Piano Technicians Journal
APRIL 1980

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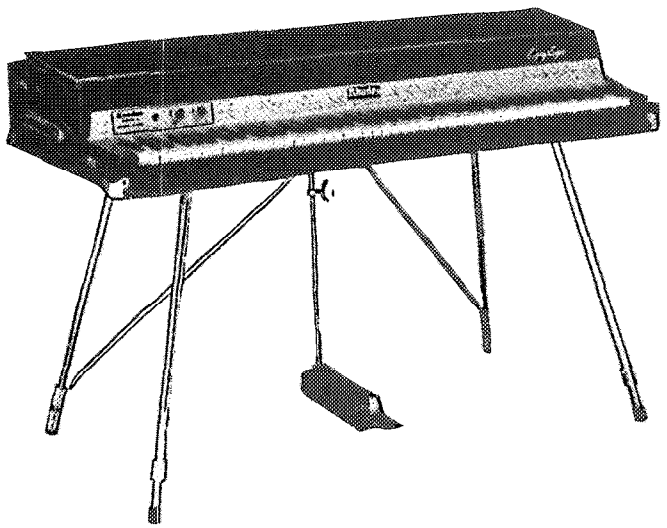
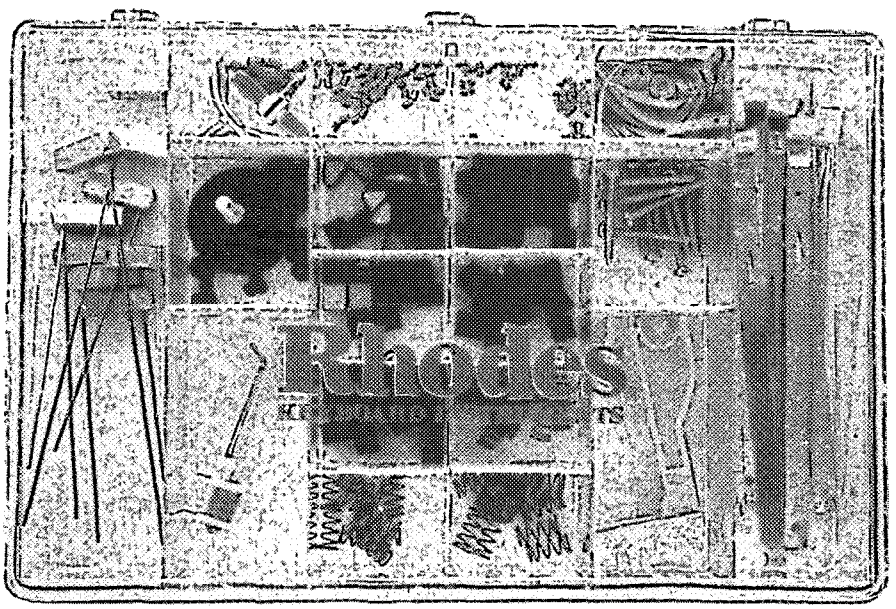


The Schaff Piano Supply Company has been chosen as a national distributor for Rhodes electronic piano replacement parts. We now have in stock the action parts and some major hardware items for both the new modular piano as well as the original model manufactured before June of 1975. By being a distributor,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



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Piano Technicians Journal

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EDITORIAL

Don L. Santy, Executive Director

The office next to mine is a conference room. Many groups and organizations meet in this room. They represent a large number of trades and professions.

I can barely hear the drone of voices through the door, but it is interesting to note that I am able to tell by the tone and texture of this drone almost what is going on.

Just as a piano technician has developed an ear for tone, I have developed a sensitive ear to the sounds of meeting sessions. I sit in meetings almost constantly and have for years. Whether I hear what's being said or not, or whether I'm in the room or not, the sounds emitting from the room can tell me a great deal about what's happening in the meeting.

Anger is easily recognizable, of course. Tension can be noted in the pitch of voices. A relaxed atmosphere, with a smooth slate of business, is subdued and comfortable sounding. One can almost feel a sense of resistance to a proposal, and a negative atmosphere usually sends out vibrations loud and clear.

The most pleasant sound of all is the easy-going, titillating tone of laughter which says that everybody is doing what they are supposed to be doing — having a good time and enjoying their association.

This tells me everything is going well. Nobody is mad at anybody. People are able to laugh at themselves, each other and the situations they find themselves engaged in. There is every indication that the organization is happy and healthy. This is the way it should be.

Why people drag themselves out of the comfort of their homes to hostile gatherings is beyond my ken. If I didn't get paid to be present when faced with such a situation, you can bet your bottom dollar I wouldn't be there.

Some time ago a paper appeared on my desk (from where I have no idea) entitled "Features From Jerusalem," by Joel Epstein. Let me share it with you.

* * * * * *

A Tel Aviv psychologist has proved what we all suspected — **that laughter is good for you.** *Dr. Avner Ziv, of Tel Aviv University, has been doing research on laughter for the past two and a half years. His findings so far have been enlightening, useful, often surprising, and sometimes even funny.*

Among his theories:

–Laughter helps learning; people retain better when a teacher uses humor in his lessons.

–Laughter makes a person score higher on psychological tests for creativity.

–Laughter can help you in your work if you are a salesman, bank clerk or soda jerk, but it can hinder you if you work on a factory assembly line or in a typing pool.

–Men are funnier than women. And funny men love their mothers but have trouble getting on with their fathers.

"In psychology research, you can read about depression, schizophrenia, anxiety, and all the terrible things that happen in life," says Dr. Ziv. "But you'll read practically nothing about laughter. Yet humans do laugh, and it is a vitally important field for research."

Dr. Ziv started his research by testing creativity and motor skills after people laughed. "We went into classes of 15- and 16-year-olds. We played a recording of a popular Israeli comedian, and everyone started laughing.

"It was really something," he recalled with a chuckle. "Not only was each student laughing, but everyone around him was. It was a roomful of 30-35 people, all laughing."

When Dr. Ziv studied the tests, he made two discoveries. First, the laughing students scored significantly higher on creativity than students who didn't laugh before the test. "Both laughter and creativity use the same kind of thought process, and we thought if we introduce some crazy ideas into the class, we will get higher creativity scores," he said.

Secondly, he found that the student scored considerably lower on the motor test — a typing drill. "Laughing is a very strong motor discharge," explained Dr. Ziv. "It uses up a lot of energy, and spoils your motor coordination for a certain time."

Dr. Ziv has combined experimental work in the laboratory with a review of the world's literature, history and jokes to try to find out the characteristics of laughter. "It helps express aggression in an acceptable way. It helps engineers and mathematicians solve problems. It helps sell things. And it helps students to remember."

Dr. Ziv is full of anecdotes to prove his points. He tells, for example, how Arab Bedouin warriors used to take the tribe poet into battle to make up satirical verses about the enemy during the fray. "After the battle, the poet was honored with everyone else. After all, he helped win the war."

He also tells how police in Germany once prevented a violent demonstration with leftist demonstrators by telling jokes. "The police were face to face with the demonstrators, and the situation was very tense. One policeman started making funny comments, and pretty soon everyone was laughing. After an hour the crowd dispersed peacefully. It could have ended very differently."

Now, Dr. Ziv has turned his attention to children. "We found children with especially good senses of

"There's only one person who cares more about how a piano sounds than a pianist: the piano technician."

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humor, and began giving them every test known in psychology.

"One of the most intriguing findings is that whoever has a high sense of humor has a good relationship with his mother — but not his father. Don't ask me why, but this has come up again and again."

Dr. Ziv says he has a good relationship with his own mother.

* * * * * *

And there you have it. Laughter is good for you. Laughter is good for your organization. Laughter is good for progress and everybody's state of mind. Laugh it up at your meetings. Don't take yourself too seriously. Have fun in everything you do. I have seen extremely tense situations in meeting sessions (which could literally destroy the entire purpose of the gathering) turn into a very pleasant and productive session by somebody just inserting a little humor into the occasion. After all, we only live so long and we may as well make our brief stay as pleasant as possible. We should even laugh at growing old. It sure is a lot better than the alternative. □

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.

