be served by further research:

1. To aid in advancing the development of new designs and new materials for soundboards.

2. To provide significant data concerning the acoustical characteristics of the traditional solid spruce as well as the new types for those concerned with the scientific differences between "good" and "poor" soundboards. □

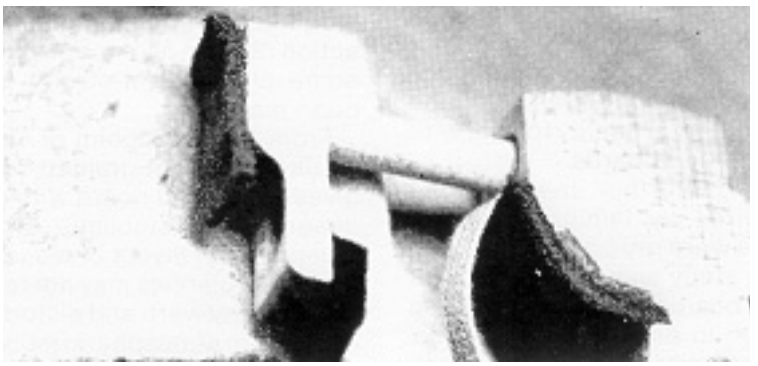
VON DER WERKSTATT

Priscilla and Joel Rappaport

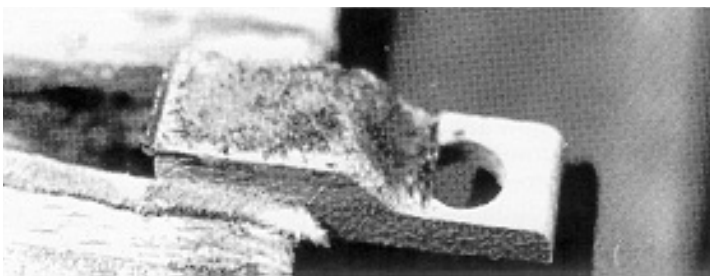
As a new upright piano is played, the felt and leather components of the action parts pack down or wear in. As this gradually happens a routine touch-up regulation is done. All facets of alignment and regulation are thoroughly gone over. However, as the years go by, many of these parts will begin to show excessive wear. For example, the middle of the keyboard which is played the most may show more packing down of the felts which affect leveling and/or let-off. The leather on the butts may wear from the jack contact creating some excessive and undesirable lost motion. The leather on the butt catchers also wears away making it impossible for the hammers to catch in the original position without regulation adjustments. If the piano has been played for many years we will be dealing with an action that is worn unevenly. The regulation will reflect this.

We first should evaluate the situation to determine what the best solution is for an instrument in this condition. If the piano can be regulated and compromises in the regulation be made so that the piano feels good, then this is a good choice. If the butt leather, for example, is simply shot and totally uneven, then the solution in this case would be to do something constructive about the condition so that the piano can be well regulated. We would also like to point out that if the leather on the butt catchers is worn down to the glue, then there is also a good chance that the felts on the backchecks are excessively worn too. In addition you may run into bad leather or leather poorly glued on a new set of butts which you were planning to use on a complete upright rebuilding job. **Picture #1** shows leather not completely glued on the catcher. Using a set of butts like these is very likely going to produce problems with regulating the backchecks. It would be practically impossible to establish a straight line in the checking of the hammers. The regulation will be unstable.

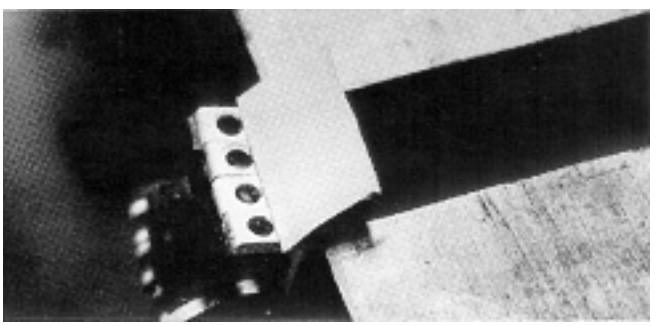
Since we wished to correctly regulate this piano after new parts were installed, it was necessary to do something about this leather. It was obvious that new buckskin had to be used and the original had to be taken off. The following pictures clearly show a simple procedure for getting this job done as efficiently as possible in a small workshop.



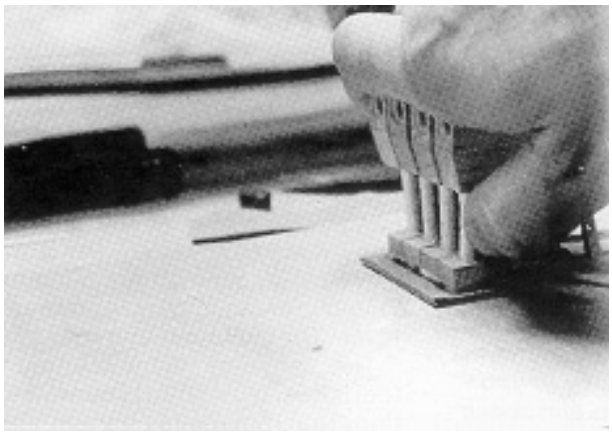
New leather on butt catcher. It is clear that it is not well glued, producing a surface somewhat less than flat. In addition the quality of the leather in this entire set was very poor and uneven in thickness. If the quality were better, the loose ends could be individually glued and the tedious work of replacing the buckskin on the butts would be avoided. However, in this case, this work was necessary.



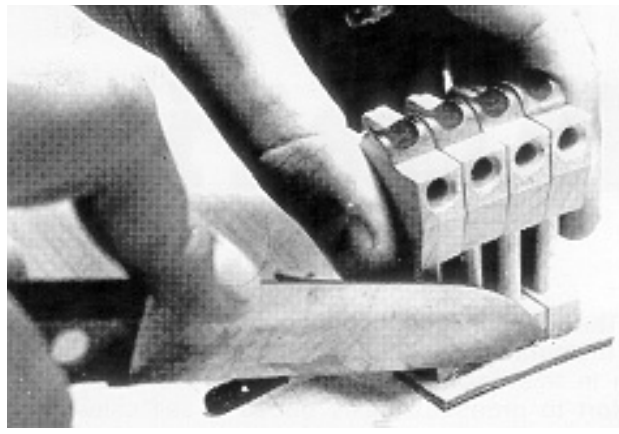
Glue and leather remnants must be filed clean down to the original smooth wood surface.



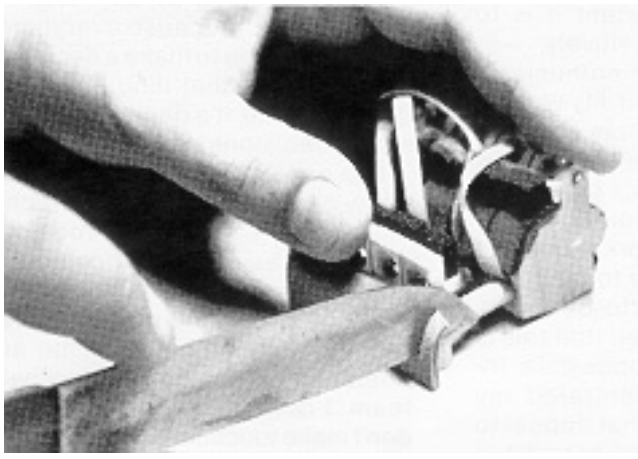
Working with groups of 4 butts, leather is attached to the lower rounded surface and allowed to set or dry. (10 to 15 min.) Pay attention to the nap of the buckskin. The nap should be from bottom to top.

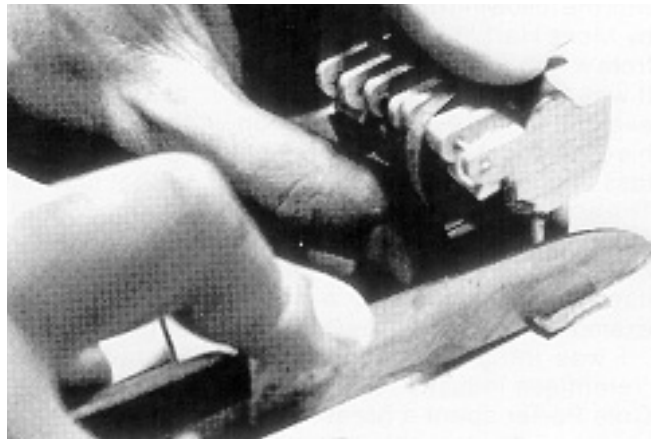


Keeping the butts together as a group of 4, apply hot hide glue to the flat smooth surface and press the leather on a flat surface until set.

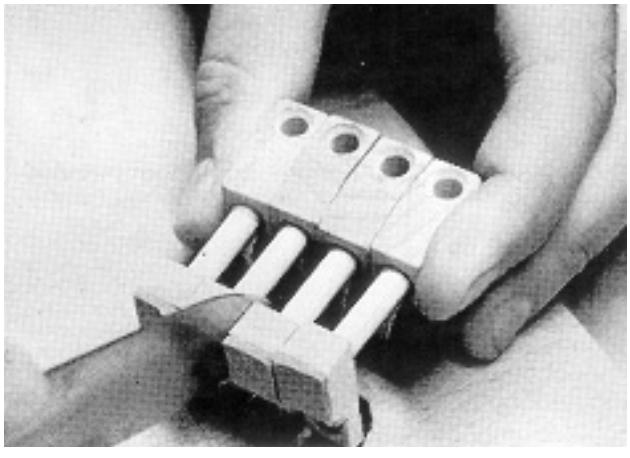


With a sharp knife, cut the leather cleanly along the edge of the wood.

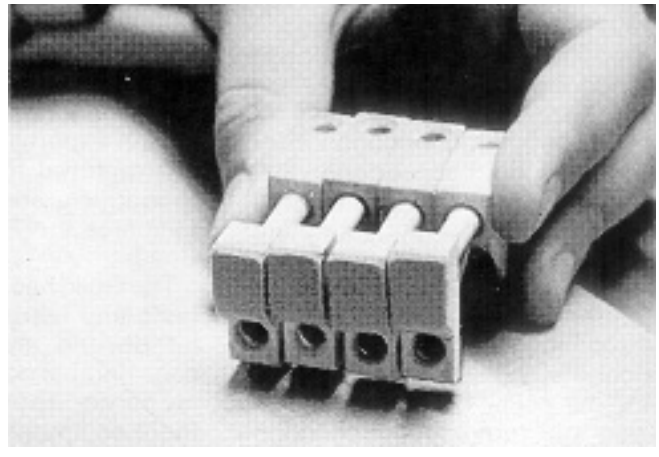




Trimming the sides of the catcher. Starting with the curved part first makes it easier to get a clean cut along the entire edge.



Use a sharp knife to slice the butts apart.



Finished product. The leather should be evenly cut and free from glue. The surface of the leather or buckskin is flat and usable for establishing a stable regulation.

In the Field

Ben McKlveen

There seems to be a resurgence of the pursuit of excellence going on in this country, a renascent effort to produce quality goods and services again. Toward this end, I offer you some thoughts on building and maintaining a successful career as a piano technician.

In the Cole Porter Song Book that I removed from a piano recently was the following quotation, written by Moss Hart, "I learned a lesson from watching Cole Porter at work. It was, simply, that no artist, however gifted can ever rely solely on his gift without a steady and relentless industry in its application. The ability to use his gift with vigor and constancy was almost as necessary a requisite as talent itself. Cole Porter was a prime example of this depressing truism..."

I was intrigued by the words "relentless industry" and "vigor". Cole Porter spent a great part of his life in physical pain as a result of a riding accident. He was also financially independent. So, to pursue a career in musical composition while in pain and with no real need to work suggests great motivation and strength of character. Ambition, imagination, drive, and talent are all intangibles in the human equation. Enthusiasm varies widely from person to person but it is a vital ingredient in the effort to keep a long career enjoyable and successful. Maynard Ferguson, the jazz trumpet player and band leader, did a radio commercial for the National Music Educators Conference last year. In it he was extolling the joys of playing a musical instrument. "At the age of 45," he said, "I still find music a teen age turn-on." In contrast, I thought of the enormously gifted and successful young comedian, Freddie Prinz, who lost his vigor and enthusiasm and died by his own hand at the tender age of 23.

The nationally popular television show "60 Minutes" did a segment last year on the "believe-in-yourself" salesmen. Courses and books on this subject have proliferated over the last decade. It would be hard to measure the success of these ventures in terms of human improvement, but I am sure that the general public has been made aware of how important it is to believe and work positively.

I share the career enthusiasm of Maynard Ferguson. My work in the piano business has kept me fascinated for over 30 years. Part of that fascination has been generated by the incredible variety that exists in our work. I used to think that I would like to learn and practice all facets of the business. Little by little I learned that this is impractical, if not impossible. Instead, I have concentrated my efforts in the areas that appeal to me and cultivated the friendship of colleagues whose interests, training and background have made them experts in different directions from mine. Take player pianos for example. I don't work on them. Fortunately, there are several technicians in my town quite skilled at player work. I refer all work involving players to them. These people, in turn, refer problems outside their field of expertise to me. This is an unstructured form of teamwork. In its structured form this teamwork becomes the Piano Technicians Guild.

The Guild has expanded my contacts and learning opportunities far beyond my local area with considerable positive influence on my career. There are experts out there on any subject—rebuilding, regulating, refinishing, public relations, communication, factory procedure, tool making, business practices, sales, you name it, and somewhere there is someone willing to help you. Last summer I was working on a piano with some unusual touch problems. While visiting out of town I had the opportunity to discuss this piano with a highly respected colleague. In about 20 minutes we were able to make an orderly review of what I had done and what still needed to be done to complete the work to the satisfaction of the customer. This kind of association is priceless to me! The Guild makes it possible.

The sense of teamwork that I feel is best illustrated in conversations that I have with children who watch me work.

"Is it hard to tune pianos?" they ask.

"Not if you know how," I reply.

"Well, then, don't you get bored going 'ding, ding,' all day long?"

"No," I say, "because everytime I go 'ding' I have to make a decision about whether that 'ding' is correct or not. For me, it's decisions, decisions, decisions all day long."