July 14-18, 1980
Piano Technicians Guild
23RD ANNUAL CONVENTION
& TECHNICAL INSTITUTE
Philadelphia, Pennsylvania

May 2-4, 1980
MICHIGAN STATE CONVENTION
Southfield, Michigan

Contact: Calvin Champine
2145 Dalesford
Troy, MI 48098

October 5-7, 1980
FLORIDA STATE CONVENTION
Jacksonville, Florida

Contact: Barney J. Johns
3546 Oleander St.
Jacksonville, FL 32205

October 11-12, 1980
OHIO STATE CONFERENCE
Cincinnati, Ohio

Contact: Willard Sims
c/o Baldwin Piano & Organ
1801 Gilbert Avenue
Cincinnati, OH 45202

October 17-18
TEXAS STATE SEMINAR
Dallas, Texas

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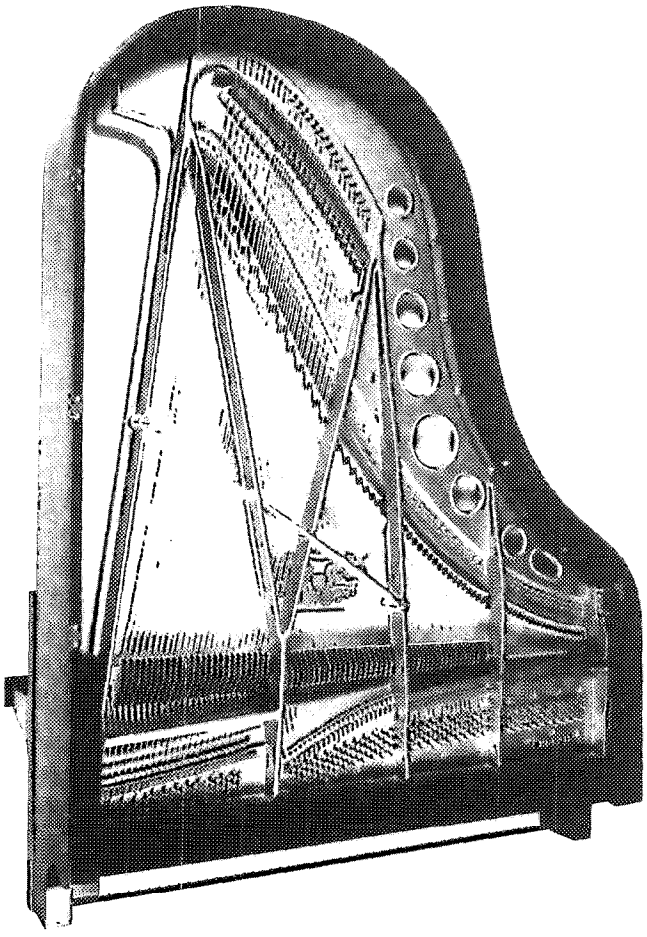
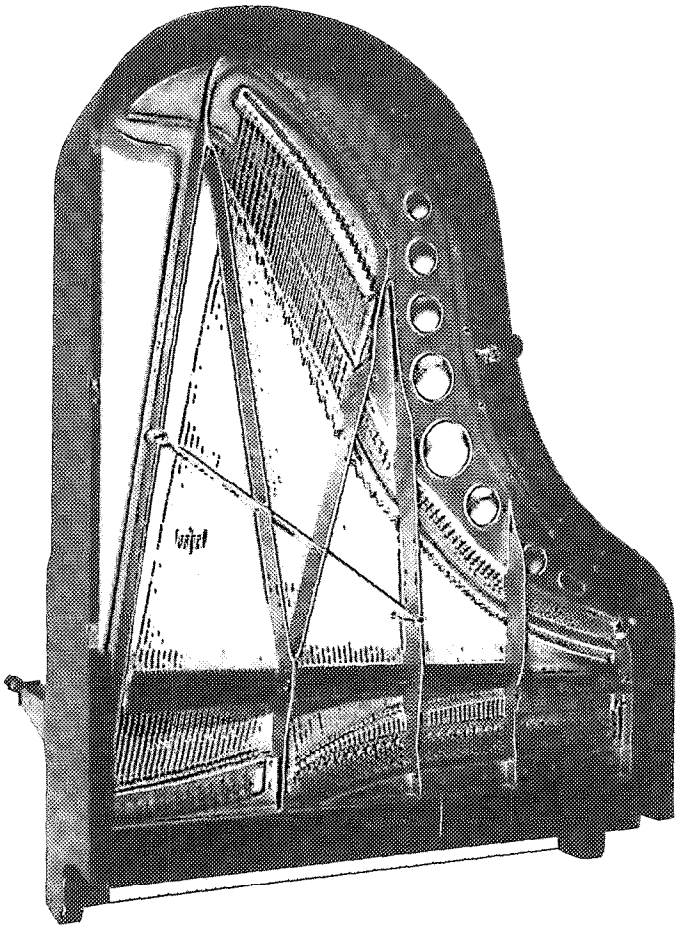
808 Cordell
Houston, TX 77009

The Resemblance Is Obvious!

The Kimball 6'7" Grand



The Bösendorfer 6'7" Grand



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PRESIDENT'S MESSAGE

Bob Russell, President

Some months ago we discussed understanding and listening to others. In another word, communication. Communication is the most important tool that we need and use daily; whether discussing a pitch raise with a customer, writing a letter to your national officers, working out a problem with your committee, or just using this tool to express your love to your family, we must use communication.

It takes time and effort to communicate ... to clearly say what we mean. Remember, people can't hear what you are thinking (only your spouse), people can't read between the lines when you write, customers don't have the knowledge about their pianos that you do. Don't be afraid to expand on ideas, facts or conversation. It is a wonderful feeling to exchange ideas and offer new thoughts to others. Some people feel that their ideas are not important. All ideas are important. If you have something to say, say it!

Is there something about your chapter that you would like to have changed? ... tell someone. Do you have some ideas that concern membership? ... tell someone. Do you like the things that the Guild is doing?... tell someone. Communication is not always negative. After visiting friends or family, a nice thank-you note is always welcomed by the host and hostess. Just a note to tell someone you like them, or you agree with them, is always welcome.

A successful technician is almost always a good communicator. If you lack the outgoing-ness that you wish you had, begin today to say something to everyone you come in contact with. You will soon find you are very confident. You will have learned to communicate. People will think of you in a different light, and your business and life will be very happy and prosperous. The key to business building is communication. The key to a happy family is communication.

Progress and growth are only accomplished through communication. □

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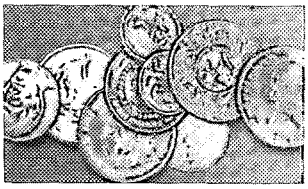
This internationally acclaimed, universally praised instrument, is crafted with great pride to provide you and your family a lifetime of enjoyment... and enrichment.



INTERNATIONAL RECOGNITION OF YOUNG CHANG PIANOS

In international competition since 1967, Young Chang craftsmen have been the gold and silver medal winners for excellence in Germany, Switzerland, Spain and the Netherlands.

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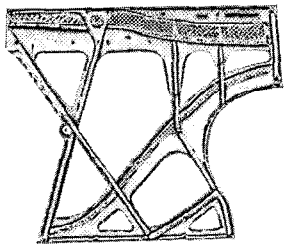
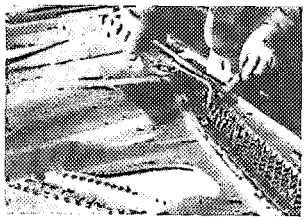
1. YOUNG CHANG 'FRAME'



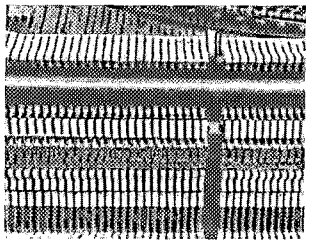
Cast of iron and steel mixture to withstand 22 tons of string tension, Young Chang is one of the few companies that engineer and make their own frames (plates). Strong and resilient, they are sanded, polyester sealed and sprayed gold/bronze. Whether for grands or uprights, the Young Chang quality story begins here.

2. YOUNG CHANG 'STRINGS'



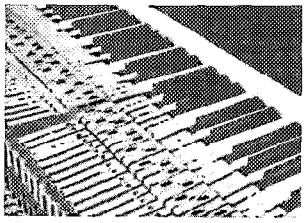
Using a technique that's more costly and time consuming (found only on the finest pianos), Young Chang uses half-step graduated wire sizes to assure an even chromatic sweep from bass to treble. The wire itself is absolutely uniform and free from scars. Bass strings are hand wound with genuine copper.

3. YOUNG CHANG 'ACTION'



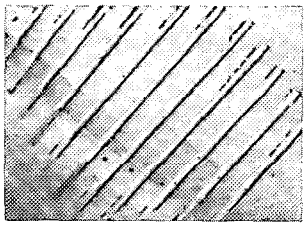
The Young Chang grand piano action is the time proven "ERARD"-type - as preferred by the world's leading grand piano manufacturers. The vertical actions are of the famous "RENNER"-type. Each of the approximately 6,200 action parts is built to within a 1/100mm tolerance. The parts are hard rock maple, the hammer shanks of birch...and real buckskin is used on all backstops and knuckles, for longer, quieter life. The hammers are 100% virgin wool and 't' fastened rather than stapled.

4. YOUNG CHANG 'TOUCH'



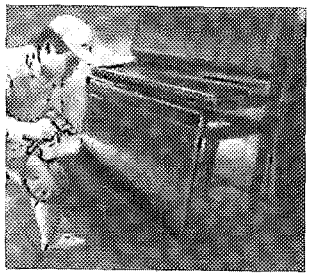
Young Chang piano keys are individually adjusted (weighted) to perfect balance, by hand. The resulting uniformity of touch can be appreciated by the finest musician or is of great value with a young student's developing dexterity.

5. YOUNG CHANG 'SOUNDBOARD'



The Young Chang soundboard is of the finest material in the industry... solid Alaskan sitka spruce. It is painstakingly tapered from the treble to the bass section to allow the full subtle range from deeper bass resonance to brighter treble. Solid sitka spruce ribs are feathered and notched into its perimeter, providing additional assurances of optimum sound.

6. YOUNG CHANG 'CABINET'



All Young Chang pianos are finished with polyester resin, which dries harder than lacquer and can be hand rubbed to a satin or mirror-like finish. This thicker finish provides greater protection to the wood, and is more stable. All cabinets are 100% lumber construction-no particle board.