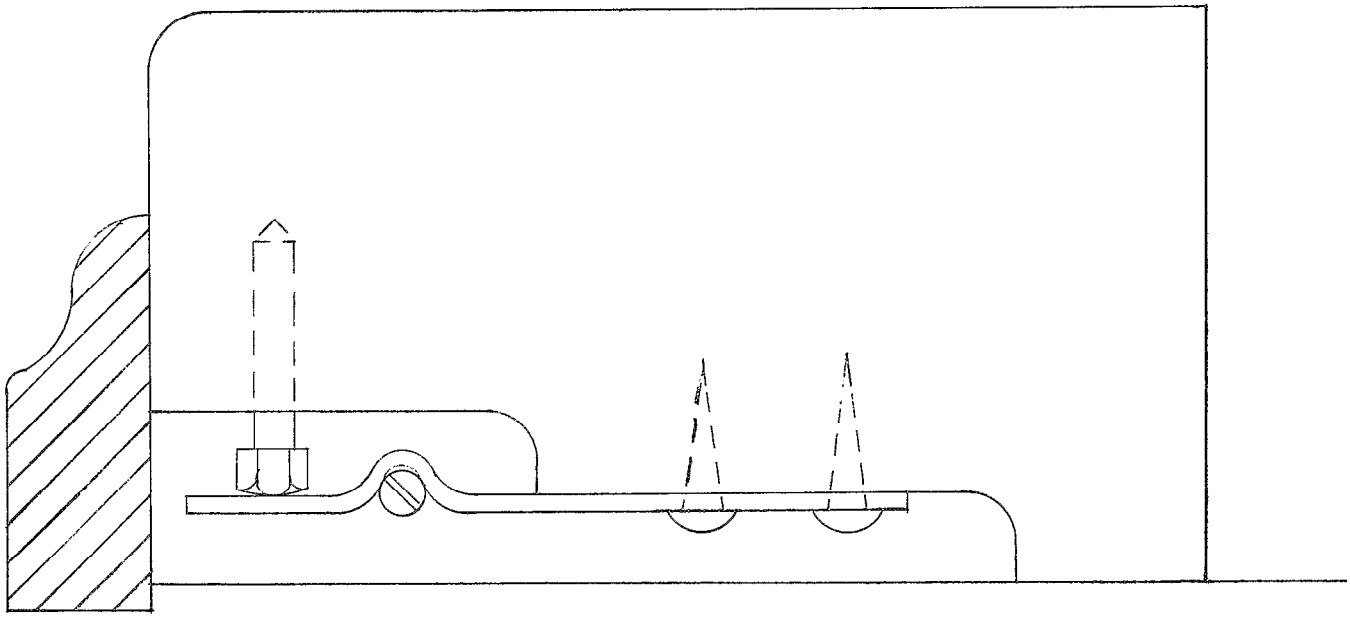
I go on to explain that there are many other things to being a technician, like repairing and regulating and these things add variety and interest to my work. I tell these kids that my position as a tuner-technician is like being an offensive lineman on a football team. I don't carry the ball and I don't make touchdowns but I create

holes so the ball carrier can get through and make a touchdown. It really doesn't matter to me if the performer is a highly gifted professional or a modestly talented amateur. Their achievements are exciting to me because I have done my job and made my contribution to the musical effort.

Associations with skilled pianists can be marvelously exciting and instructive. It gives you a sense of perspective to hear pianos you have serviced being used in performance. I was called to service a concert grand for a prominent pianist who was also teaching a master class here in Cincinnati. I arrived early for the tuning and was able to watch nearly an hour of high level piano instruction to a class of perhaps a dozen very skilled young pianists. My time was well spent. I was able to listen and learn about the fine points of piano performance. It was a broadening experience for me. I learned that pianists themselves can make a good piano sound awful in spite of all we do to get it in top shape for performances. But, in the hands of an artist performer and serviced by an expert technician, the piano is capable of absolutely heavenly sounds.

The relentless industry in the application of talent is indeed necessary. It conjures up in my mind the working through of failures, the correction of mistakes, the honing of skills, the cultivation of tactful communication, the resolution of complaints, all the dark and discouraging experiences we have in the pursuit of excellence. It is painful, but it must be endured with grace if we are to develop into real artists. The ultimate tribute to an artist appeared in a January issue of Newsweek. It was said of Ted Graber, the California decorator, "When he is finished with the job, he leaves two things behind him: beautiful work and great friends." We, as technicians can aspire to that high goal. □

Baldwin has developed a new grand piano keyblock positioning guide mechanism for the keyframe shift pin. The guide is a formed brass strip screwed to the top side of the keyblock cutout. It simplifies the down pressure adjustment on the keyfram shift pin by employing a capstan screw adjustment. (See drawing)



Evaluating Temperament Sequences

by Carl D. Root

In this article, I would like to consider the choices we have made which have led us to the temperament sequences we are now using. I was originally taught one sequence and used it because I knew no other. I later attended a Guild class on tuning, tried the instructor's method, and adopted it until the next tuning class where I was persuaded to try yet another approach. I have worked with several different types of sequences, each one having several popular variations, and have concluded that when considering their utilitarian value, not all temperament sequences are created equal.

My aim is to achieve the highest degree of accuracy possible with maximum efficiency. That is, I hope to determine the proper tempering of each interval tuned without altering each note an unnecessary number of times. To accomplish this, we need enough information available from the beginning of our procedure to know which note to change in an interval that has been determined to be improperly tempered. This approach is recommended whether or not we are accustomed to a "once over lightly" approach before we get down to serious fine tuning.

Before discussing the features that help us to achieve accuracy and efficiency, I would like to mention that I prefer an A-440 fork and would ask those of you who use a C or other alternative — why? I suspect it is because you were taught to use it, not because you were given a choice and decided not to use our current standard. The other hotly debated topic deals with the selection of the temperament octave. I use an F-F octave which has intervals with countable beat rates and minimizes the possible adverse effects of uneven inharmonicity due to wound strings. Because I've yet to hear of anyone losing work because of their pitch or octave selection, and because old habits die hard, I will cut short this discussion. Rest assured that all procedures discussed here can be applied to a variety of pitches and octaves.

Many technicians have suggested that it is important to be familiar with more than one temperament sequence. It is felt that a different sequence might better deal with the problems caused by the condition or scale of the instrument. My own approach has been to find the best possible method and then discover variations in that one sequence which will allow for the necessary flexibility without sacrificing the benefits of that temperament.

For the sake of comparison, let us reduce the temperament sequence to a four-note system called the *temperament foundation.* Most foundations naturally lend themselves to a repeating four-note system while others are simply easier to analyze and compare when reduced to a small number of notes. After our comparison of foundations, we will proceed with the tuning of subsequent notes of the temperament in a way that will give us the most accurate information regarding the proper beat rates for each interval of the scale.

There are four criteria that contribute towards the tuning of an accurate and efficient temperament:

1) USEFUL INTERVALS: How many intervals are revealed after four notes have been tuned? Three is insufficient; five or six would be ideal. Also, if we have a choice, would we prefer to work with certain intervals rather than others at this stage of temperament development? A useful interval should reflect the accuracy of both notes and we are therefore concerned with their coincident partials — preferably the third, fourth, and fifth partials. Lower partials do not reflect the pitch that our ear detects. This is demonstrated by the antiquated method of tuning pianos electronically. The bass seems sharp and the treble is flat. Partials above five typically exaggerate the perception of inharmonicity and are less consistent from one note to the next. We are also interested in the ease of both measuring and detecting small changes in those intervals. My ranking of useful intervals is as follows: Thirds, Sixths, Octaves, Fourths, Fifths, Minor Thirds.

2) INTERVAL COMPARISONS: The use of a foundation with a large number of intervals is considerably diminished if there are few ways of comparing their beat rates. Further, intervals that have identical beat rates or reveal a constant rate of change are more useful than intervals that are perceived to be merely faster or slower. Tests involving thirds, sixths, and octaves usually fall in the former category, fourths, fifths and minor thirds in the latter.

3) INHARMONICITY: A temperament sequence should aid the technician in determining the effects of inharmonicity of a particular piano on the theoretical beat rates of all tempered intervals. It must be stated that a few tuners with considerable talent and experience have a concept in their minds of how fast a given interval should beat under ideal conditions and are then able to modify that beat rate according to their knowledge of the scale design of the particular instrument being tuned.

The members of this select group have my greatest respect and admiration. Fortunately for the rest of us, there are tests which give us information to help us tune fast beating intervals and, at the same time, reveal the necessary deviation from mathematical ideals imposed by the scale of the piano.

4) PITCH INTERVALS: If several intervals in the foundation include starting pitch, the accumulation of ever-present small error is reduced and those errors will be easier to trace. If, instead, we proceed away from pitch by simply "hinging" one interval onto another, we will have no notion of where to make corrections when interval comparisons start to reveal obvious errors. Changing one note of an interval when we are unsure of the accuracy of the other note should be avoided. When tuning proceeds in only one direction, there is no check to determine which note is at fault; we have no choice but to start over.

In examining different temperament foundations, I have found four basic approaches that I feel should be understood and used in the tuning of all pianos. They each provide information not as readily available in the other three and by combining them all in one temperament, maximum efficiency and accuracy can be obtained! These four temperament foundations shall be referred to as 1) Circle of Fourths, 2) Both Ways from the middle, 3) Chromatic Thirds, 4) Conjunctive Thirds. Let us proceed with a brief evaluation of several examples of each of these temperament foundations after which we will determine the best way to incorporate the other systems into the sequence.

CIRCLE OF FOURTHS

Example One

1) USEFUL INTERVALS: The four intervals after four notes have been tuned do not include any of the high priority intervals — there are no thirds, sixths, or octaves.

2) INTERVAL COMPARISONS: The use of the sixth-tenth test for fifths and the third-sixth test for fourths allow for the proper expansion or contraction of these intervals. However, to tune one interval so it beats one beat per second faster or slower than another is more difficult than matching beat rates exactly or providing a constant increase of one beat per second through three or more intervals. The intervals in this sequence, as in all variations of the circle of fourths foundations, do not provide these preferred comparisons.

3) INHARMONICITY: Theoretically, a comparison of the rates of the three slow beating intervals provided at this point would be an aid in dealing with inharmonicity. But do the slow beating intervals vary their beats slightly from piano to piano just as fast ones do? If so, how will you determine how these intervals should be modified?

4) PITCH INTERVALS: Perhaps the most serious limitation of this particular series is that it has only one pitch interval. When each note tuned later in the sequence starts to reveal two or three additional intervals and discrepancies are revealed, you will be at a loss to determine how far back to trace your steps.

I include this variation because it was the first sequence I learned, but its reasons for presentation are more than nostalgic. For the beginning tuner, it will be a delight to discover that it is self-tempering! Since all fourths are tuned down and all fifths tuned up, tune them beatless, and residual torque on the pin and uneven string tension will drop the pitch to its proper position — well, almost!

Example Two

1) USEFUL INTERVALS: The four notes available still have no thirds or octaves, and the sixth provided is a shot in the dark.

2) INTERVAL COMPARISONS: see example one.

3) INHARMONICITY: see example one.

4) PITCH INTERVALS: We now have two pitch intervals to work with, the A-E fifth, and the A-D fourth.

The reasons for the inclusion of this variation will become clearer in the next section where the foundations will be developed further beyond their four-note beginnings. The positive aspects at this point are limited to an additional pitch interval.

Example Three

1) USEFUL INTERVALS: This sequence provides five useful intervals: two fourths, two fifths, and an octave. Some technicians may be inclined to play down the usefulness of the octave and if no tests were available to determine its accuracy, I would agree. An aural confirmation to determine that it is beatless is insufficient.

2) INTERVAL COMPARISONS: We can use the third-tenth test on the octave and in addition, observe that the lower fourth and upper fifth beat the same. Also the lower fifth beats at half the rate of the upper fourth. Surely these tests should accomplish the tuning of the octave as well as providing additional checks for A# and C.

3) INHARMONICITY: Because of the interval comparisons available between the fourths and fifths, the thirds and sixths have a much better chance of falling into place as the temperament progresses.

4) PITCH INTERVALS: Two pitch intervals are provided. For those who would place a premium on maximum pitch intervals (three after four notes), tune either G or G# instead of A#. In fact, both variations on this example are quite popular.

The advantages of this example over the previous ones, additional pitch intervals and interval comparisons employing the octave, lead to the conclusion that if an F-F octave is preferred, a C fork provides more flexibility than an A. If scale breaks and wound strings allow, a D-D octave would provide the same tests using an A fork as would an E-E octave.

BOTH WAYS FROM THE MIDDLE

The three examples of the "Both Ways From the Middle" temperament are identical: the second and third examples are transpositions of the familiar version presented by William Stonaker using an A fork and F-F octave.

1) USEFUL INTERVALS: There are five intervals: two thirds, two fourths, and a sixth. The high

NOTE TUNED	INTERVALS PRODUCED	TESTS
EXAMPLE ONE		
A3	- - -	- - -
E4	A3-E4 fifth	sixth-tenth
B3	B3-E4 fourth	third-sixth
F#3	F#3-B3 fourth	third-sixth
	F#3-A3 minor third	- - -
EXAMPLE TWO		
A3	- - -	- - -
E4	A3-E4 fifth	sixth-tenth
D4	A3-D4 fourth	third-sixth
G3	G3-D4 fifth	sixth-tenth
	G3-E4 sixth	- - -
EXAMPLE THREE		
C4	- - -	- - -
F4	C4-F4 fourth	third-sixth
F3	F3-C4 fifth	sixth-tenth
	F3-F4 octave	third-tenth
		C-F fourth beats twice F-C fifth
A#3 (B^b3)	F3-B^b3 fourth	third-sixth
	B^b3-F4 fifth	sixth-tenth
		B^b-F fifth beats same as F-B^b fourth
EXAMPLE FOUR		
A3	- - -	- - -
F3	F3-A3 third	- - -
D4	A3-D4 fourth	third-sixth
	F3-D4 sixth	third-sixth
A#3 (B^b3)	F3-B^b3 fourth	third-sixth
	B^b3-D4 third	7-8-9 (6.9-7.9-9.2)
EXAMPLE FIVE		
A3	- - -	- - -
E3	A3-E3 fourth	third-sixth
C3	C3-E3 third	- - -
	C3-A3 sixth	third-sixth
F3	F3-A3 third	5-6-7 (5.2-5.9-6.9)
	C3-F3 fourth	third-sixth
EXAMPLE SIX		
C4	- - -	- - -
G#3 (A^b3)	- - -	
F4	A^b3-F4 sixth	third-sixth
	C4-F4 fourth	third-sixth
C#(D^b4)	D^b4-F4 third	9-10-11 (8.3-9.4-11.0)
	A^b3-D^b4 fourth	third-sixth
EXAMPLE SEVEN		
A3	- - -	- - -
F3	F3-A3 third	- - -
A#3(B^b3)	F3-B^b3 fourth	third-sixth
F#3	F#3-A#3 third	beats half beat faster than F3-A3 third (9.4-10.0)
	F#3-A3 minor third	- - -
EXAMPLE EIGHT		
A3	- - -	- - -
C#4(D^b4)	A3-C#4 third	- - -
D4	A3-D4 fourth	third-sixth
A#3 (B^b3)	B^b3-D4 third	beats half beat faster than A3-C#4 third (8.7-9.3)
	A#3-C#4 minor third	- - -
EXAMPLE NINE		
A3	- - -	- - -
F3	F3-A3 third	- - -
C#4(D^b4)	A3-C#4 third	beats two beats faster than F3-A3 third
F4	F3-F4 octave	third-tenth
	D^b-F4 third	7-9-11 (6.8-8.7-11.0)
EXAMPLE TEN		
C4	- - -	- - -
C3	C3-C4	third-tenth
E3	C3-E3 third	- - -
G#3(A^b3)	E3-G#3 third	
	A^b3-C4 third	5-7-9 (5.2-6.5-8.3)

number of intervals is otherwise difficult to obtain at this point, especially if you are inclined to avoid the octave.

2) INTERVAL COMPARISONS: The most noteworthy trait of this temperament is the availability of a uniform progression of fast beating intervals. The bottom third, sixth, and top third must show increases of about one beat per second. It makes no difference what those specific beat rates are: if they are all too fast or too slow, the fourths will beat incorrectly and reveal the error.

3) INHARMONICITY: The uniform increase and cross checking with fourths are important in that they provide a means for the piano to tell the tuner what beat rates will be required to reveal a uniform rate of increase. Without this kind of test, the tuner is compelled to force his impression of proper tempering on each piano.

4) PITCH INTERVALS: There are usually two notes tuned from pitch; example six has three. The temperament's name is derived from the tuning of a third down and a fourth up from pitch. The pattern is then reversed as the third is tuned down from the top note and the fourth is tuned up from the bottom to reveal a common note back towards the middle.

CHROMATIC THIRDS

As the name implies, this sequence involves the tuning of major thirds a half step apart. A third is tuned either up or down from pitch. Fourths and thirds are then alternated. The sequence can be worked chromatically either up or down the scale.

1) USEFUL INTERVALS: There are only three intervals to work with unless you count the minor third.

2) INTERVAL COMPARISONS: The important comparison here is the difference in beat rates between the two major thirds. The upper beats about a half beat, or 6% faster than the lower.

3) INHARMONICITY: Although we are now emphasizing fast beating intervals which are normally the most useful in determining the effects of inharmonicity, we must still rely on our sense of beat rates and knowledge of individual piano scales to determine precisely how these thirds should be tempered. The only possible means for getting the information from the piano is by comparing the minor third which can be done only if the beat rate is slow enough and the scaling reliable. The F#-A in example seven might be reliable, the A#-C# in example eight would likely beat too fast in any event.

4) PITCH INTERVALS: Example seven has two pitch intervals only if the minor third is included. Example eight has a fourth and major third.

CONJUNCTIVE THIRDS

This sequence, also known as "contiguous thirds" and "stacked thirds," is simply the pivoting, or hinging both above and below a common note. Credit has been given to Frank W. Hale who invented it and taught it at Oliver C. Faust's tuning school in Boston. It must have seemed a radical departure from the fourth-fifths temperaments of the time, but its many adherents today attest to its validity.

1) USEFUL INTERVALS: There are four intervals; three thirds and an octave.

2) INTERVAL COMPARISONS: Once again, there are three intervals, the major thirds, which must show a constant rate of change. This test can and should be extended beyond the confines of the temperament octave not only to test the accuracy of the octave on which this test relies, but to see if the constant rate of change will faithfully continue both up and down the scale to include the whole piano. These extra notes outside the octave should not be considered superfluous since they should not need changing later on. In fact, they will help us to prevent acceleration or deceleration of the rates of increase or decrease of the thirds once the notes of the temperament octave have been completed and we continue tuning the rest of the piano. I have seen several variations of this temperament foundation which omit the third that completes the octave; the fifth is usually tuned down as an alternative. With due respect to those adherents, the advantages of this sequence are virtually lost if the octaves are not thoroughly explored.

3) INHARMONICITY: See above.

4) PITCH INTERVALS: There are two intervals: two thirds in example nine and a third and octave in example ten.

BUILDING UP FROM THE FOUNDATION

When selecting subsequent notes to expand our foundation, the criteria remain the same as for the temperament foundation. We are still interested in producing a maximum number of intervals for comparison, tuning intervals from pitch, and dealing with our old friend, inharmonicity. As we work through each of the previous examples, notice that a continuation of a repeating sequence is seldom the best way to proceed. Although a simple pattern is easy to learn initially, the need for frequent retuning of these notes indicates that there may be alternatives available which allow us to continue tuning, confident that previous notes can be relied upon for comparison. One golden rule to keep in mind is that as we continue tuning away from the temperament foundation, each note should always provide at least two new intervals. Each interval should have a useful basis for comparison. (All notes fall within an F-F octave except examples #5 and #10 which fall within a C-C octave.)

EXAMPLE ONE: Tuning C# as the fifth note produces the F#-C# fifth, A-C# third, and C#-E minor third. This may seem impressive except that there are still no clues from the piano to tell us how this specific scale should be tuned. Continuing the pattern of tuning fifths up and fourths down produces a G#. The additional interval provided is a minor third. I would prefer to work with a different interval. An improvement on this sequence would be to tune both F's as notes number six and seven after C# has been tuned. After the three conjunctive thirds have been checked, tune A#, use

a chromatic comparison with the F#-A# third and F-A third. Now tune D and note the "Both Ways from the Middle" and the second chromatic comparison test.

EXAMPLE TWO: Notes five and six are usually C and F. The C gives us a fourth and a third, the third beating faster than the sixth provided by note four. Watch the G-C fourth. The F-A third provided by note six is slower than the F-D sixth. Check the A-D fourth. An alternative sixth note would be B, which produces yet another example of "Both Ways" (G-E third, G-E sixth, and C-E third). Complete the F-F octave and tune C# for the conjunctive thirds test. The A# will then provide the familiar "Both Ways" test of example four as well as a chromatic comparison.

EXAMPLE THREE: Frequently, G and D are tuned as notes five and six, but since the G provides only one interval, I would prefer D and A which provide "Both Ways"; C# will then provide a conjunctive thirds test.

BOTH WAYS FROM THE MIDDLE

EXAMPLE FOUR: Traditionally, F# and D# are selected to create the second "Both Ways" series which is completed when B is tuned. Instead, tune C# and high F to complete the conjunctive thirds series. I find it often reveals errors in the first four notes. Tune F# (the F#-F# octave will provide a second conjunctive series, if you wish). The D# and B will then complete your second "Both Ways" series as well as providing several chromatic comparisons.

EXAMPLE FIVE: Using a C-C octave from an A fork, the conjunctive thirds test is provided by adding G# and high C. This is often attempted before tuning F as note four which completes the first "Both Ways" series. In addition, a problem could develop since the first conjunctive thirds series does not include starting pitch. To be safe, add the C#-C# octave as the second conjunctive thirds series, and check the chromatic comparisons.

EXAMPLE SIX: If F and A are tuned, we have added the conjunctive thirds series. (As in example five, an additional octave, E-E, could be added to produce the second conjunctive thirds series which includes pitch.) Note the resemblance of this temperament to the variation of example three which substitutes G# for A# as note four. If the first six notes of this temperament look familiar, credit William Stegemen whose Guild Institute class has been well attended.

CHROMATIC THIRDS

EXAMPLES SEVEN AND EIGHT: The strong point of the chromatic thirds sequence is its flexibility. It is often used when the piano has been tuned recently and the changes in tuning are expected to be minor. In example seven, we can continue up the scale tuning the G-E third or down the scale tuning the E-G# third. If you occasionally have trouble working with the F-A third, tune up from A to C# as in example eight and tune the third a half step higher. Then add the F-F octave which would produce both the conjunctive thirds series and "Both Ways". In example seven, tune D for "Both Ways" before adding C# and high F for the conjunctive thirds test.

CONJUNCTIVE THIRDS

It is traditional to add three more thirds a half step higher than the temperament foundation. Although I heartily agree with this aim, I think the usual means of achieving this is weaker than the strong foundation we have worked so hard to establish. The traditional fifth note in example nine would be F# followed by A#. The two intervals provided by the F# are a fifth and a minor third. Would you not agree that a major third and sixth would be preferable alternatives for working intervals? Consider tuning D which will not only give you those intervals but will also provide the "Both Ways" test and an interesting combination of the two important foundations when A# is tuned as note six. Observe how there is an increase in beat rates of these fast beating intervals: F-A third, F-D sixth, A-C# third, B^{b}-D third, D^{b}-F third. Note that the rate of increase of these intervals is not constant, but a careful examination of their relative positions in the temperament octave should tell you how great an increase should be present from one interval to the next. I am convinced that no other temperament can provide such a large amount of reliable information after six notes have been tuned.

To produce the two foundations in example ten, tune D# and G. Note that the relative position of the two foundations is not the same as in example nine. (In general, I prefer to have at least two systems include starting pitch in the early stages of the development of the temperament.) Add F and A to produce the second "Both Ways" test used in example nine.

The following conclusions may prove helpful: 1) The conjunctive thirds test is unsurpassed in determining the effects of inharmonicity on the beat rates of fast beating intervals. It is the preferred temperament foundation; when used to augment other systems being used as foundations it should include starting pitch. 2) "Both Ways from the Middle" provides the best means for linking each conjunctive thirds series because it subsequently provides five fast beating intervals after six notes. 3) The chromatic thirds sequence is the most flexible foundation and is best used as a constant check on the accuracy of our results. 4) Because the circle of fourths is markedly different from the other three systems, it too serves as a good continuing check for accuracy on both the temperament octave and its fast beating intervals. It also helps to provide additional pitch intervals and, incidentally is useful for quick temperaments for major pitch raises.

In my experience, the conjunctive thirds series and "Both Ways from the Middle" series are most helpful in the first half of the development of the temperament. As the second half is being completed, a greater emphasis is placed on chromatic thirds and the circle of fourths. □

Reader Feedback

Dear Mr. Santy:

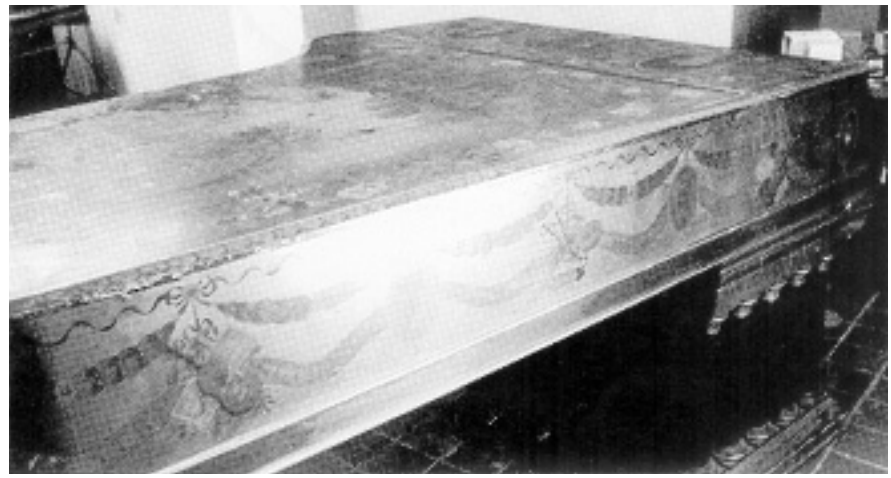
I have acquired a very unusual Steinway B #61663. The instrument is completely covered with paintings (garlands, pictures of composers, scenes of muses dancing, etc.).

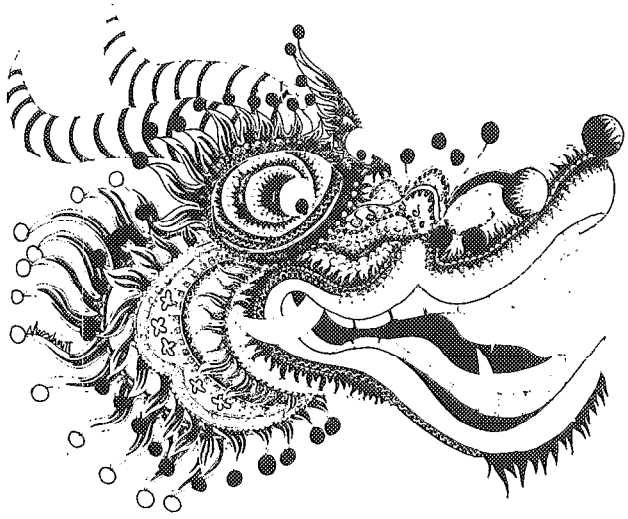
I found out that when the piano left Steinway back in 1876, it was a standard ebony-black finish with heavy set legs prevalent for the era. Someone who purchased the instrument had it redesigned, and if my research is correct, it must have happened very soon after it left the store, for the painter who did all that work died in 1881. The piano had been gold leafed, then painted over and then lacquered for a final finish. Of course, over the years the piano has collected scratches, dents, nicks to the point where restoring it would be very costly and time consuming. However before refinishing it and stripping the paintings I would like to share my dilemma with others. Perhaps some of them had similar experiences and could advise me—restore or refinish?

Looking at the paintings, one can notice the inconsistency in quality; some are not bad at all, and others are amateurish. The painter, Maurice Cottier (1822-1881) specialized in watercolor scenes and portraits but generally is known as a collector of tableau paintings.

Take a good look at the enclosed photos and if you have any comments or information, write me.