YOUNG CHANG

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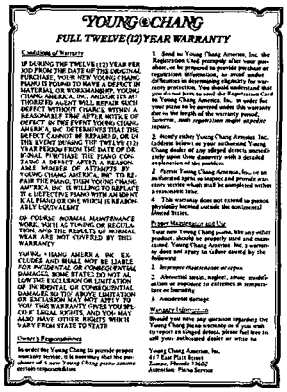

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THE TECHNICAL FORUM

Jack Krefting, Technical Editor

NOISES

If piano technicians were given the opportunity to cast a ballot for the single most frustrating aspect of their work, my guess is that the diagnosis of extraneous and unwanted noises would rank very near to the top of the list. Correcting the problem is usually a simple matter once the cause has been pinpointed, but therein lies the difficulty. The piano is a machine with thousands of moving parts, but at the same time it is a resonant musical instrument. This resonance, carefully designed into the instrument, also magnifies the slightest click or rattle; it is our job to maintain the total musical performance capability with which the piano was made, not merely to tune it periodically. This means, unhappily, that we must spend extra time tracking down and eliminating noises that would be cheerfully tolerated in any other machine known to mankind.

Efficiency in diagnosing and correcting noises can have a direct bearing on a technician's income, especially if self-employed, in the same way that an efficient tuner can make more money than a slower colleague. Accordingly, I think a discussion of this topic would not be misplaced here. First, some generalizations about noises:

(1) A higher pitch usually means smaller parts are involved, in the sense that a click is higher than a clack, and a clack is higher than a knock.

(2) Parts make noise because they touch one another by (a) hitting; (b) rubbing; or (c) vibrating.

(3) Vibrating noises are the most difficult to diagnose, especially if transitory.

(4) Almost all moving parts operate in arcs, so any noise is either in the pivot or in one of the arms. There is usually a difference in the pitch, as the center of the mass tends to produce a lower pitch than the extremity.

(5) If the source is not immediately found, use a process of elimination. The more things that can be dismissed as possible sources, the fewer potential culprits remain.

(6) If elimination doesn't work, move things and change positions and pressures. When noise stops, try to recreate it to be sure of the diagnosis.

(7) Be suspicious of any noise that seems to fix itself. It will be back to haunt you sooner or later, and callbacks cost money.

(8) When the source is located, be sure to use the proper remedy. Don't lubricate what should be tightened, and vice versa.

Now let's get down to specifics. Narrow the scope of the search as much as possible by determining whether the noise appears only on certain notes, or only when a certain pedal is depressed, or only at a particular time of the year, and so on. Does the noise appear when the key is first struck, or only when it is released? Is it metallic, or is it more of a woody sound? Does it appear when the string is plucked with a fingernail, or only when struck by the hammer? What other variables, such as the position of the lid or other case parts, affect the noise?

Some sounds are obviously related to certain parts or functions. A pinging sound when a note is struck, for example, is almost always caused by faulty termination. We can therefore immediately dismiss the case, action, lyre, back and soundboard; we will check the V-bar and the bridge. A clanking sound is another easy one, because there aren't that many large metallic moving parts. The una corda lever is the most likely culprit here.

A groaning sound is actually a low-pitched squeak, almost always traceable to the trapwork or bottom board, and is produced when large wooden parts are scraping. Similarly, zinging sounds are produced when a hard object touches a vibrating string. Check the dampers and then the full length of the string for foreign material touching the strings.

Knocking sounds are easy to diagnose because they are actually low-pitched clicks. Two little pieces won't make a knocking sound no matter how hard they strike one another, so look for large parts hitting, such as the keyframe or lyre parts. A clunk is a muffled knock, such as when two large parts are hitting with a piece of felt or leather between them.

A clop is a high-pitched clunk or a low-pitched clack, such as can be heard on quick release of grand keys when the whippen heel cloth is compressed. A similar sound when the key is just touched may indicate elongated balance holes

in the keys.

Scraping sounds are usually easy to locate also, because they relate directly to the function of specific moving parts. The process of elimination works well with this type of noise. The final noise in the "easy to find" category would be the chatter that is caused by grand damper guide rails with hardened or missing bushings. Related to this chatter, but lower in pitch, would be the rattling sound produced by loose string windings. Still lower in pitch is the rattle caused by glue failure in the soundboard assembly. Check the bridges, ribs, edges of the board, and also for foreign objects touching the board.

So much for the easy ones, and on to the smaller parts with their higher-pitched noises. Squeaks are caused by smaller parts rubbing. In most cases, the solution is to lubricate, but not always. A trap spring, for example, may be squeaking because its moving end needs lubrication, but it could be squeaking because its fixed end is not tightly screwed in place. Another interesting example is a squeaking pedal on a grand. There are different methods of construction, but in all cases there is a fixed part which must not move, and a bushed part which must move freely.

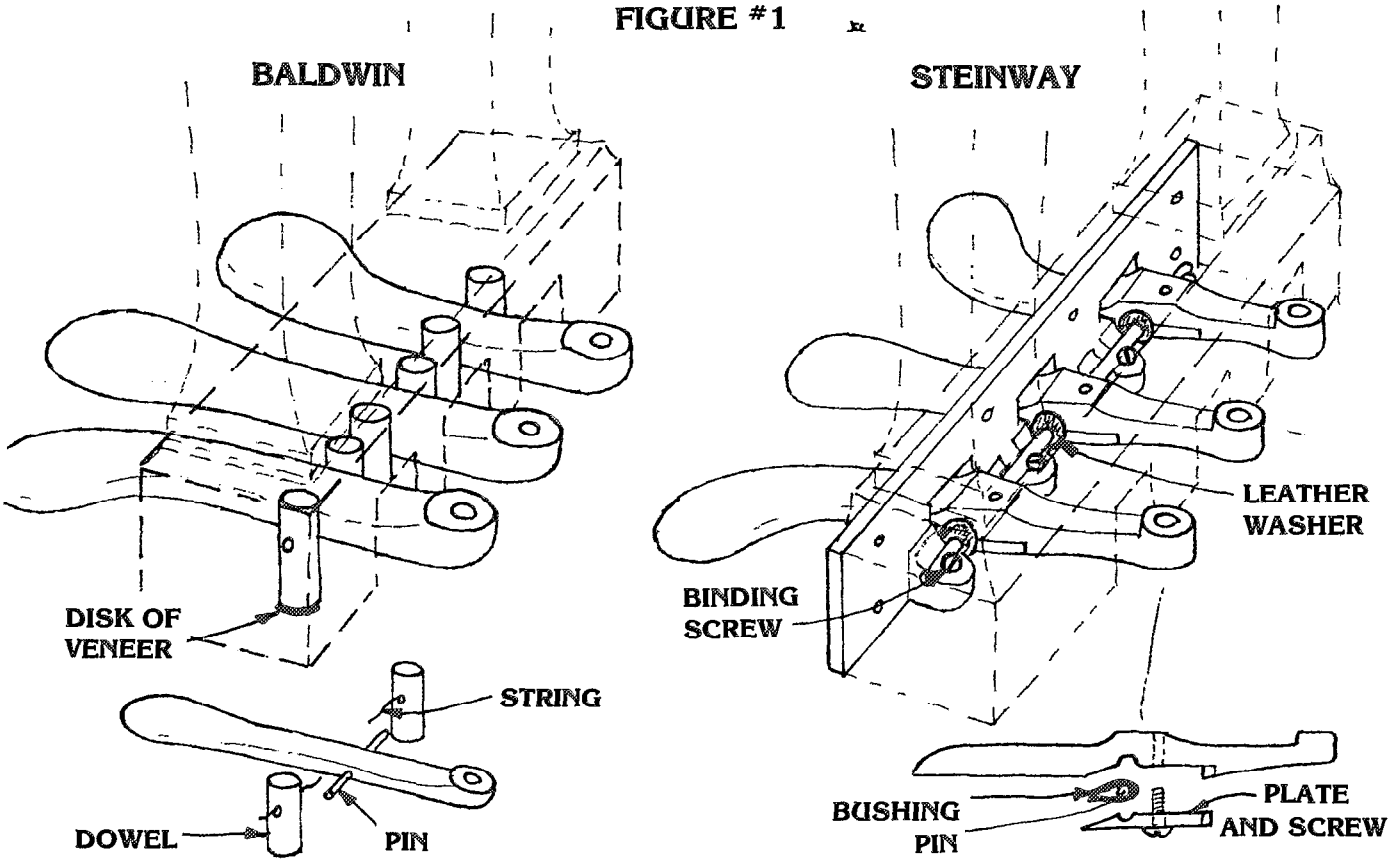
In the Baldwin, the pedal pin must not move in the pedal; it must move in the holes in the dowels freely, but the dowels must not move up and down in their holes. If these dowels move, they must be shimmed from the bottom with veneer, and the bottom board must be solidly screwed in place. Steinway construction is completely different in that there is only one pedal pin that serves as the axis for all three pedals. It is held in place by four flathead machine screws (**see Figure #1**) which must be tight; care should be exercised when tightening them, though, because they bind sideways against the pin and are often bent, making them vulnerable to breakage. There is a tension screw under each pedal to take up lost motion in the bushing.

Clicking sounds are caused by two small parts hitting one another, such as loose hammer heads or jack flanges, loose keytops or leads, or loose damper inserts. Action springs may click for lack of lubrication, Teflon bushings will click if the centerpin clearance is too great, and flanges will click against the action rail if the screws are loose. Some verticals have their bridle wires so far outboard that there is a clicking interference with the backcheck wire of the adjacent whip, and grands will click on staccato release if the rest rail is loose. The list of possible sources of clicking sounds is practically endless.

A clack is like a click, but slightly lower in pitch. The most common source of clacking is missing or glue-encrusted butt felt. Another source, less common, is interference between the back of sharp tops and the keystrip or fallboard. The solution here is to move the offending case part back to allow clearance.

What's left? Probably quite a lot, but the only thing I can think of is the buzz, a high-pitched cousin to the rattle. I left buzzing for the end of this discourse because it's probably the toughest to locate. It can be caused by virtually any part that touches another without being cushioned or solidly fas-

FIGURE #1



tened. The cure usually involves increasing or decreasing the clearance involved, or removing foreign objects from contact with vibrating parts.

Locating a buzz is made easier if a second person can be recruited to keep playing the offending note again and again while the technician checks everything in sight. Check the obvious things first, like loose hardware, by touching it while the note is being played. If a hinge is the culprit, tighten the screws; if the buzz persists, it could be a loose hinge pin. This can be corrected by removing the pin and bending it slightly so it will fit very snugly.

Check the lid prop, fly parts, soundboard assembly, trapwork and everything else. Once I found a buzz was caused by a blob of varnish that had dripped into a soundboard hole and hardened against a nosebolt. Another time, in a vertical, the rubber grommet was missing from the top of a pedal dowel, allowing the pin to buzz against the damper lift rod. Still another time, I was about to give up in defeat when I noticed a glass case across the room which contained dozens of tiny glass and ceramic horses, one of which was vibrating sympathetically against the glass shelf. Surely every technician has similar stories to tell, like the man who told me about spending an hour and a half trying to track down a buzz without success. His customer had been playing the one note again and again, and was visibly less than enchanted with the technician, who finally leaned against the wall in weariness. The buzz stopped! As it turned out, a loose bit of the wallpaper had been buzzing against a nail in the wall.

One hint that may be helpful is that buzzing sounds not only have different pitch levels, but they have varying "tone qualities" as well. A buzz involving the strings or soundboard assembly will be generally lower in pitch and almost bassoon-like in intensity, while a buzz elsewhere usually is higher in pitch and sounds more like a kazoo.

When all else fails, stop working and take a coffee break. Try to relax and think of something else. Sometimes excessive concentration causes us to lose sight of the obvious; a fresh, relaxed approach will often turn a situation around for you, especially if you find yourself desperately rechecking things that have already been considered again and again.

NOMENCLATURE QUIZ— GRAND CASE PARTS

Test your knowledge by filling in the blanks in **Figure #2.** Score yourself as follows: 23-25 right, excellent; 20-22, above average; 15-19, mediocre; and below 15, dismal. Be sure to use a pencil so you can correct any mistakes that might embarrass you if someone borrows your copy later. Answers will be found near the end of the Forum in this issue.

NEWSLETTER TECH REPRINT

This month we present a reprint of an article on tuning forks that appeared in the Cincinnati newsletter three years ago. The author is **Ellen Sewell.**

Early this year I had a telephone conversation with Mr. H. E. Trommer, Sales Manager for J. C. Deagan, Inc. in Chicago. Out of this

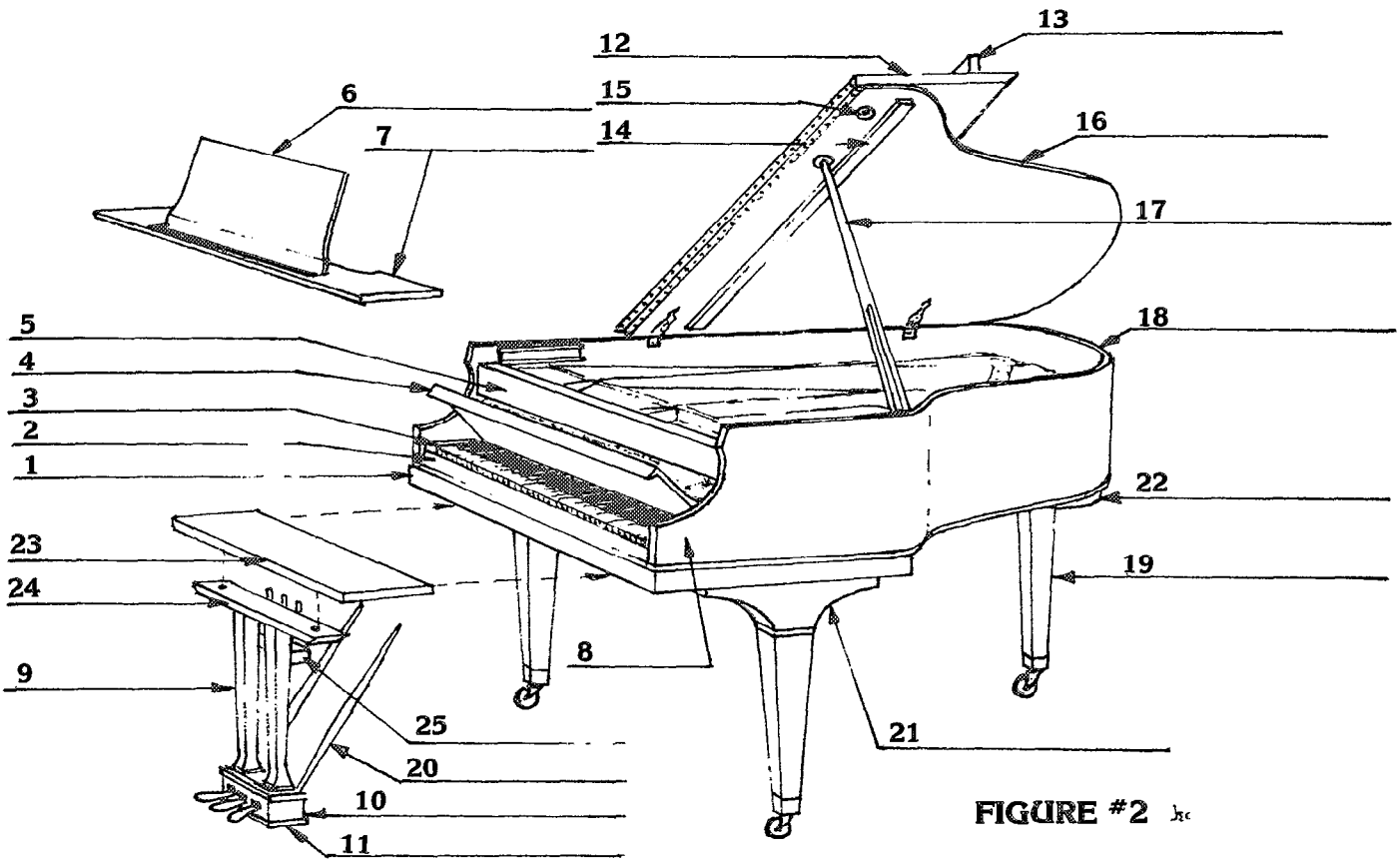


FIGURE #2

conversation came an exchange in which Mr. Trommer answered a series of questions about tuning forks. We are very grateful to Mr. Trommer for his time and interest in supplying these informative answers and comments:

1. What properties make for a fine tuning fork?

A. A fine tuning fork is made of tempered steel for both durability and resistance to changes in temperature.

B. The tines and shaft of the fork should be machined from a single piece of steel.

C. The fork is nickel or chrome plated, both for appearance and protection.

2. What qualities should a tuner look for in a fine fork?

1. Accuracy of tuning.

2. Amplitude of tone and duration of audible sound.

3. Quality of material and finishing.

4. Design for handling ease.

3. How should one properly care for a tuning fork?

A tuning fork is a precision instrument provided it is well made and tuned. Avoid any kind of handling that will nick, scratch, or otherwise damage the tines or the finish. Any damage to the tines, including rust, can alter the tuning. Polish the fork periodically with a soft cloth to remove finger marks (some persons secrete acids in perspiration that can pit metal).

4. Should a fork be tested against a strobe from time to time to see if it has changed pitch or whether or not it was originally correct?

This should not be necessary for a fork that is well made and guaranteed accurate, except for forks that have been in use for many years, have plating that shows signs of wear, or where damage has occurred.

5. If a fork is high in pitch, how should it be corrected?

A precision made tuning fork should be in tune at 70 to 72 degrees F. at 45 to 55% relative humidity. Where pitch has been altered by wear or damage, it should be returned to the manufacturer for fine tuning adjustment if only slight compensatory adjustment is required. Do-it-yourself tuning on a fork can be damaging beyond the point of salvage, even by skilled tuners.

6. What temperature is best suited for a tuning fork?

Precision tuning forks are traditionally tuned at 70 to 72 degrees F. and at 45 to 55% relative humidity, as stated previously. Consequently, tuning forks are most accurate under these conditions.

7. Should a fork ever be put on a heater to warm it up if it is cold from having been in a car in cold weather?

Excluding the use of fire or high heat, a tuning fork can be warmed from excessive cold to room temperature without damage. Conversely, a fork can be cooled from a high temperature by plunging it into water at room temperature (70 to 72 degrees) and drying it promptly with a soft cloth.

8. Approximately how long will it take a fork to warm up if it has been in a below freezing temperature?

This depends on how cold the fork is and how you are warming it. The temperature/frequency change at A=440 pitch is as follows:

120 degrees F.	*438.333 Hz*
110 degrees F.	*438.666 Hz*
100 degrees F.	*439.001 Hz*
90 degrees F.	*439.333 Hz*
80 degrees F.	*439.666 Hz*
70 degrees F.	*440.000 Hz*
60 degrees F.	*440.333 Hz*
50 degrees F.	*440.666 Hz*
40 degrees F.	*441.001 Hz*
30 degrees F.	*441.333 Hz*

9. Can you compare the advantages and/or disadvantages of a tuning bar versus a fork?

A tuing bar produces a frequency reference of maximum volume and longest ringing time, can be mechanically sounded and does not require holding. The bar is, however, larger, heavier and less convenient to carry in a tool kit. A tuning fork is small, light and convenient to carry, but must be hand-held to use, and produces a frequency reference of low volume and comparatively short usable ring-time.