Leopold Holder
12 East 31st St.
New York, NY 10016





San Francisco's Hidden Delights — Redwoods, Kites, Mimes, Forts

by James G. Bryant
Local Host Chairman
1981 Piano Technicians Guild
Convention

If you were to ask one hundred world travelers what it is that makes San Francisco this country's most visited city, you might receive one hundred entirely different answers. It seems to have become, to this generation, what Paris was to earlier generations although the two cities are totally different in almost every respect. The city simply cannot be categorized. Each person invariably finds his own special reason for leaving his heart in San Francisco.

The logical starting point to begin the love affair is on a cable car, but this is far more than a mere joy ride—it's a nostalgic means of transportation, with one of the most interesting and exciting parts of the city awaiting you at the end of the line. Fisherman's Wharf, Pier 39, The Cannery, Ghirardelli Square, Aquatic Park and Fort Mason are all within walking distance from terminal points of the cable lines.

Convention registrants will be provided with complete, self-guided tours of these and other areas, but, just to whet your appetite, we'll provide a small sample:

If you were to catch the Hyde 4St. cable to Aquatic Park, for example, the first thing you experience on disembarking might be the ancient Chinese art of kite fighting. When the winds and weather are right for kite flying members of the Chinese community (and many caucasians are taking it up) gather with their beautiful, dragon shaped kites with small knives attached to the guide strings. They are launched high into the sky where they enter into mortal combat, twisting and turning to gain some small advantage that will allow one kite to cut the line of the other. It is a bloodless sport in which all the vanquished loses in his kite (and, perhaps a wager).

Across the street is Ghirardelli Square, a former chocolate factory (parts of which are still operational) converted into an indoor/outdoor four-story complex housing many fine shops and restaurants. History buffs might enjoy visiting the Maritime Museum at the end of the block where one can climb the stairs into Fort Mason. Once the embarkation point for 1.5 million World War II G.I.s, Fort Mason was made the headquarters and focal point for the Golden Gate National Recreation Area and is now the most popular unit of the entire National Park system! Visitation surpassed the previous leader, The Great Smokeys, last year. Different events are scheduled each day plus scores of ongoing diversions. This showcase for the artistic, cultural and ethnic communities has programs as varied as the city itself. While it may seem odd to see such things as self awareness seminars, Balanese dancing, dixieland jazz and a poetry festival all going on at one time on National Park land, it works, and the people love it—over 900,000 last year.

Most visitors want to see Fisherman's Wharf, which is half a mile from Fort Mason and the terminal point of another cable line. Just a few blocks east of the Wharf is Pier 39, a 45-acre commercial specialty center opened in October, 1978 at a cost of $54 million. Here are 132 specialty shops and boutiques in a marine setting, and 14 full-service restaurants all with magnificent views. There are three stages with constant entertainment of all varieties and, as through this section of the city, street musicians are everywhere. Wherever you go you find musicians, singers, dancers, clowns, mimes, jugglers and some specialty acts that defy definition. They work for the sheer love of it plus any gratuities that are offered, and the degree of talent possessed by most will amaze you. The great mime team of Shields and Yarnell gained stardom after performing on the streets of San Francisco for years.

As in most major cities, there are commercial tours available to far and near. The delightful surprise is that, of all of the tours offered, the best is also the least expensive—Muir Woods/Sausalito. For $7.75 (children $3.85) you are picked up at your hotel and proceed through the city and across Golden Gate Bridge into Marin County.

There you wind through the eucalyptus groves of Mount Tamalpais to your first stop—a lengthly one—at Muir Woods. Just a few minutes away from the city you behold a 424-acre national monument of giant redwoods in all stages of development from month-old seedlings to 1,000 year-old elders which rise 300 feet or more. The inspiring, cathedral-like setting is unlike anything you are ever apt to experience again.

Upon leaving Muir Woods the bus winds down the mountain into the quaint English-style village of Sausalito, a colorful suburban community nestled in the hills overlooking San Francisco Bay. Here the tour pauses to allow you a stroll along Bridgeway for a marvelous view of San Francisco across the Bay. You may reboard the bus to return to your hotel or you may opt to leave the tour here and take the Sausalito Ferry back to San Francisco for $2.00.

After about a 20-minute ride on a modern cruiser it docks at the Ferry Building at the foot of Market Street where you will find many additional interesting attractions.

This is merely a small sample of what awaits you in San Francisco. Far more details will be provided with your convention packet. This is one PTG Convention you certainly won't want to miss. It may be your last chance to make a tax deductible dream trip to EVERYONE'S FAVORITE CITY. □

1981 TECHNICAL INSTITUTE UPDATE

We're not quite sure whether these paragraphs should be called Institute Reports or out-and-out advertising for the San Francisco convention. We all may be vaguely aware that something has been overlooked in our quest for excellence, but just can't convince ourselves we should spend that money for a trip to a Convention.

Well, we'll say it again and again: "You can't afford *not* to go if you are serious about wanting to be a top-notch piano technician." Maybe we are doing a bit of advertising, but if that is what it takes to get you to come and pick up some valuable information—we have no shame.

Suppose you had been tuning for a number of years and never encountered a grand with a broken agraffe. How much would it be worth to you to know what tools you need and how to remove the stub from the plate in a matter of minutes? Come to the Convention and see Paul Bergan and you will have that information for the rest of your life.

Suppose you had never had a reason to regulate damper spoons in a spinet piano. Come see the Wurlitzer class on vertical regulation and servicing, with action models, tools and hands-on assistance from some of the finest instructors in our profession. You will never have to worry about that little item again.

Do you have all the tuning customers you can take care of? You know regular tuning and service means extra repair, regulating and voicing opportunities, which will put extra dollars in you pocket. Phil Bashaw makes it sound so simple (it's just a matter of doing the right thing at the right time). I wonder why I didn't think of it 40 years ago, and become one of the wealthy piano technicians.

Have you ever tried to regulate a grand piano action and wondered why it didn't seem to be all that much better than it was when you started on it? Perhaps you didn't treat all the friction points before you started turning screws and bending springs. Go see Ed Whiting's class on "Friction In The Grand Piano Action" and you won't make that mistake again.

These are *just a few* of the classes that will be available to you at the 1981 Piano Technicians Guild Convention in San Francisco. How can you *not* plan to come??? □

More next month . . . **George A. Defebaugh, Institute Director.**

San Francisco

SPOUSE CALENDAR

Sunday — July 5, 1981 (PTG Council in Session)

8:00 am-12:00 n	Auxiliary Center Open
1:00 pm- 4:00 pm	Auxiliary Center Open

Monday — July 6, 1981 (PTG Council in Session)

8:00 am-12:00 n	Auxiliary Center Open
1:00 pm- 4:00 pm	Auxiliary Center Open

(Auxiliary Center open to Members and Non-Members)

Tuesday — July 7, 1981

8:00 am-12:00 n	Auxiliary Center Open
8:00 am- 9:00 am	Auxiliary Board Breakfast
9:30 am-11:00 am	Auxiliary Assembly Two Speakers & Slide Presentation
11:30 am-12:00 n	M A L Meeting
1:00 pm- 4:00 pm	Auxiliary Center Open
1:00 pm- 2:00 pm	Auxiliary Council*
2:30 pm- 4:00 pm	President's Reception*

Wednesday — July 8, 1981

8:00 am-12:00 n	Auxiliary Center Open
9:00 am-10:00 am	Class
10:30 am-11:30 am	Class
1:00 pm- 4:00 pm	Auxiliary Center Open
12:00 n 2:00 pm	Installation Luncheon

Thursday — July 9, 1981

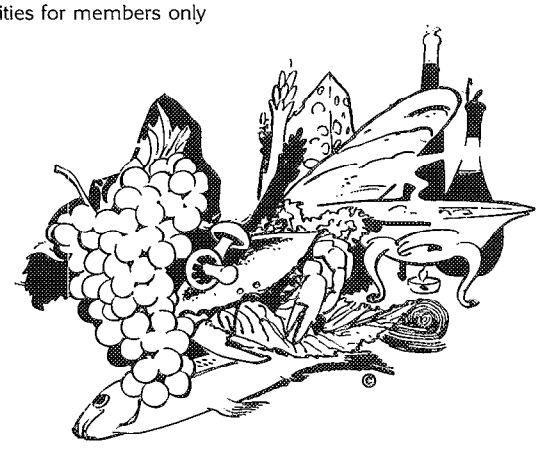
8:00 am-12:00 n	Auxiliary Center Open
9:00 am- 4:00 pm	Tour of Wine Country and Sonoma Village
1:00 pm- 4:00 pm	Auxiliary Center Open

Friday — July 10, 1981

8:00 am-10:00 am	Auxiliary Center Open

All meetings are in California Room except President's Reception in Vista Room & Installation Luncheon in Continental Ballroom 5.

*Activities for members only



MEMBER CALENDAR (Preliminary)

Saturday — July 4, 1981

1:30 pm- 6:00 pm	Registration Open

Sunday — July 5, 1981

9:00 am	Worship service
10:00 am-12:00 n	Council in Session
12:00 n - 6:00 pm	Registration Open
1:30 pm- 5:00 pm	Council in Session

Monday — July 6, 1981

8:00 am- 9:45 am	Chapter Workshop
8:00 am	Complete Institute Office Setup
8:00 am- 6:00 pm	Registration
9:00 am- 4:00 pm	Classroom Setups
10:00 am-12:00 n	Council in Session
1:30 pm- 2:15 pm	Regional Caucuses
2:15 pm- 5:00 pm	Council in Session/Officer Elections
7:30 pm- 9:00 pm	Opening Assembly
9:00 pm-10:30 pm	Exhibit Opening/Ribbon Cutting

Tuesday — July 7, 1981

7:30 am-12:00 n	Exhibits (Drawing)
7:30 am	Membership Services
8:00 am- 6:00 pm	Registration Open
8:30 am-12:00 n	Institute Classes in Session
9:00 am-10:30 am	Board Committee Appointments
1:00 pm- 6:00 pm	Exhibits (Drawing)
1:30 pm- 5:00 pm	Institute Classes in Session
5:15 pm- 6:15 pm	Feminine Technicians Meeting
6:30 pm	Young Technicians Meeting
8:00 pm-10:00 pm	Flea Market — Hawaiian theme

Wednesday — July 8, 1981

7:30 am-12:00 n	Exhibits (Drawing)
7:30 am-	Membership Services
8:00 am-	Registration All Day at Office
8:30 am-12:00 n	Institute Classes in Session
1:00 pm- 6:00 pm	Exhibits (Drawing)
1:30 pm- 5:00 pm	Institute Classes in Session
6:45 pm- 7:30 pm	No Host Cocktail/Reception
7:30 pm- 9:30 pm	Banquet

Thursday — July 9, 1981

7:30 am-12:00 n	Exhibits (Drawing)
7:30 am	Membership Services
8:00 am-	Registration All Day at Office
8:30 am-12:00 n	Institute Classes in Session
11:45 am- 1:30 pm	Membership Services Open
1:00 pm- 6:00 pm	Exhibits (Drawing)
1:30 pm- 5:00 pm	Institute Classes in Session
Free Evening	

Friday — July 10, 1981

8:00 am- 9:00 am	Committee Meeting
7:30 am-11:00 am	Exhibit Finale (Drawing)
8:30 am-12:00 n	Institute Classes in Session
12:30 pm- 2:00 pm	Closing Luncheon

MEMBER REGISTRATION COPY

Name _____
Home Address _____
City _____
State/Province _____ Zip _____
Nickname for Badge _____
(if not the same as above)

☐ Member ☐ Non-Member
☐ Visually Handicapped
☐ Will be staying at the San Francisco Hilton and Tower

Spouse's Name _____
(if attending)
Nickname for Badge _____
(if not the same as above)
Children (names and ages) _____

REGISTRATION CUTOFF DATES
(Cutoff Dates are Firm and Absolute)
Check Boxes and Total

TECHNICIANS

Guild Members

Postmarked by May 1 ..... ☐$ 90.00
Postmarked after May 1 ..... ☐$110.00

Non-Guild Members

Postmarked by May 1 ..... ☐ $175.00
Postmarked after May 1 ..... ☐ $195.00

Private Tuning Tutoring (1½ hours) ..... $ 30.00
☐ Aural ☐ Visual

Grand Rebuilding ..... ☐ $ 30.00

SPOUSES AND CHILDREN

Auxiliary Member ..... ☐ $ 35.00
Non-Auxiliary Member ..... ☐ $ 45.00
Children (15 and under) ..... ☐ $ 5.00
I Plan to Attend ..... ☐ Auxiliary Tea
☐ Auxiliary Luncheon

OPTIONAL FUNCTIONS

Banquet ..... ☐ $ 25.00
Closing Luncheon ..... ☐ $ 15.00

TOTAL ENCLOSED $_____

Tickets for optional functions must be bought no later than 48 hours before the event.
NOTE: Spouses of Piano Technicians Guild members and their sons or daughters, age 16 or over, may register for Institute classes at Piano Technicians Guild member rate. Guides of visually handicapped technicians may attend classes at no charge.

CUT CUT CUT CUT CUT CUT

HOME OFFICE REGISTRATION COPY

Name _____
Home Address _____
City _____
State/Province _____ Zip _____
Nickname for Badge _____
(if not the same as above)

☐ Member ☐ Non-Member
☐ Visually Handicapped
☐ Will be staying at the San Francisco Hilton and Tower

Spouse's Name _____
(if attending)
Nickname for Badge _____
(if not the same as above)
Children (names and ages) _____

REGISTRATION CUTOFF DATES
(Cutoff Dates are Firm and Absolute)
Check Boxes and Total

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Guild Members

Postmarked by May 1 ..... ☐ $ 90.00
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Auxiliary Member ..... ☐ $ 35.00
Non-Auxiliary Member ..... ☐ $ 45.00
Children (15 and under) ..... ☐ $ 5.00
I Plan to Attend ..... ☐ Auxiliary Tea
☐ Auxiliary Luncheon

OPTIONAL FUNCTIONS

Banquet ..... ☐ $ 25.00
Closing Luncheon ..... ☐ $ 15.00

TOTAL ENCLOSED $_____

DO NOT WRITE HERE

Date Rec. _____ Priority No. _____
Amt. Pd. _____
Cash _____ Check _____ Money Order _____
Chapter No. _____ Member No. _____
Classification _____

Cross Over The Bridge

All New for 1980-1981

This year the booster club has a new format.

1. **POINTS** The point system for bringing in a new member has been changed to give members a simpler, fairer system. Three points will be credited for bringing in a registered technician, apprentice or allied tradesman and one point for sponsoring a member of any other classification. In this way, the point spread recognizes the fact that all who sponsor a new member are actively supporting the Guild.

Members who achieve fifteen points will be honored in the 1981 President's Club. Those who help bring a former member back into the Guild will be honored in the 1981 Restorer's Club.

2. **PRIZES** This year as a special feature every member who brings in three members will receive a flashlight pen and every member who brings in seven new members will receive a Journal binder as a gift.

To be sure all points are properly recorded, please check all new member applications carefully.

1. Please PRINT your name after your signature on the line "recommended by" when you wish to receive credit for bringing a new member into the Guild. Some signatures are difficult to read and we regret having to omit a name for this reason.

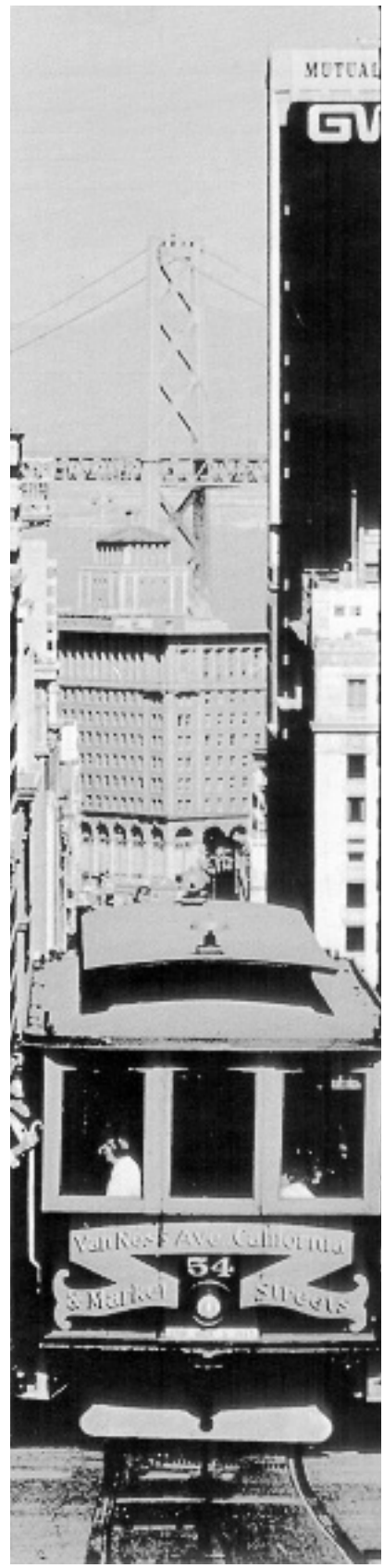
2. Please show your own chapter after your name. Some members sponsor a new member into a chapter other than their own.

3. If you wish credit for a RESTORED MEMBER, please write this fact on the application form. It is not always possible to trace a former member after a lapse of time.

4. If corrections should be needed in the records, please notify the home office promptly. The **Journal** *goes to print some weeks ahead of mailing.*

5. The first figure after each name represents the number of points earned. The second figure shows the number of new members brought into the Guild for the year 1980-81.

	Pts	Mbs
President's Club		
BITTINGER, Dick	17	7
DRAINE, Robert	24	8
MARCIANO, William	15	5
SMIT, Robert	18	6
Restorer's Club		
BITTINGER, Dick		
COLEMAN, Sr., Jim		
DUNCAN, David		
FANNING, William		
GOLD, Jimmy		
MENSCHING, Dale		
PREUITT, Ernie		
WALKUP, Ken		
WEEKS, George		
Booster Club		
ACKMAN, W. H.	3	1
AFFLECK, Don	1	1
ALLEN, Jon	1	1
ANDERSON, Albert	6	2
ASHMORE, Yvonne	1	1
BAIRD, John	3	3
BARRUS, Ralph	3	1
BENNET, Wallace	3	1
BITTINGER, Dick	17	7
BROOKSHIRE Jerry	1	1
BROWNFIELD, Gary	3	1
BURTON, Robert	1	1
BUYCE, Harold	4	2
CALLAHAN, James	1	1
CLEVENGER, Wayne	4	2
COLEMAN, Sr., Jim	4	2
COLLINS, James A.	3	1
CONOVER, Lester	3	1
COX, Merril	9	3
CRABB, Larry	3	3
CRAW, Stephen	1	1
CUNNINGHAM, Jess	12	4
DANTE, Richard	3	1
DeARMOND, C. E.	6	2
DEFEBAUGH, George	3	1
DeTAR, Brian	1	1
DRAINE, Robert	24	8
DROST, Michael	6	2
DUNCAN, David	3	1
EDWARDS, William E.	3	1
ERDMAN, James	1	1
ESMONDE-WHITE, Oliver	6	2
EVANS, Dan	4	2
FANNING, William	6	2
FELTON, Hilbert	10	4
FINGER, Chris	9	3
FLEGLE, Sr., Richard	1	1
FRITZ, Lloyd	3	1
FROST, Jack	6	2
GARLICK, William	3	1
GARRETT, Joseph	1	1
GENTRY, Kenneth	3	1
GILLER, Evan	7	3
GOLD, Jimmy	3	1
GULLIXSON, Elisha	3	1
HANSON, Frank	9	3
HARMON, Clayton	3	1
HAUCK, Jack	1	1
HEDRICK, Ralph	4	2
HERBERT, Curtis	2	2
HERSHBERGER, Ben	3	1



HESS, Mark	3	1
HIPKINS, David	3	1
INGLES, Bob	1	1
JACKSON, George	3	1
JOHNSON, Eric	3	1
JORDAN, Wayne	3	1
KIMBALL, Michael	1	1
KINGSBURY, Richard	3	1
KOKTON, Paul	3	1
KREITZER, Mark	3	1
LAWRENCE, Paul A. U.	3	1
LEVITCH, Leon	1	1
LILLICO, John	6	2
LURIE, Mordecai	6	2
LYNN, Frederick	6	2
McCLURE, Wallace	1	1
McGUIRE, Michael	4	2
McKINNON, Karl	1	1
MARCIANO, William	15	5
MARTEN, Gil	3	1
MATHESON, Duncan	1	1
MATTHEWS, John	3	1
MENSCHING, Dale	6	2
METZ, Al	2	2
NEIE, Gary	3	1
NICOLAI, Jay	3	1
ODENHEIMER, Fred	6	2
OSBORNE, James	6	2
OSBORNE, Joseph	3	1
PERSON, Donald	1	1
PETERS, George	3	1
PETERSON, Gerald	3	1
PREUITT, Ernest	4	2
RADD, Dorothy	3	1
RAPPAPORT, Joel	3	1
REITER, Michael	1	1
REQUE, Styrke	1	1
RUSSELL, Bob, Sr.	6	6
SAAH, Joseph	3	1
SCHMITT, Paul	6	2
SCHOPPERT, Robert	12	4
SEITZ, Al	3	1
SIEROTA, Walter	3	1
SKOLNIK, David	3	1
SMIT, Robert	18	6
SNYDER, Willis	3	1
STEELE, Joe	10	4
STONE, Patrick	6	2
SVEC, John	1	1
THILE, Scott	1	1
VARNADO, James P.	3	1
WAGNER, Lloyd	9	3
WAGNER, Robert	6	2
WALKUP, Ken	6	2
WEEKS, George	4	2
WEST, Richard	2	2
WICKSELL, Larry	1	1
WILLIAMS, Kenneth	3	1
WOODALL, Dennis	3	1
ZEISEMER, Bruce	3	1
ZELLMAN, Adelaide	1	1

New Members

REGISTERED TECHNICIANS

Long Island Cristofori Brotherhood N.Y. Chapter
LAWRENCE, JAMES E.
977 Little East Neck Rd.
W. Babylon, NY 11704

New Orleans, LA Chapter
HELMER, JOE R.
2024 Coliseum #4
New Orleans, LA 70130

HITT, HENRY L., JR.
2616 Bell St.
New Orleans, LA 70119

Northeast Florida Chapter
WERNETH, CAREY W.
2675 S. Favre Dr.
Mobile, AL 36605

Pittsburgh, PA Chapter
SPAULDING, GEORGE H.
1645 Ardmore Gardens
Pittsburgh, PA 15221

Rochester, NY Chapter
BRADLEY, DOUGLAS I.
1222 Park Ave.
Rochester, NY 14610

GOLDEN, DONALD R.
253 Alexander St.
Apt. 406
Rochester, NY 14607

Salt Lake City, UT Chapter
DUNN, GARY R.
6287 W. 3705 S.
West Valley, UT 84120

San Antonio, TX Chapter
HESS, LEN G.
7108 Larksong
San Antonio, TX 78238

HOENING, DAVID C.
5203A Raton Pass
Austin, TX 78724

San Francisco, CA Chapter
AUGER, RALPH E.
Box 1023
Healdsburg, CA 95448

South Bay, CA Chapter
DONN, PAUL S.
10720 Woodbine St.
Los Angeles, CA 90034

STEVENS, BRUCE A.
17830 Downey Ave.
Bellflower, CA 90706

South Dakota Chapter
REYNOLDS, JOHN
426 W. 8th, Apt. 26
P.O. Box 627
Sioux Falls, SD 57101

Springs Valley, IN Chapter
REUTER, RAYMOND A.
RR 1 101-D
French Lick, IN 47432

Syracuse, NY Chapter
GORZKA, RODNEY T.
148 Orlando Ave.
Syracuse, NY 13205

Utah Valley Chapter
LEVITRE, MARGO E.
827 N. 435 E.
Orem, UT 84057

APPRENTICES

Baltimore, MD Chapter
GILCREST, MELISSA J.
1543 Covington St.
Baltimore, MD 21230

HICKMAN, FREDERIC T.
301 Rugby Cove Rd.
Arnold, MD 21012

O'CONNOR, MARILYN N.
2700 St. Paul St.
Baltimore, MD 21218

Central Pennsylvania, PA Chapter
WILLIAMS, VERNON P.
11215 S. Wilcrest #606
Houston, TX 77099

Long Island-Suffolk, NY Chapter
FREEMAN, BONNIE
169 Power House Rd.
Roslyn Hgts, NY 11577

New Mexico Chapter
STUEDLI, MARK D.
6430 Palacio S.W
Albuquerque, NM 87105

North Central Louisiana Chapter
PYLE, STANLEY L.
2348 Rapides Station Road
Boyce, LA 91409

Pittsburgh, PA Chapter
ALBERTS, DANIEL A.
407 Johnson Ave.
Connellsville, PA 15425

Reading-Lancaster, PA Chapter
SPONENBURG, DANIEL M.
39 S. Nicholas St.
Saint Clair, PA 17970

Toronto, ON Chapter
BRONSON, BILL J.
201 Palmer Rd., Apt. 1403
Bellevue, ON CANADA

LAWRIE, THOMSON T.
86 Main St. E.
Grimsby, ON L3M 1N3

Utah Valley Chapter
WILLMORE, E. REED
1849 N. 200 West #350
Provo, UT 84601

West Michigan Chapter
JEWELL, STEVEN M.
4170 Bedford Rd.
Hastings, MI 49058

ALLIED TRADESMEN

Los Angeles, CA Chapter
KNITTLE, ELIZABETH J.
5462 Mohave. Ave.
Simi Valley, CA 93063

ASSOCIATES

Central, NC Chapter
FULK, CHRISTOPHER
1420 S. Stratford Road
Winston-Salem, NC 27103

Los Angeles Chapter
BERNARDS, BORIS
19835 Halsted St.
Chatsworth, CA 91311

West Maryland Chapter
MACHEN, FRANCES L.
1337 Pennsylvania Ave.
Hagerstown, MD 21740

STUDENTS

Central Illinois Chapter
ELLISON, DAVID W., JR.
1732 Hunt Court
Decatur, IL 62526

SMITH, JAMES H.
401 So. Webster St.
Taylorville, IL 62568

Cleveland, OH Chapter
BECK, CARL
2729 Dale Ave.
Rocky River, OH 44116

Los Angeles Chapter
HEIST, DON A.
2616 Citronella Court
Simi Valley, CA 93063

PIERCE, ROGER J.
5657 Allott Ave.
Van Nuys, CA 91401

SURAKIL, NARONG
18730 S. Danielle
Cerritos, CA 90701

Portland, OR Chapter
WILKINSON, DENIS J.
1401 E. 8th
Newberg, OR 97132

San Francisco, CA Chapter
CADELAGO, HARRY A., JR.
1225 Temblor
Napap, CA 94558

West Michigan Chapter
McCARTHY, MARTHA C.
4070 N. Andrus Rd.
Hastings, MI 49058

RECLASSIFICATIONS

REGISTERED TECHNICIANS

William I. Barrett
John R. Brubaker
John C. Bryner
Thomas M. Carraher
Kathy Combs
Richard V. Dante
Ronald Duschenchuk
Leon V. Honey
Robert L. Hostetler
John Oblak
Michael O'Brien
Lawrence D. Parrish
Mark O. Ritchle
Ronald R. Sanford
Edward E. Skidmore
Jeffrey G. Skousen
Robert Smith
Richard T. Weller

APPRENTICES
Richard Trafny

PIANO TECHNICIANS GUILD
24th Annual Convention
and
Technical Institute
San Francisco Hilton Hotel
July 6-10, 1981

Coming Events

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.**

March 27-29, 1981
PENNSYLVANIA STATE CONVENTION
Brunswick Motor Inn
Downtown Lancaster, Pennsylvania

Contact: Richard E. Bittinger
107 West Main Street
P.O. Box #51
Brownstown, Pennsylvania
17508
(717) 859-3111

April 11, 1981
LOS ANGELES CHAPTER SEMINAR
University of Southern California
Booth Hall

Contact: Elvah Brown
3903 Olive St.
Huntington Park, CA 90255
(213) 588-3709

April 13-14, 1981
MICHIGAN STATE CONFERENCE
Michigan State University
East Lansing, Michigan

Contact: Thomas McNeil
119 Allen Street
Lansing, MI 48912
(517) 372-7296

May 1-3, 1981
MISSOURI STATE SEMINAR
St. Louis, Missouri

Contact: Willem Blees
515 Poplar
Webster Groves, Missouri
63119

May 15, 16, 1981
UTAH STATE SEMINAR
Salt Lake City, Utah

Contact: Paul L. Stephens
516 5th Street
Ogden, Utah 84404

THE AUXILIARY EXCHANGE

Luellyn Preuitt

1980/81 Auxiliary Board

Officers

JEWELL (Mrs. Jack) SPRINKLE, *President*
6033 North 19th Road
Arlington, Virginia 22205

JULIE (Mrs. Ronald) BERRY, *1st Vice President*
6520 Parker Lane
Indianapolis, Indiana 46220

SHIRLEY (Mrs. Richard) TRUAX, *2nd Vice President*
628 Florida Avenue
York, Pennsylvania 17402

BERT (Mrs. Walt) SIEROTA, *Recording Secretary*
5201 Whitaker Avenue
Philadelphia, Pennsylvania 19124

AGNES (Mrs. Charles) HUETHER, *Corresponding Secretary*
34 Jacklin Court
Clifton, New Jersey 07012

BELVA (Mrs. Richard) FLEGLE, *Treasurer*
1920 South 1st Street #904
Minneapolis, Minnesota 55454

GINGER (Mrs. James) BRYANT, *Parliamentarian & History*
1012 Dunbarton Circle
Sacramento, California 95825

Editor, Auxiliary Exchange

LUELLYN PREUITT
4022 South Fuller
Independence, Missouri 64052

GREETINGS FROM PRESIDENT JEWELL—"MARCH! the time of Mother Nature's erratic moods of weather, and bizarre priority of interests of the people of the earth. We of PTG and PTG Auxiliary can say we are definitely making plans to attend the convention in San Francisco this coming July.