10. Does plating have any effect on a tuning fork? If so, what?

Since final tuning is done after plating, the plating has no effect on the accuracy of the fork. The plating is for protection and appearance.

11. How can one best make a fork sound? By placing it on a bridge? Placing it on the keyslip? Or by holding it to one's ear?

Practices differ. Placing the ball of the fork shaft on a resonant portion of an instrument increases the audible volume. Longest ring of the tines is obtained by grasping the fork by the shaft near the ball with the fingers and placing the tines near the ear.

12. Is there an optimal shape for the handle, round or pointed? If so, why is one preferable to the other?

Since there is a node between the tines and the shaft, the shape of the shaft is of little consequence to the production of tone by the tines. The shape of the shaft is primarily one that relates to ease of handling and manufacturing efficiency. Some types of forks (industrial, for example) have square, rectangular, or even untapered shafts that work best for such uses as clamping.

PLASTIC ELBOWS

QUESTION: *"I was recently called to inspect a spinet and found that at least a fourth of the plastic lifter elbows were broken. The piano had been fitted with a dehumidifier; just the heater with no humidifier and no control box. My question is this: Can this unit by itself cause damage? The elbows were quite brittle. I have never installed one and as I have a customer requesting information on humidity control, I would hate to do harm to her fine old upright ..."* **— Bob Adkinson, Lexington, KY**

ANSWER: The plastics used in some vertical piano actions during the decade following World War II were of inferior quality. Apparently the problem was that too much hardener was included

in the plastic mix, the result being that the parts kept getting harder and more brittle over the years. Eventually, usually when the piano is about 20 years old, these parts will break. This is not a question of owner abuse, as I have personally known of several instances of plastic elbows breaking when the piano wasn't even in use. The parts simply got too hard.

We tend to think of hardness as being synonymous with strength, but this is not necessarily true. I remember reading somewhere that a certain type of fine china actually has a hardness rating above that of steel, though it obviously cannot compare in strength.

The elbows were not damaged by the dehumidifier, which puts out so little heat that it can be held in the hand without discomfort. The decision to use a complete climate-control system rather than just a dehumidifier should be made in consultation with the piano owner, with due consideration given to the yearly environment of the instrument. In some areas only a dehumidifier would be needed, and in others the opposite might be the case. If the relative humidity can be maintained, by whatever means, in the 30 to 50 percent range year around, the piano will be in nearly ideal circumstances. If the owner has a hygrometer or psychrometer, he or she can check the environment periodically; this is one way to be sure whether more or less moisture is required. Most owners are neither that conscientious nor that interested, though, and would welcome the installation of automatic equipment.

Getting back to the original problem, I would heartily recommend that all 88 elbows be replaced. This will be cheaper in the long run, because the unbroken elbows are unlikely to remain that way very long.

RECOVERING KEYS

Two of our members have written to this office with descriptions of key recovering techniques using plastic keytops. I have also received several questions on this topic in the past year, which would indicate that there are still quite a few technicians who like to recover their own keys. I have always thought that this type of work would be more economically and efficiently done by specialists, but unusual circumstances or individual preference might require the do-it-yourself approach. One set of keys might have to be done overnight, for example, or maybe a set from an antique would be irreplaceable; or maybe the technician just likes to do all his or her own work, period. In many countries such specialized services are simply unavailable; whatever the reason, the interest is there, so we will take some space here to discuss it. Our first correspondent is **Bill Reichert of St. Louis, Missouri:**

"Here is how to recover keys in six hours with no goofs. It also works on waterfall keys. There will be square sharp notches, and no fallboard problems.

"Step 1. *I use two 5-foot, 2x2's to support all the naturals. The front 2x2 has a lip for the key front to butt against. A 5-foot piece of plywood is slipped between the 2x2's for moving all the keys at one time in a later step (***see Figure #3).** *A wet towel and an electric iron are used to steam the old ivory. Holding the front of the key against my chest, I draw a 3" felt knife (blade tip broken off) under the ivory from rear to front. Occasionally it has to be run from front to rear if the wood starts to tear. Next I sort the ivories and keep the good ones. Time: 30 minutes.*

"Step 2. *Move all the keys to the drill press by means of the plywood. I use the Gilmore rotary planer to plane the key wood so that the new key and keytop thickness is equal to the original ivory and key thickness. A stop is set on the drill press table so that all keys are planed back the same distance. For extra neatness, a saw kerf is*

made first where the rear of the new keytops will be. This prevents any ragged wood at the end of the planed are. **Figure #4** *illustrates this step. The planer will cut cleanly through ivory and plastic fronts if fed slowly.* **Caution: the key must be held firmly and flatly for a good surface. The planer is a high quality tool and you won't feel your finger being fed into it if you are daydreaming.** *Time: 15 minutes.*

"Step 3. *Return keys to workbench. Place newspaper in front of keys. Place all tops on proper keys. Remove tops one at a time, flipping end over end, and lay them upside down on the paper. The front edges should now be facing the key fronts. Spray the keys with Schaff's Crown 8091 Adhesive; spray the keytops also, and then give the keys a second coat. Wait until the adhesive is dry to the touch. Make an overhang spacer (***Figure #5***) out of three or four old ivories. Time: 45 minutes.*

"Step 4. *Hold spacer and key front between thumb and left index finger. Butt the keytop front against the spacer and lower the rear of the keytop onto the key while guiding it with the right index finger and thumb (***Figure #6***). Set the key down and draw the thumb down the keytop with firm pressure. Note: if the fronts are coming loose the overhang will not be even unless the fronts are replaced first. Ivory fronts can be steamed off, but celluloid must usually be burned and scraped off. Time: 15 minutes.*

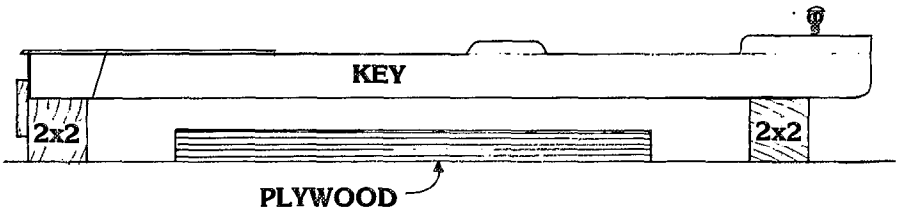


FIGURE #3

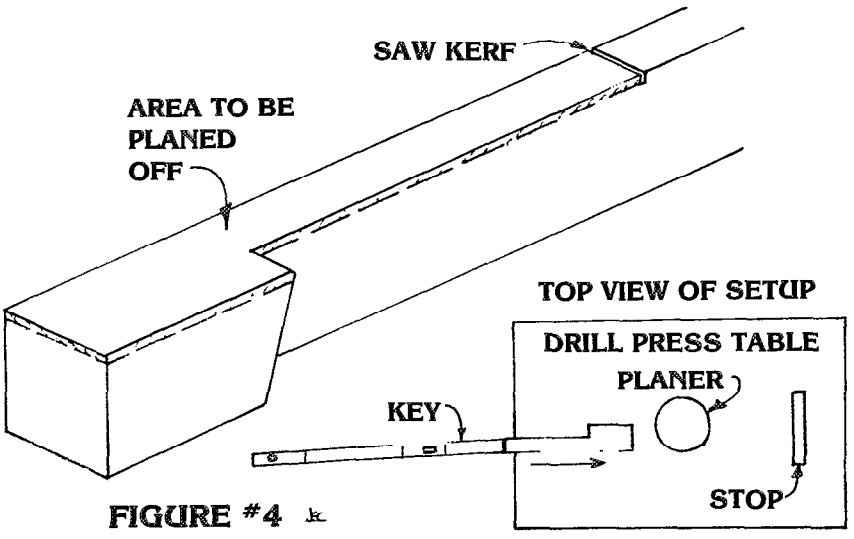


FIGURE #4

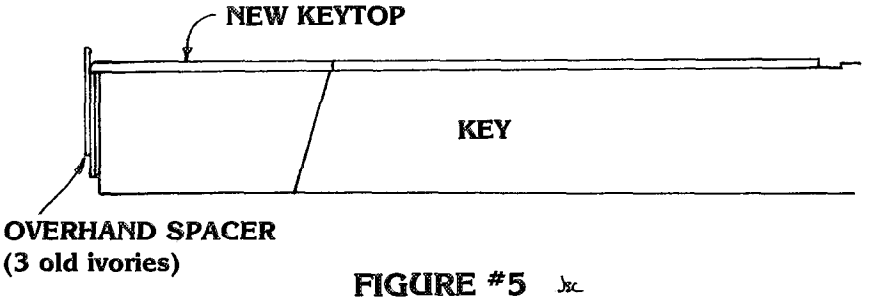


FIGURE #5

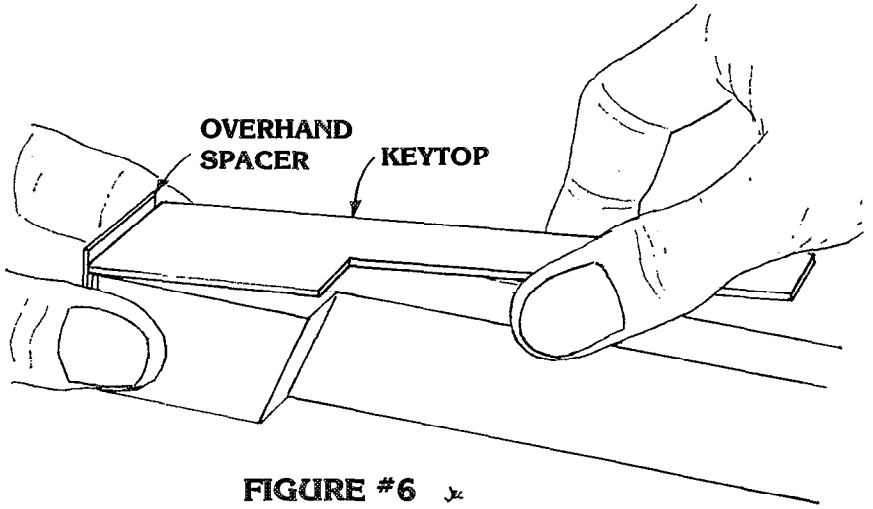


FIGURE #6

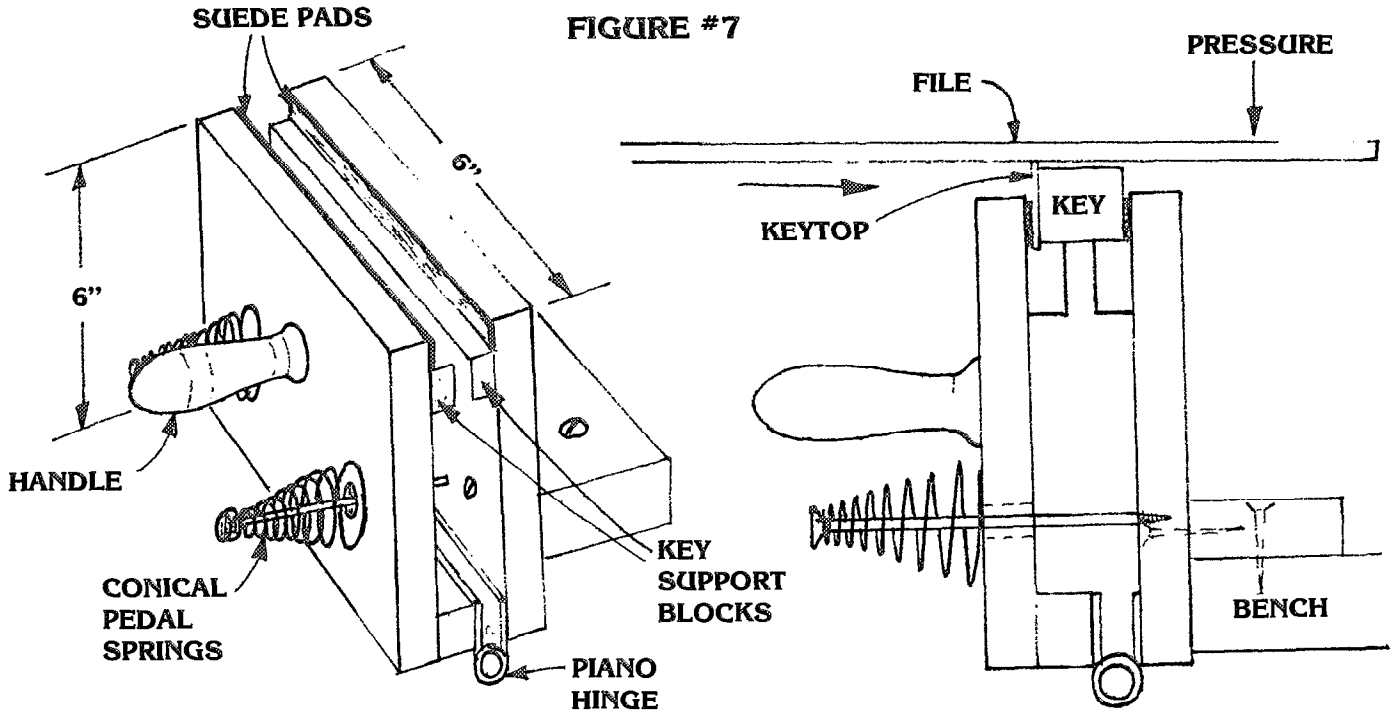


FIGURE #7

"Step 5. *Key is placed in key clamp (***Figure #7***) with keytop facing you. Rough shape keytop with 10" flat bastard file. The file is pushed back and to the right. Practice will lead to exerting more force with the left hand at the beginning of the stroke, and more with the right at the end of the stroke. This technique prevents rounding the side of the key. Next, use a 10" mill bastard file to smooth the side. Flip the key in the vise and repeat. Remove key and round keytop sides with the 10" mill bastard file. This sounds tedious but is just monotonous. (I suggest TV, radio or tapes of seminar classes.) Total filing time: 2 hours with experience.*

"Step 6. *Butt keys against the front 2x2. Use an "A.M. Swiss" 6" file to notch for sharps. This file, which has no teeth on the narrow edges, slips between all notches and easily squares the corners (***see Figure #8***). These files are hard to get — how about supply houses stocking them? Time: 30 minutes.*

"Step 7. *Buff out scratches. Time: 45 minutes. Total time for the job, 5 hours plus 30 minutes travel time each way, for a total of six hours."*

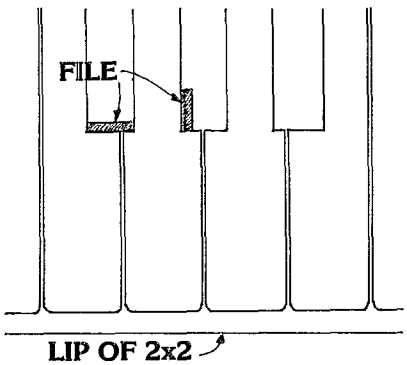


FIGURE #8

Our thanks to Bill Reichert for this description of his procedures and techniques. Bill goes on to caution us about the danger of developing a casual attitude toward power tools which can lead to serious injury. He suggests finding the nearest hospital that has a team for reattaching severed limbs and posting its phone number and address prominently in the shop. Memorize what to do for yourself in such an emergency, says Bill, because those around you are apt to go to pieces feeling sorry for you.

The rotary planer attachment is available from Gilmore Pattern Works, P.O. Box 50034, Tulsa, Oklahoma 74150. Two models are available, one for a radial saw and the other for a drill press. The cost is $21 and $18 respectively, prices postpaid.

Our second correspondent is **Ernest Vagias of Baden, Pennsylvania**, who is known as the developer of the snap-on plastic elbow replacement. He is apparently in the keytop business also, and has some ideas of his own to share with us:

"Because piano keytops are made in many sizes, people such as I who manufacture keytops for the trade are compelled to produce keytops extra long and extra wide. To provide exact size would require at least four molds. With the limited market that exists, the cost of molds makes that notion prohibitive.

"I realize, however, that the task of trimming fitted keys is painstaking and time consuming and a great many technicians steer clear of keytop work. The trimming problem is really not a problem if the technician will opt for the method I urge my customers to use.

"The most trying problem is trimming at the sharp notch when a keytop is pushed back to attain a desirable lip at the front. This excess stock can be removed in a jiffy by making a slight cut along

the tail edge where it meets the front. This cut is made with one or two strokes of a hacksaw blade. Then, with a pair of cutting pliers, simply snip the excess stock. I'm familiar with the un-square results attained by filing; properly aligning the cutting pliers assures a clean, square cut.

"Unless the tail portion of the keytop rubs the sharp, there is no harm in permitting an overhang. However, if trimming of the tail is required, simply hold a sharp knife at 90° to the tail and the excess will peel or scrape off beautifully!

"In my practice, I have found that I can install a set of keytops (whites only, not sharps) in three hours."

READER FEEDBACK

Two or three issues ago, a question was asked about the sostenuto tabs catching on a hard blow. In my answer, I failed to mention that the proper regulation of the upstop rail is vital, and several readers wrote to let me know of my error; I even got a phone call from Jim Donelson about it on the very day the issue hit the streets. I have chosen to publish Stan Oliver's letter, partly because he said it best and partly because he also voices some reservations about the centerpin zapper.

"In reviewing your dissertation concerning sostenuto regulation, here are a few thoughts coming out of experiences.

"The sostenuto tabs will skip above the raised sostenuto blade on a hard blow when there is excess travel of damper heads. One of the absolute 'must do' things in servicing grands is a check of the upstop damper lever rail. Not only is it disturbing to pianists to feel keys bouncing under their fingers, but it also makes reliable operation of the sostenuto impossible.

"It is likewise essential that sustaining and sostenuto pedal travel be properly limited with hard blocking felt. It is very common to find even in Mason Hamlin and Baldwin grands where the upstop rail is bradded in, that this has been forced up and out of adjustment by excessive movement of the sustaining pedal. Lost motion must be taken up on the pedaling rods, and often enough this correction allows full m ovement of the blade from 5 to 3 o'clock and dropping tabs are cured. Checking that damper lift by key action, sustaining pedal and raised position from the sostenuto blade should be as identical as possible. The in and out position of the blade as well as its up and down state I have found quite often only as the last resort.