"Our plans for the auxiliary program are progressing very well. A big event will be an all-day tour to the wine country and the village of Sonoma. This will occur on the third day of the convention. We will leave by bus and travel north to the Pueblo of Sonoma, a landmark of early California days, tour the state's oldest winery and sample its excellent wines. After a special lunch at the beautiful Sonoma Mission Inn, we will explore the quaint town of Sonoma and its many shops and historical points of interest, including Mission San Francisco de Solana, founded in 1823. The cost of this tour will be $28.00 per person and will be included in your convention registration. We will also be learning, from those same people who are organizing the tour, about points of interest in San Francisco during the opening Auxiliary assembly. They will show slides and maps. Be sure to attend!

"We have all heard many points on the importance of attending conventions and seminars. Even though the cost of this one is going to seem higher than usual, it certainly is an excellent investment in broadening our business future.

"See all of you in 'Everyone's Favorite City' — Jewell".

The first annual New York State convention was hosted by the Syracuse chapter on October 16-18, 1980. We have this delightful report of auxiliary activities from Marge Williams, president of the Syracuse auxiliary chapter. The chapter received its charter at the national convention in Philadelphia last July, so you can see they have plunged right into the swing of things. Marge writes,

"The Syracuse auxiliary chapter took great pleasure in planning entertainment for the ladies attending the New York State convention. We registered at the Best Western Northway Inn on Thursday afternoon and attended a session for everyone hosted by Bob and Ginny Russell on their 'Format for Business Practices.'

"Activities began on Friday with a bus tour to the Syroco Factory and factory store (to spend half our money). This was followed at noon with a fine buffet luncheon at the Fireside Inn in Baldwinsville, New York, where everyone received a New York State velvet-red rose corsage made by yours truly. After lunch, we took a shopping tour through the Muench-Kreuzer Candle Outlet store where Christmas candles, center pieces, ornaments, gift wrap, etc. were elegantly displayed, causing most of us to get rid of the rest of our money! Back at the motel, we joined spouses on Friday evening for a banquet, attended by over 100 people.

"Saturday morning activities were in the hospitality room where we had demonstrations of scarf tying and luggage packing (your writer could have benefited from that one—it would have been worth the price of the seminar) by Ann Muench.

"We supplied home-made cookies and sweetbreads for all coffee breaks for the technicians attending the wonderful classes during the three days.

"Auxiliary members attending our activities were Ginny Russell, Celia Bittinger, Shirley Truax, Agnes Huether, Jan Balzer, Betty Brooks, Lillian Lurie, Marge Moonan, Dolores Matson, Alice Nowark, Marilyn Orr, Lilla Shattuck, Mary Tisdale and her two boys and Marge Williams.

"It was a wonderful success and we all look forward to this becoming an annual event in different parts of New York state. Next fall, we understand the Christofori Sisterhood chapter auxiliary will hostess the second convention in Long Island. We'll be looking forward to this event!" □

PIANO TUNER AVAILABLE

... IN THE Rockwell print, that is. Have you ordered your fine memento of the Philadelphia convention? It comes in the form of a print of the January 11, 1947, cover of the Saturday Evening Post, and shows one of our fine artists of bygone days tuning a grand piano, with the little student paying rapt attention. In looking it over this time, your writer discovered that it cost the grand total of 10 cents! Now you can receive as many copies of the print as you like for $3.50 each by sending your check or money order to Julie Berry, 6520 Parker Lane, Indianapolis, Indiana 46220. The prints are suitable for framing and make great gifts.

Marian Damon, our energetic and enthusiastic Sunshine Editor from the Central East Region, writes, thankfully not about anyone's misfortune but her own good fortune. She says, "Greetings from snowy, COLD Milwaukee—Walter and I read with interest about the event which you enjoyed at the PTG convention in Philadelphia, but it seemed to us that this was the year that we should go back to my former home town near Boston. It was a real tonic to be in my home town, to see lovely old white churches with their steeples and white houses with green shutters—as well as meeting old friends, some of whom I have not seen since I left in 1942 to go to work in California. The rhododendron was out as well as other spring and summer shrubs which we don't have here in the Middle West, and New Hampshire put on its loveliest scenery for us.

"Following our trip I attended the Elderhostel program for 'Over 55-ers' at a nearby college for women. During the one-week session we had classes in the folk stories and music of the ethnic groups which settled in Wisconsin. As I usually do, I wore my PTG Auxiliary pin, and a number of people commented on the pin and asked WHY I was wearing it. The same thing happened with the young mothers of a group of three-and-four-year-olds attending a Montessori day care center where I am a volunteer two mornings a week and am known as 'the Story Book Lady'. I am very proud to wear the pin and treasure the many friends Walter and I have made through the Piano Technicians Guild."

Thank you, Marian. Perhaps Marian has reminded us of the Auxiliary of something which I am sure many of us are prone to forget. Many times this writer has tended to feel that the only place appropriate for her Auxiliary pin to be worn is at Auxiliary functions. From now on, she resolves to turn that thinking around, and wear the pin proudly wherever she might be asked about its significance. Whether we think of it as a tool, a badge, or a meaning of association, it is another way of showing our support for the Piano Technicians Guild and the Auxiliary. By the way, how many of you own an Auxiliary pin? You ought to, you know.

Several months ago we reported in this column about the hospitalization of Layleth Qualls following her heart attack. Now a communication from Jesse Lyons reveals that she was finally dismissed from the hospital late in the summer, and is at home. She walks with a walker or cane, and is gaining ground steadily. I'm sure she would like to hear from all her friends around the country. You can send her a note or card at her home, 1301 E. Maine, Enid, OK, 73701.

Last summer we were in Philadelphia for the annual convention of PTG and its Auxiliary. We learned much about the early history of our country, and saw much that was a reminder of our beginnings. This writer in particular, being there a couple of days early so her husband could attend PTG Board meeting, took advantage of that time to carry out an activity of which she had long been desirous. A bus tour took her out to Valley Forge and some of the surrounding area. The guide's comments were interesting and helpful, the English

couple on the bus a reminder that we still have ties with the "old country", and the museum, with its glassed-in portion of George Washington's tent, was fascinating.

But on the way out, with the bus winding around through the encampments, the driver pointing out the grassy, shady knolls where the Delaware, the New York, and other contingents pitched their tents, I shivered with excitement and dread. For over those serene places hung an aura of austerity which told plainly of the agony with which these people spent their lives in order that I might live in ease and comfort.

What can I—what can all of us—do to preserve this ideal? In July, we have that opportunity. As the early pioneers trekked across the nation, so we have the chance to travel across the continent, in whatever manner we choose or can afford, and attend a convention of pioneers. I know, we are organized, but so was the Continental Army. It takes a certain amount of organization and cooperation to be able to realize one's own individual potential. If it requires sacrifice of a sort on our part to reach the west coast, remember the original sacrifice of the original settlers. Will ours be any greater?

Perhaps a personal anecdote might be permitted here. In 1965, Ernest and I attended the national PTG convention in San Diego. We had a station wagon, not much money, and some relatives in Los Angeles. Several times we pulled off into a roadside park and spent the night in the back of the station wagon in sleeping bags. Thank heavens for the relatives in Los Angeles! Two nights of clean sheets on the road! We had a wonderful time, enjoyed all the activities, and coming back close to home, took an old two-lane road across Kansas instead of the toll road. We arrived in our driveway with 20 cents in my coin purse and 36 cents in his pocket! (Incidentally, we managed to treat the little family in Los Angeles to a meal at Knotts Berry Farm.) How rich we were! We had made new friends, gained new knowledge and thanks to having taken enough film along, taken some pictures as a reminder of the experience.

When we speak of hardship and sacrifice we are speaking of a personal symbol of an underlying truth. Do I—do you—do we—wish to symbolize this underlying truth by doing whatever is necessary to attend the convention of the Piano Technicians Guild and its Auxiliary next July in San Francisco? I do! GO WEST, AUXILIARY MEMBER!

Classified Advertising

CLASSIFIED ADVERTISING RATES are 20 cents per word with a $5.00 *minimum. Full payment must accompany* insertion request. Closing date for ads is the first of the month prior to publication.

Box numbers and zip codes count as one word each. Telephone numbers count as two words. Names of cities and states count as one word each.

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.

FOR SALE

ZUCKERMANN HARPSICHORD KITS — A real challenge for the interested technician. Factory direct shipment at factory prices. Troubleshooting and advice for kit builders. Authorized Agent: **Yves A. Feder R.T.T. Harpsichord Workshops, 2 North Chestnut Hill, Killingworth, CT 06417, Telephone (203) 663-1811**

PIANOS FOR SALE — Always on hand, 150 to 300 uprights! Plain case, art case, and players. Also 50 to 150 grands at all times, as is or rebuilt. Excellent brand names — no junk! All set up for inspection. Lowest possible prices. **Call for quotes: Owen Piano Wholesalers, 2152 W. Washington Blvd., Los Angeles, CA 90018. Telephone: (213) 883-9643**

KEY RECOVERING MACHINES for sale. Prices on request. Send self-addressed envelope. Or, build your own — *send $10.00 for plans, photos, instructions* (refund w/purchase of machine). **Solenberger Piano Service, 1551 Lynn Court, Santa Rosa, CA 95405.**

STROBO TUNER used only three times in shop. Mint condition. $275. Also two stage dollies (trucks) for small grands. $125 each. **Roland Grittani, 427 Waterloo Str., London, Ontario, Canada N6B 2P1. (519) 434-0027.**

INSTALL YOUR OWN, new, ready made **SOUNDBOARDS.** Key boards made. **The Piano Shoppe, Inc. (Benvenuto), 6825 Germantown Ave., Philadelphia, PA 19119. (215) 438-7038.**

CHROMATIC TUNER, PETERSON 320. Back issues of Journal. **Ronald Poire, 8328 E. 25th Pl., Tulsa, OK 74129, (918) 622-2872 all hours.**

VIRGIL PRACTICE CLAVIER—88 note, upwards and downwards tap control levers, very good condition, with fold-away legs. Made 1895, New York Offers to **Mr. G. H. Pearce, 4, Greenhill Road, Leicester, England.**

NEW, SOPHISTICATED ELECTRONIC TUNER helps get the job done faster and with absolute accuracy. Details and trial offer from **Kleiner Music, 3701 PT 25th Ave. SW, Naples, FL 33999.**

REPLACEMENT REEDS available for use in parlour reed organs. Send inquiry to **Paul W. Toelken, Box 5017, Prescott Valley, Arizona 86312.**

9' KNABE GRAND PIANO, serial no. 19290, built 1879, fair condition. For sale at **Central Presbyterian Church, Geneseo, New York 14454, phone (716) 243-0669.**

HELP WANTED

LECTURER I in Piano Design and Construction and related technology is required to teach piano design, construction, restoration and related technology. Applicants should have a good general education with relevant qualifications and industrial experience. The Department includes sections for stringed, keyboard, woodwind and electronic instrument studies with comprehensive facilities and staffing. Salary: on an incremental scale within the range of £4,683 – £8,055 (plus £759 Inner London Allowance), starting point depending on qualifications, training and experience. Salary scale subject to formal approval. Application *form and further details obtainable from* Senior Administrative Officer, **London College of Furniture, Department of Musical Instrument Technology, 41-71 Commercial Road, London E1 1LA, England.**

FULL-TIME PIANO TUNER-TECHNICIAN. Old-line dealer on Florida Gulf Coast. Finest lines and reputation. Only highly qualified technicians need apply for permanent position. Send complete resume. **Reynalds Music, P.O. Box 608, Pensacola, FL 32593, (904) 438-1628.**