"With reference to Mehaffey's zapper, I have found this interesting idea lacking in durability. We have handled a number of Steinway grands with their mineral oil treated flanges and these tested fine in the shop. One that was serviced 18 months ago just bounced, and in checking we found that virtually all the sluggishness had returned to the hammer shank flanges. A silicone naphtha juicing and routine left the instrument usable for the Christmas season, but we will now be pulling the head back to repin. Homer Wagman, a meticulous researcher, first planted the seeds of doubt in my mind shortly after the zapper idea popped up. Specimen shanks and wips were treated and examined at intervals, and the results showed that the original lack of freedom in the centers returned. There is nothing like a clean pin and adequate clearance in the wool bushing. Cinderizing the wool or lubrication with whatever is not for the long haul."

Thank you, Stan, and I must say I agree that a clean center with adequate clearance is the best assurance of long-term reliability. I also agree that Wagman is a topnotch technician whose findings in this instance are surprising and enlightening, especially in view of the fact that the zapper has been in general use for several years with apparent success. My information is that the old Steinway centers were treated with mutton tallow rather than mineral oil, and that the treatment was largely responsible for the subsequent appearance of verdigris. It would be nice if the Guild had its own testing laboratory where various chemicals and techniques could be examined closely under carefully controlled conditions; lacking that, we rely heavily on manufacturers and independent observations for the knowledge that represents the state of the art in piano technology.

Why did the zapper fail in this experiment? Could the centers have been treated with another solution after they left the factory, a solution which rendered the scorching treatment ineffective? Could it be that the scorching works only until the accumulation of verdigris reaches a certain level? Willis Snyder, another meticulous researcher, has found that even after reaming and repinning a certain amount of verdigris can be found in the fibers of the bushing. Will this amount increase even though no mutton tallow is applied to the new centerpin? The answers to these and other questions could be best found in a laboratory setting, and I would hope that one day we will have such a facility.

We are indebted to Stan and Homer for this interesting bit of research, and hope that other technicians holding similar or contrasting opinions will also forward their findings to us.

Our next letter is from Yvonne M. Ashmore of Grass Valley, California:

"This letter is to let you know that I for one would like to read more articles in The Journal about birdcage pianos such as the one recently presented by Bert Blackhurst. I dislike these pianos as much as anyone, but since the vast number of antique buffs in my area are continually buying them despite my best efforts at discouragement, I am continually having to service them.

"Recently I finished installing a pinblock and restringing a Chappell. While doing this I also removed the soundboard to facilitate the massive repairs needed in the frame. The most difficult part of this job was replacing the keybed which I had sawed off (doesn't that sound horrifying?) because it was mortised and tenoned into the case. When I replaced the keybed I used long dowels in place

of the tenon. It's back in the home and so far everything is holding together.

"At any rate we are seeing more and more of these 'instruments', so the more we know about them the better..."

I'm glad someone in this country admits to working on birdcages, because now we all know who to recommend! Seriously, Yvonne, the next time you do a major job like that, how about taking some black-and-white pictures for publication? I'm sure we would be interested.

Apparently the influx of birdcages is not limited to Grass Valley, because this office just received the following letter from Regional Vice President Dan Evans in Los Angeles:

"In answer to your question on page 10 of the December 1979 issue of The Journal, at the end of Bert Blackhurst's article on birdcage pianos, I say 'yes'. I would like more information on these old instruments.

"There is a large antique dealer out here that buys them from England by the shipload. Most tuners will not touch them. I have tuned many at above normal fees, but have brought only two to A440 pitch.

"There is a lot I would like to know about regulation and repairs. Damper regulation is a subject that could be covered..."

I will write to Mr. Blackhurst, and in the meantime, if any of our readers have specialized knowledge about birdcages, now would be an appropriate time to come forward.

SOUNDBOARD FINISH

QUESTION: *"I would like to know, when refinishing a soundboard, what difference it makes as to what finish is used. Does lacquer affect the resonance of the board differently than, say, varnish or shellac, and is there a finish (such as plastic) that should not be used? Or are there certain types of lacquers or varnishes that are better than others? Would the underside of a board ever need to be refinished? Also, is oil out of the question?"*—**Vincent Mrykalo, Provo, Utah**

ANSWER: Oils of any kind are definitely out of the question, since they would soak into the wood and contaminate the pores. Extensive experiments in this area have shown that, from a performance standpoint, a soundboard works best with no finish at all; therefore the least amount of finishing material that will protect the surface from water and dust is preferable.

The traditional soundboard finish, which I favor for reasons not altogether scientific, is two thin coats of white shellac followed by one flow coat of varnish. The shellac seals the surface, preventing varnish from soaking in, and the varnish provides the hard, protective outer layer. Some plastic finishes are fine, but others are not. Plastic varnish which is compatible with shellac works admirably (such as McCloskey's Heirloom Gloss Finish #0092); but most if not all urethane finishes are incompatible with shellac and must be applied directly to bare wood. The first coat soaks in, clogging pores and raising the grain, which is what we specifically want to avoid. For this reason I would not recommend Varathane or polyurethane.

Lacquer is probably all right to use from a tonal standpoint, but its durability is not as good as that of varnish, nor is its appearance. These factors would not be important in a vertical piano, because the dust and liquid spills won't collect on a vertical surface, and the board is not generally visible anyway. In grand pianos, appearance and protection become more important to the piano owner. My only real objection to the use of lacquer is that it is sometimes sprayed on the board and bridges without masking the bridge tops, which can cause serious tuning problems later because the strings stick to the lacquer on the bridge.

TECHNICAL TIPS

Our first tech tip this month is reprinted from the Cleveland Chapter newsletter. The subject is broken pedal prop bolts, and the author is **Mike Knoblock:**

"Recently I have used a method of replacing pedal prop bolts (in small verticals) that some may find interesting. As you may know if you've ever replaced one, the nut at the top of the rod (bolt) must be removed, allowing the bolt to drop out of the wooden trap lever. Then the pedal must be completely loosened and turned sideways (or nearly so) to insert the new bolt. If the broken bolt happens to be in the middle pedal, many times the adjacent pedal must be removed as well, adding up to a frustrating and time consuming job for something that seems so incidental. Enter the solution.

"A pedal prop bolt is nothing more than a machine bolt, usually a 4-40 or a 6-32. If the broken bolt is of some other species, a bolt of the above dimensions can be substituted. Cut off the head of the bolt and thread a spring-wing toggle bolt onto it. (If you can't locate any toggle bolts with very short wings in your hardware store, buy a few of the smallest size and cut the wings shorter.) You can then drop the toggle bolt with the wings held back down through the hole in the pedal. The wings will spread underneath and you have only to reattach the wooden trap lever.

"Now, the disclaimer: I've had success with this method using a very small toggle bolt on a 4-40 bolt; however, in some instances, you may have to drill out the pedal hole a bit so the toggle bolt wings will clear. There are sure to be some cases as well where this method will not work due to under-the-pedal clearance problems. However, the potential for time-saving makes this small item a worthwhile addition to your tool case."

Our next tip was submitted by **Alan M. Anderson of McConnellsburg, Pennsylvania:**

"I have found the removal of old bridle straps from actions a simple job by using a 'seam ripper' from

my wife's sewing basket. The ripper is a small plastic and metal tool commonly found in sewing and department stores. The illustration gives an ideal of what it looks like (**see Figure #9**).

"To use the ripper, remove the bridle tape tab from the wire. Grasp the tape in the left hand, pulling it tight. Taking the ripper in the right hand, run it into the action. Place the trough of the blade against the side of the strap at its junction with the hammer butt. Very little pressure cuts the strap from the butt cleanly and easily. It is surely much easier to get the narrow ripper into the action than a knife. It is not only smaller, but the U-shaped blade guides the edge of the strap and holds it in place for cutting."

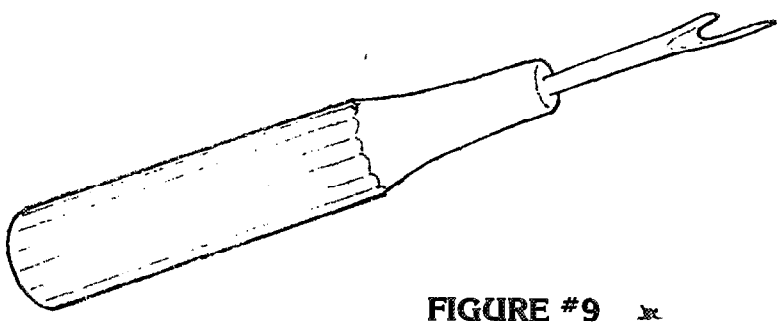


FIGURE #9

TIP OF THE MONTH

The inventive mind of the piano technician is always at work, it seems, and because of our varied backgrounds we are able to bring tools and techniques designed for other fields of endeavor to bear on problems in the piano service field. One such item is heat shrink tubing, which is used in the electronic field as a protective coating for a bundle of wires. The wires are inserted into the tubing, which is then shrunk tightly around them by the application of heat. Sure enough, this can be applied to the piano business, according to **H. Vince Thomas of Las Cruces, New Mexico:**

"Being a craftsman member of the Guild for a short time compared to the majority, I wonder if I could share a tip that would be of any value to members who have probably tried 'everything'. Here's a small tip for repairing a broken hammer shank.

"There are times when it seems advisable to repair an existing shank instead of replacing it. Shank repair sleeves from the supply houses are sometimes just not the right size and there has been some question as to the weight factor as well as a possible unsightly appearance.