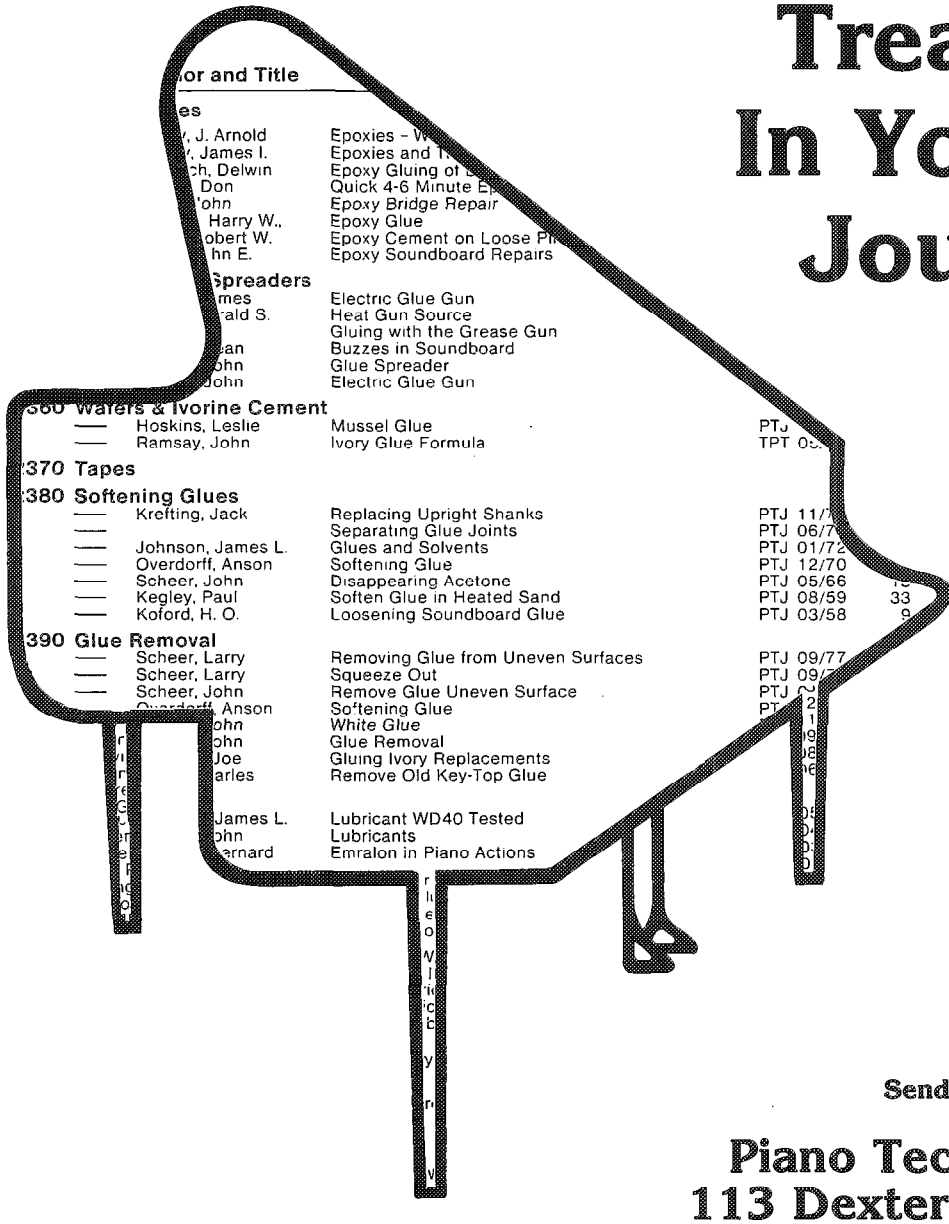
PIANO TUNER & TECHNICIAN, fully qualified in upright and grand pianos, *willing to relocate in Ontario, Canada.* Excellent opportunity. Write to: **Abel Muniagurria, 15 La Rose Ave., #1214, Weston, Ontario, Canada M9P 1A7.**

MASTER TUNER-TECHNICIAN. Artist *piano-rental company seeks master* tuner-technician. Must have positive self-image of his professionalism. Work with the greatest pianos and artists in the world. Master technician is sought for long-term employment in New York City, with possible relocation to San Francisco or Los Angeles. Must be willing to embrace with equal zeal the following: tuning, rebuilding, truck driving, piano moving, regulating, voicing, road touring and sometimes long and unusual hours. Benefits: work with the world leader in concert piano preparation and provision, all types of artists, all types of music. As a reward for long-term loyalty, profit sharing or other bonus could apply. **(212) 582-6798.**

WANTED

PIANO TECHNICIAN seeking job opportunities; willing to relocate; registered craftsman member. Please write: **Walter F. Gramza, Jr., P.O. Box 201, East Rochester, New York 14445**

NOW! A Map to the Treasures In Your Old Journals



$25

Send check or money order to:

Piano Technicians Guild
113 Dexter Avenue North
Seattle, Washington 98109

Now, you can find the information you need — quickly and easily. It's all here in the "Classified Index to Published Piano Technology." This 293-page index can guide you to any one of the thousands of articles that have appeared over the years in the **Piano Technicians Journal** and four other publications related to piano technology.

All you have to do is look in the index under the subject heading you need. There you'll find listed all of the articles published on that subject.

You'll find out who wrote a particular article, the title of it, the issue in which it appeared, and the page number. Then, you just grab the issue you need, and the information is yours. Quick and easy.

And, the home office of the Guild can send you a reprint of any article listed in the index that you don't have. So, how can you afford to be without it? Order your index today.

Open For Business!

We didn't forget the technician when we designed our newest school and chapel pianos, Conservatoire 2960 and the Chapel 2962.

Tops, fronts and fallboards detach with ease, and the entire action slips out simply. However, most mechanisms, including a sostenuto system, can be serviced *without* removing the action!

These new pianos also offer a new all-spruce Duraphonic Multi-radial ™ Soundboard which dramatically improves tuning stability. Laboratory tests prove that in environments with up to 90% relative humidity, solid spruce soundboards expand over 5 times more than the new Wurlitzer design, causing more serious changes in string tension.

It costs more to build pianos this way, but we believe that a quality instrument must be well maintained. Recognizing the importance of your work, we try to do ours just a bit better.

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PIANO TECHNICIANS GUILD

MARCH 1981 UPDATE

February Chapter Mailing

These important papers were mailed to chapter presidents on February 6:

Request for location of chapter seat.

The New Tuning Examination: procedures, fees, forms, etc. as shown on page 2.

Information for Chapters and Members, as shown on page 3.

One copy of the new Written Examination Test No. 1.

One copy of the new Application for Tuning Test form.

One copy of the Answers to Written Examination Test No. 1.

Letter from President Bob Russell with invitation to participate in the 1981 Convention Flea Market.

Letter from Dennis E. Kurk, chairman of the Government Affairs Committee, on a new tax ruling that may affect Guild technicians.

Another copy of the Chapter Notes form for use by chapters wishing to have chapter news printed in the Update.

NOTE: Additional copies of the new Application for Tuning Test form, the new Written Examination Test No. 1 and the Chapter Notes form will be sent to chapters on request.

Transfer of Members

The Guild bylaws state that all members must belong to the chapter within whose jurisdiction the member works and/or lives. Chapter jurisdiction is the territory within a 75-mile radius from the City Hall of the chapter seat. In addition, Guild Regulations provide that the penal jurisdiction of a chapter extends over all members of the Guild within its jurisdiction and all of its own members wherever they reside.

These bylaws and regulations were adopted by the delegates in council session, and the intent then, and now, is to give the local chapter responsibility should there ever be need for comment or action on the conduct of a Guild member within the chapter's jurisdictional area. This conduct point was an important issue on the council floor at the time the law was adopted.

The Regional Vice presidents have recently been directed to assist members and chapters in complying with these bylaws and to notify the home office of transfers to be processed.

Where a member lives and/or works in the jurisdictional area of two or more chapters (overlapping jurisdictional areas of chapters near one another), the member may join any one of those chapters.

The bylaws provide that chapters may permit what is known as "dual membership." This allows a member of a chapter to belong to one or more other chapters, provided such chapters have consented to accept dual memberships. Chapter who do so have the right to establish their own rules regarding chapter dues, voting rights and obligations for their dual members. A member is recorded at the home office only with the chapter in whose jurisdictional area he lives and/or works and is counted on the strength of that chapter so far as the Guild voting rights are concerned.

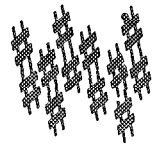
I.A.P.B.T.

The International Association of Piano Builders and Technicians session will be held in Switzerland this Spring. Don Morton, Immediate Past President of the Guild, will attend as co-President of the I.A.P.B.T. with Nobuo Tanaka, President of the Piano Technicians Association of Japan.

The Piano Technicians Guild Board of Directors has elected Charles Huether, Treasurer-Secretary, as delegate to the session.

The session will consider opening the I.A.P.B.T. to a form of individual membership for top qualified technicians in each international association. In the Guild, those interested have been invited to donate $10.00 to the I.A.P.B.T. The following additions to the list of contributors shows the interest in this international project:

Richard Doerfler
Harry E. Berg
Don Foli
Herbert Sorg
Larry Crabb
David Sylvester
George Defebaugh
Allyn Winslow
Jim DeRocher
Richard Flegle
Charles Herbert
P. K. Glumac
Douglas Denham
Hilton White
Matt Grossman
Johan B. Krebs



NEW TUNING EXAMINATION

PLEASE KEEP ONE COPY OF THIS INFORMATION IN THE CHAPTER EXAMINATION COMMITTEE'S FILE AND ONE IN THE CHAPTER PRESIDENT'S FILE

NEW EXAMINATION PROCEDURES - The board of directors considered the full report of the Examination and Service Standards Committee at its meeting January 31, 1981. The following decisions were made as a follow-through to the letter on the new tuning examination sent to all chapters by President Bob Russell in the December 15th chapter mailing.

EXAMINATION FEE - The fee to be paid by all those who take the new tuning examination is $40, with $20 to be sent to the home office and $20 retained by the test center. The fee is to be paid for each new tuning examination taken. The $20 sent to the home office will be placed in the examination fee account to help in offsetting the Guild expenses in establishing and conducting the new tuning examination.

APPLICATION ENTRY FEE - In addition, the regular $30 application entry fee is still required for all applications for Registered Technician, Apprentice, or Allied Tradesman classification. $15 should be sent to the home office to cover entry processing and $15 retained by the chapter for expenses involved in handling the written and bench test procedures, etc.

APPRENTICE UPGRADING - Apprentices are required to take the new tuning examination for reclassification to Registered technician. The $40 fee is required and the current $10 reclassification fee will not be charged to an apprentice who successfully achieves Registered Technician grade.

PROCEDURES - A new simplified set of procedures for chapters is being prepared and will be distributed as soon as available.

EXAMINATION FORMS - An initial supply of required examination forms will be distributed by the home office as soon as they are available.

NEW WRITTEN EXAMINATION TEST - The first 100 questions of the new written test have been compiled and are available for use by chapters. One set and one copy of the answers to the questions are enclosed for use by the local chapter examining committee. Additional supplies of the questions are available on request.

ANSWERS TO WRITTEN EXAMINATION - The answer sheet is to be kept in the charge of the Examination Committee.

NEW BENCH TEST - A new bench test is being prepared and, until available, the old bench test is still in use.

NEW TUNING TEST CENTERS - A list of new tuning test centers is being prepared.

CERTIFIED TUNING EXAMINERS - A full list of certified tuning examiners will be published as soon as the information is complete.

EFFECTIVE DATE - The procedures and information in this report are to be effective retroactive to January 1, 1981. Any examinations from that date through receipt of this notice were taken on the understanding that decisions on procedures would be made by the board of directors at the January board meeting and would be binding on the applicant and the chapter.

INFORMATION FOR CHAPTERS AND MEMBERS

FEBRUARY 1981 CHAPTER MAILING

CHAPTER COMPUTER PRINTOUT - Computer printouts have been furnished chapters with membership data as of December 31, 1980, for verification and correction. Each member is responsible for keeping the chapter officers advised of current address, phone number, and membership status. When the printouts are returned to the home office, any changes are noted and processed in all files, biographical records, and in the computer. An updated computer printout is then sent to the chapter in the next regular chapter mailing.

1981 MEMBERSHIP ROSTER - The new membership roster will be compiled and printed in the same format as the one last year. This year, however, the classification of the members will be included both on the alphabetical listing and on the list by chapters.

Because the roster is compiled and printed through the computer records, it is essential that any changes affecting the roster be reported to the home office no later than February 27, 1981. PLEASE RETURN THE PRINTOUT SHOWING ANY CORRECTIONS NECESSARY FOR AN ACCURATE ROSTER EDITION.

CHAPTER OFFICERS - Since chapter officers take office in the months of April, May, and June, as required by the current bylaws, the roster does not contain lists of chapter officers. By the time the roster is printed and distributed in May, the officers will be changing for 1981. The new officers will be printed in the UPDATE as soon as possible following completion of information from the chapters.

CHAPTER SEAT - The board of directors has asked that each chapter send the name of the chapter seat to the home office for record. A form for this is enclosed.

CHAPTER NOTES - The home office is interested in receiving more news from our chapters. To make sure that the news is for use in the UPDATE, chapters are urged to use the new Chapter Notes form distributed last year. A copy is enclosed in this February mailing and more will be sent on request.

CONVENTION FLEA MARKET - Please be sure to tell the home office that you plan to participate in the Flea Market so that a table will be reserved for you to sell your chapter's product and make money for your chapter at the San Francisco convention.

CHAPTER REFUNDS - Not all chapters want the home office to send refunds of new member entry checks, etc., to the chapter treasurer. Unless the home office has a specific request, all checks and correspondence are mailed to the chapter president. Please let the home office know if your chapter wants refund checks mailed to the treasurer and not to the president.

JOURNAL ON TAPED CASSETTES - Chapter presidents have been asked to furnish the home office with a list of members who are totally or industrially blind who would like to receive taped cassettes of the JOURNAL. The list should include the names of members who are currently receiving taped cassettes.

Dues — Once Again

Partial Payment

The second payment of $32.00 is now due. Deadline for receipt at the Home Office is April 1, 1981.

DELINQUENT DUES

Those who have not paid any part of the 1981 dues by February 15 will receive a dues delinquency notice. A copy will be sent to the chapter and board.

DROPPED MEMBERSHIP

Members whose dues are not paid (partial or full) by March 18, 1981 will be dropped from membership on that day. Notice will be mailed to the member, chapter and board of directors.

REINSTATEMENT OF MEMBERSHIP

A $30.00 reinstatement fee plus payment of back dues is required for reinstatement in accordance with Guild Bylaws and Regulations. A reinstatement cannot be accepted without the required payment. The chapter must sign consent to a reinstatement.

NEW MEMBERS

Applications must be accompanied by the required fees or dues:

Registered Technician, Apprentice & Allied Tradesman Classification

Entry Fee — $30.00, of which $15.00 is retained by the chapter and $15.00 is sent to the Home Office. Where there is no chapter available, send $30.00 with completed application to the Home Office.

Annual Guild Dues — $96.00. A billing for prorated annual dues will be sent to the new member after acceptance by the Home Office.

Associate & Affiliate Classifications

Annual Guild Dues — $48.00. Send no funds until requested. Annual dues for these members are prorated through December 31 of the current year. New members will be billed after acceptance.

Students

Annual Guild Dues — Send $60.00 with application to the Home Office. Dues for students begin the month the application is processed and continue through 12 months.

Walt Disney's Magic Kingdom Club (MKC)

Membership is available to all PTG families free upon request. MKC membership provides discounts on car rentals, hotel accommodations, and tickets to Disneyland Park in California and Walt Disney World in Florida, PLUS vacation travel packages in this country and abroad.

Be ready when your family plans its next vacation. Request your membership card today! Send your application for membership to Piano Technicians Guild, 113 Dexter Avenue N., Seattle, WA 98109.

---------- CUT ----------

APPLICATION FOR MEMBERSHIP
(Please Print)

☐ ☐ ☐ ☐
Mr. Mrs. Miss Ms. _____

Home Address _____
(Please do not use Business Address)

City _____ State _____ Zip _____

To help develop additional programs and benefits for Magic Kingdom Club families, please complete the optional information section below.

☐ Have children between the ages of 1 thru 7
☐ Have grandchildren between the ages of 1 thru 7.
☐ Own a recreational vehicle.
☐ Own homie video recorder/player or 8 mm movie equipment

Please indicate first name and birthdate of your youngest child (grandchild)

_____ _____
First Name Mo. Day Yr.

Boardroom Report

The board of directors met in San Francisco, site of the July Convention, January 31 and February 1, 1981. A full report on Board action on the new examinations and other board action is shown on following pages.

GUILD SUSTAINING (LIFE) MEMMERSHIP. Robert Bobst was granted Guild Sustaining membership.

NEW CHAPTERS. Three new chapters were granted temporary charters:

Maritime Provinces, Canada, Northeast Region;

Ottawa, Ontario, Canada, Northeast Region; and

Northern Michigan, Central East Region.

EXAMINATION HANDBOOK is now being revised.

EXAMINATION COMMITTEE. The board gave an unanimous vote of thanks to Ron Berry and the examination committee for fine work on the new Examination Handbook and the success of committee achievements.

1982 INSTITUTE DIRECTOR. The board unanimously selected Wendell Eaton as Institute Director for the Washington, D.C. convention.

1984 CONVENTION SITE SELECTION. Further consideration is being given to the invitations received from Region 4.

JOURNAL TECHNICAL ARTICLES. The board voted unanimously to send a letter of appreciation to Jack Krefting, Technical Editor, for his fine work on the **Journal.**

BUDGET. The 1981 budget was reviewed and approved in outline.

IAPBT. The Board approved Charles Huether as delegate to the meeting in Switzerland, and voted in favor of retaining the word "International" in the title of the Association.

PIANO TUNING AS A PROFESSION. A new pamphlet on this subject is being prepared.

TRANSFER OF MEMBERS. The bylaws requirement regarding jurisdiction of chapters was considered. A statement on this may be found elsewhere in the UPDATE.

Player Pianos

All those who are interested in having their names on record as working on player pianos are still encouraged to notify the Home Office.

The names and information received are being forwarded to Ronald Orr, secretary of the committee which has formed the Guild Player Piano Technicians group. His address is 47770 Skyview Drive, East Liverpool, Ohio 43920.

Registered Technicians Certificates

Each registered technician is mailed one of the engraved certificates which attests to his standing as a registered technician.

Each year thereafter a gold foil seal bearing the year date is mailed to those who hold a certificate from previous years. The gold year seal may be placed over the previous date or placed alongside. A new certificate is not sent each year.

For new members there may be a wait of a month or two until we have a minimum of 100 certificates to place on order as the imprinting is handled only in lots of that number.

Please note: The gold seal is enclosed with the membership card which is sent only upon receipt of the full 1981 dues.

1981 Roster

The new roster will be printed from the information in the computer as of the end of April. Please make every effort to check with your chapter to see that the information there is correct.

Many members have not submitted telephone numbers. Ask your chapter president to add the number directly on the computer printout.

A new and up-to-date computer printout will be sent to all chapters

PLEASE RETURN THE PRINTOUT either with corrections or marked CORRECT. Your home office wants to be quite sure that all entries are accurate for each member.

MEMBERS — Please check with your chapter on this.

Guild Membership Open Only to Individual Members

At present Guild membership is not available to companies on a group basis. Each membership is granted to an individual only and the Guild logo may only be used by Registered Technicians, as individuals. The **company** with which a member is associated may not use the PTG logo or title or claim membership in the Guild.

Deceased Members

Donations to the Steve Jellen Memorial Library have been received from Ernest Preuitt, Charles Huether and the Faith Lutheran Church of De Leon, Florida in memory of Carl Wicksell, former Southeast Regional Vice President. Carl was a member of the Daytona Beach, Florida chapter, having joined the Guild in 1966.

The Home Office has also received word of the deaths of Reginald Moore, Wichita chapter; Walter W. Thomas, Wilmington chapter; and John Fozard, Central Pennsylvania chapter.

FOLLOWING
THE PIANO TECHNICIANS GUILD CONVENTION
IN SAN FRANCISCO
JULY 6-10, 1981

CONVENTION IN SAN FRANCISCO
RELAX IN HAWAII

THREE ISLAND POST-CONVENTION TOUR: OAHU, HAWAII AND MAUI

Kailani World Travel, Inc. is offering a **MONEY-SAVING POST CONVENTION** tour from San Francisco or from your home city with tremendous air savings to convention city, San Francisco, then on to Honolulu, Kona, Hawaii and Maui.

KAILANI'S THREE ISLAND HAWAII POST CONVENTION TOUR INCLUDES: 8 Days/7 Nights: July 11-18

* Round-trip air transportation from your home city to San Francisco and round-trip air from San Francisco to Hawaii including all inter-island air travel (Note: Direct service from Honolulu to your home city will be used where possible on the tour's return).
* Complimentary in-flight food and beverage service.
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* Information and hospitality desk at each hotel on each island.
* Services of members of the Kailani World Travel staff throughout your stay.
* A Kailani World Travel Flight Bag for each tour member.
* Fresh FLOWER LEI Greeting on arrival in Honolulu.
* Hotel Accommodations: 3 Nights at Hilton Hawaiian Village, Honolulu
  2 Nights at Kona Hilton, Kona
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* All hotel and air transportation taxes.
* Full schedule of optional tours on each island.

COST PER PERSON: Costs as shown are based on double occupancy and are based on projected air fare increases thru **January 20, 1981** out of each of the Zone cities as indicated below. Please note that any increase or decrease in air fares after **January 20, 1981** will be passed on to each tour participant.

PRICE GUARANTEE: Kailani World Travel will guarantee the cost of the tour as shown if the total tour cost less $350 is prepaid in full prior to January 20, 1981.

ZONE A — $1179 Per Person	ZONE B — $1099	ZONE C — $999	ZONE D — $889
Baltimore	Atlanta	Kansas City	Denver
Boston	Chicago		Phoenix
Cincinnati	Dallas		Salt Lake City
Cleveland	Des Moines		Seattle
Detroit	Houston		Portland
Miami	Minneapolis		Los Angeles
Pittsburgh	New York		
Washington	New Orleans		
	Philadelphia		
	St. Louis		

TOUR PRICE FROM SAN FRANCISCO ONLY — $799 Per Person

Single Supplement – $225, Triple Reduction — $25, Upgrade at Hilton Hawaiian Village to Rainbow Towers: $40.

RESERVATION APPLICATION:
PIANO TECHNICIANS GUILD
POST CONVENTION TOUR

Return to: KAILANI WORLD TRAVEL, INC.
119 NO. COMMERCIAL ST.
BELLINGHAM, WA 98225

Enclosed is my check in the amount of $_____ representing a deposit of $100 per person, or the total package cost less $350 for price guarantee, for my party of _____ person(s). Please confirm me on _____ Three Island Hawaii Program.

Hilton Hawaiian Village Hotel Upgrade _____ Yes _____ No

My departure city is _____ Desired departure date _____

NAME: _____ First Name of Spouse _____

Address: _____ City, State, Zip Code _____

Home Telephone: _____ Business Telephone _____

Others in my party (Please indicate ages of children) _____

Type of accommodations: _____ Twin/Double _____ Single _____ Triple

Please make your checks payable to Kailani World Travel, Inc. and return to the above address. You will be invoiced for the balance of your tour cost which will be due no later than 6 weeks prior to departure. Should you cancel your tour arrangements after making your final payment, a $100 per person cancellation fee will be assessed. Trip cancellation insurance is available thru our office for a reasonable cost.

FOR INFORMATION CONTACT: KAILANI WORLD TRAVEL

*In Washington State, call 1-800-562-2597
*In Ore., Ca., Ariz., Nev., Utah, Ida., Mont. and Wyo., call 1-800-426-2561
*All other states call 1-206-676-1250

revised

PTG GUILD LIBRARY

These books have been donated or purchased for Guild members and are available for ONE MONTH on loan. You are requested to return library books within one month because other members may be waiting to borrow these items. There is a $2 fee for this library service to cover expenses of handling and postage.

Please check your preference (s) below and return the entire sheet. The book (s) will be mailed immediately if available, otherwise your name and request will go on the waiting list and will be sent to you as soon as available as all requests are automatically cancelled 3 months after date received. Please reorder if we have been unable to fill your request within the three months.

	TITLE	CHECK SELECTION BY PREFERENCE ORDER
A	THE ART OF TUNING THE PIANOFORTE - Herman Smith	____
B	PIANO ACTION HANDBOOK - Merle Mason	____
C	THE INDEPENDENT PIANO TUNER - Don Boles	____
D	LET'S TUNE UP - John W. Travis	____
E	MICHEL'S ORGAN ATLAS - N. E. Michel	____
F	THE MODERN HARPSICHORD - Zuckerman	____
G	MUSICAL ACOUSTICS - PIANO & WIND INSTRUMENTS Edited by Earle Kent	____
H	PIANOS, ANYONE - Lawrence R. Wood	____
I	THE PIANO HAMMER - Walter Pfeiffer	____
J	THE PIANO: ITS ACOUSTICS - W. V. McFerrin	____
K	HOW TO BUY A GOOD USED PIANO - Willard M. Leverett	____
L	PIANO PARTS AND THEIR FUNCTIONS - Merle Mason	____
M	PIANO REBUILDERS' HANDBOOK OF TREBLE STRING TENSIONS (and other characteristics) James H. Donelson	____
N	PIANO REPAIRING FOR BEGINNERS - Dennis Kurk	____
O	PIANO SERVICING, TURNING AND REBUILDING - Reblitz	____
P	PIANO TEACHERS PROFESSIONAL HANDBOOK - Gordon B. Terwilliger	____
Q	PIANOS AND THEIR MAKERS - Alfred Dolge	____
R	PIANO TUNING FOR BEGINNERS - Dennis Kurk	____
S	PIERCE PIANO ATLAS - Bob Pierce	____
T	SCIENTIFIC PIANO TUNING & SERVICE - Alfred H. Howe	____
U	THEORY AND PRACTICE OF PIANO CONSTRUCTION - Wm. White	____
V	INTERVALS, SCALES AND TEMPERAMENTS - Llewellyn Lloyd Hugh Boyle	____
W	WHAT IS YOUR PIANO ALL ABOUT AND ALLIED SUBJECTS Don U. Kresge	____
X	MEN WHO HAVE MADE PIANO HISTORY - SEQUEL TO PIANOS AND THEIR MAKERS - Alfred Dolge	____
Y	CAREERS IN MUSIC - American Music Conference	____
	BRAILLE EDITION - BB PIANO ACTION HANDBOOK - Merle Mason	____
	BL PIANO PARTS & THEIR FUNCTIONS Merle Mason	____

PTG F14
12/1980

Chapter Notes

... **The San Francisco Chapter's** December meeting included a presentation by Jim Callahan on ivory work. Jim discussed removing damaged ivories and replacing them with new or used materials. He suggested careful fitting and a slight bevel to avoid an unsightly line between ivory head and tail.

... Charles Walter of Walter Piano Co. visited the **Milwaukee Chapter's** January business meeting and brought one of his Model 1520 Concert Consoles along with him.

... Newly approved Craftsman member Donald Golden has already taken on the office of secretary for the **Rochester Chapter.** Dick Bean presented a class on setting of tuning pins during tuning.

... "Re-Manufacturing" was the topic of a field trip taken by the **Southern Tier, NY Chapter** in November. Will Snyder guided members through his Robesonia, PA shop— its soundboard press, finish room, soundboard gluing device and specimen spruce from Alaska.

... **The Los Angeles Chapter's** January meeting featured Francis Mehaffey's demonstration of some special tools: a ¾" piece of channel aluminum to check the height of sharps for key height; a 3-amp "zapper" to loosen center pins; capstan wrenches; an impact tuning hammer for vertical pianos only; pliers for removing hammer heads; a dial-faced micrometer and an knuckle extractor. Mehaffey also demonstrated silver soldering.

... Part of the **Connecticut Chapter's** November meeting was Donald Pagano's electronic readings on inharmonicity in the temperament range on many models of pianos. Pagano demonstrated his inharmonicity formulae and offered methods of corrections if using an electronic tuning aid. □

Home Office Address

Please address all mail to the home office at 113 Dexter Avenue North, Seattle, WA 98109.

Our Post Office Box 1813 was closed last November. Mail sent to the P.O. Box is delayed and should be discontinued.

Booster Club Points

Recently some members have not been credited with the booster club points they have earned because the home office was not able to decipher the signature.

For full Booster Club credit please write the name of the sponsor in capital letters beside the signature.

Fabulous Hawaiian Flea Market

This is your chapter's chance to be directly involved with the success (and the fun and profit) of the San Francisco National Convention! If you participated in last year's Flea Market, we know you'll want to do so again. If this will be your first year, start now to make the most of the opportunity.

Each chapter is responsible for the making, transporting and selling of its own product. You're given a free table and complete control over prices. The profit is all yours!

Fill out the form below right away . . .

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YES! We plan to participate in the FABULOUS HAWAIIAN FLEA MARKET at the 1981 San Francisco Convention. We'll be selling the following:

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Please reserve a table for our Chapter/Auxiliary.

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(Chapter president/person responsible)

MAIL TO HOME OFFICE BY MAY 1, 1981

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(Name of chapter)