"What I use is a piece of ¼ inch heat shrink tubing used in electronic work. I cut the tubing just slightly shorter than the split in the shank so I can make sure of alignment. With shank broken I slip the tubing on and apply glue (Titebond) to the wood. Put the shank together in alignment, slip the tubing over the split and heat with a match, or preferably a lighter, turning the shank as it is heated evenly.

"This tubing gets very tight and after the glue has set for 15 minutes or so the heat-shrink tubing can be cut off leaving nothing to show, no added weight and a very strong bond."

TAPERED TUNING PINS

QUESTION: *"... I am rebuilding a George Hewes straight string mid-19th century square piano. It is so ornate and beautiful that I couldn't resist the temptation to try to rebuild it.*

"The tuning pins are tapered and somewhat loose. Should one try to rebore and use conventional oversized pins? Could one use the same pins by redrilling a new hole to start the coil on the pin a little higher? Is there any place where one could get tapered pins made?..." **— Richard A. Schoenbohm, Oviedo, Florida**

ANSWER: A square piano may be said to be a triumph of workmanship over design; an elephantine example of the cliche about a silk purse and a sow's ear. Whatever we call it, there is no doubt that the typical square piano is a fine example of the cabinetmaker's art; the joinery and carvings on some of these pianos is really beautiful. They can be made into wonderful desks, bars, or even coffins, and they certainly are a source of excellent firewood.

If you simply cannot resist trying to make a piano out of a square, there are some things that you should be aware of in the restringing process. The pinblock really should be replaced, but it is next to impossible to get the old block out without dismembering the case, so it is wise to consider the alternatives.

New tapered pins are not available, which is just as well because they weren't much good anyway. Drilling new becket holes in the old pins would not be a good idea in my view, because the coil might interfere with the tuning hammer. Besides, one can only tap a tapered pin so far into a pinblock before it starts to split. In a piano this old, that is not just a disagreeable possibility; it is a near certainty.

If we cannot easily replace the block or redrill the beckets, what can be done? My suggestion would be to drill out all the holes to ½" and insert plugs made from pinblock material. Do not try to use dowels, because the grain will be running the wrong way. If you do not have a plug cutter and suitable pinblock stock, you can purchase Falconwood plugs from Cliff Geers for 19¢ apiece. After gluing the plugs in place, new holes can be drilled to accommodate new 1/0 or 2/0 pins. This would be far better than attempting to use oversized pins in that old block, which is likely dried out and probably has no more than two or three laminations.

If the piano has an open block, which one would suspect in the case of tapered tuning pins, be sure to make a drilling pattern before reaming out the holes. Cut a piece of paper or Mylar to the exact shape of the visible portion of the block and tape it in place.

Rub a pencil over it to indicate where the holes are, and save the pattern. After plugging, the block is likely to look a bit rough, especially if a piece of veneer was used to cover the block. Replace the veneer, apply shellac and varnish, and then lay the pattern on the block. If the hole location was carefully marked, the new holes will be in the center of the plugs even though the new veneer hides them from view. Use a spur drill to cut through the veneer only, and then switch to a pinblock drill to finish the job.

ANSWERS TO NOMENCLATURE QUIZ

1. Keybed
2. Keyslip (*not* front rail!)
3. Keyblock
4. Fallboard
5. Front rail (or case cornice or stretcher)
6. Music desk
7. Music shelf
8. Arm
9. Lyre column (or lyre pillar or lyre post)
10. Lyre box (pedal box)
11. Lyre bottom
12. Front top
13. Lockbar (or Log)
14. Topslip
15. Lid prop rosette
16. Back top
17. Lid prop (or Topstick)
18. Rim (outer rim)
19. Leg (Leg column)
20. Lyre brace
21. Leg top
22. Console
23. Lyre board
24. Lyre top block
25. Lyre rod guide bracket

READER FEEDBACK

The following letter comes from Omaha, Nebraska:

"Referring to the January 1980 Journal article on rib strength (p. 15), here is the reason why they are as they are. The piano soundboard is no different in its function than is the top of an acoustic guitar, which is to amplify the vibrations of the strings via the bridges. If one would look at the underside (feel through the soundhole) of a good handmade guitar, one would find a system of ribs, or fan bracing as it is called by the luthiers. They are there to discipline the movements of the top (soundboard) caused by the vibrating strings, so that the entire surface does not bellyroll, or undulate, in a haphazard way. Because of the ribs the top is not allowed to flutter about as it moves up and down. Also, because of this absolute necessity to move in response to the vibrating strings, the ribs **dare not** *reach the glued edges (rim) of the piano, else all movement be killed, resulting in a very dead sounding piano.*

"The fan bracing (ribs) in a guitar are feathered. There are probably ten reasons for this, backed by a couple of centuries of trial and error, so one might use these reasons and experience to feather ribs on the piano's soundboard. Yet, it may not make much difference at the high treble ends, as long as they (ribs) stay clear of the edge." — **Hugh J. Manhart**

I'm sure that manufacturers of pianos whose ribs are notched into the rim will be surprised to learn that their instruments are "very dead-sounding."

I don't know much about guitar construction, but I am aware of a number of attempts by inventors to incorporate the principles of violin resonance into piano construction, and none of these have been particularly successful. Experiments with such things as double soundboards, F-holes and soundposts have not become widely accepted in the piano industry because they don't improve the piano; and I suspect that any attempt to apply guitar technology to the piano would meet with a similar fate. The basic principles are the same, but their application is radically different.

IN CONCLUSION

In January I asked for one or two more regular contributors, and I am happy to announce that David W. Pitsch will be a member of that team beginning this month. Blessed with an ideal name for his occupation, David has nonetheless resisted the temptation to use it in a cute way (Absolute Pitsch, Perfect Pitsch, The Pitsch Fork, etc.) in his title. Instead, it will be called "After Touch," and its emphasis will be on fine regulation and voicing.

Another fresh voice in The Journal, though probably not every month, will be that of James Ellis. Jim will be helping us out with cover stories and occasional articles in the area of research or human interest.

The area where we still need help is tuning. This is a difficult topic to write about, but I have received many letters indicating interest and concern in this area; so if you are an excellent tuner and can write, we need you! ☐

Readers may contribute material to the Technical Forum by writing Jack Krefting, Technical Editor 6034 Hamilton Avenue, Cincinnati, Ohio 45224.

AN ACTION SAGA

J. E. Denning

This is a story about the so-called "well regulated" action that did not feel right, what was done to determine the cause, and what action was taken to correct the problem. What occurred could have happened on a cheap piano in which case it may be blamed on poor engineering and remain unresolved, or it could happen on a quality piano. This also serves as a lesson in humility since I went about action regulation confidently without doing the complete job. The findings, solutions and compromises to make things right gave me the feeling that I have just reinvented the wheel.

THE INSTRUMENT

The piano in question is a 5'7" grand manufactured by a reputable company. It was purchased for personal use and development from a private party. It required a complete overhauling. There was evidence the piano was in a variety of differing environments: near bird cages, out in a pine forest, and at wild parties accompanied by the heavy use of flying liquor. It was a virgin piano — not having been previously reconditioned.

The reconditioning process began with shimming and refinishing the soundboard; installation of a new pinblock and subsequent re-stringing; new key covers; re-bushed front and balance rail holes; new *factory* hammers, shanks, flanges, backchecks, and damper felt; new felt or cloth throughout except on the whippens. The only attention given to the whippens was a thorough cleaning in dry cleaning fluid and an application of DAG on the various contact points — all being burnished bright. All felts and cloth were compressed prior installation to minimize malfunction after wearing in. The action was regulated several times and "buttoned up" due to a severe shortage of time. The touch was heavy — probably because of the new parts and cloth.

The piano was reconditioned in an environment having a normal humidity range of 50-75%. Touch pressure on the lower tenor was about 65 grams. That's too much. The piano was later moved to a climate whose humidity normally ranges from 10-30% humidity. After several months in the dry climate, "clunking" and rattling set in. It was time for another regulation.

During this regulation I noted all centers were much freer than initial installation, but none were loose. Naturally, the repetition springs were now too strong. The action was regulated according to factory recommendations, but the touch pressure on the lower tenor was still about 65 grams. There was something wrong that normal regulation was not correcting. Not only was the touch too heavy, but there was no control over soft blows and the jack felt as if it were getting hung up on the knuckle during letoff. What was found and accomplished caused me to add another step in my regulating procedure.

THE OBSERVATIONS

The observations and experiments were performed on key #1. This was done since it, like key #88, is easy to view from the side, but is more sensitive to adjustment than its treble counterpart due to the difference in hammer weight. To avoid confusion — all references to **forward** mean on the side of (or closer to) the keys, and **back** is the opposite.

The action was removed and thoroughly inspected. Many clues were available to the suspecting eye.

(1) Heavy touch and poor control can be the result of many things, but when the jack feels like it is hanging up on the knuckle during letoff, there is evidence the jack is improperly positioned under the knuckle or its height in the repetition cradle is wrong. The jack was checked to assure the backside of the jack was aligned with the backside of the knuckle insert. It was. Next, the jack was checked for proper depth in the repetition cradle. It was properly set as tested by "winking" the hammer at rest by carefully pushing the jack tender down without moving the repetition lever and then allowing the jack to spring back under the knuckle. Rather than slipping during letoff, the jack was digging into the knuckle. The jack was adjusted forward.

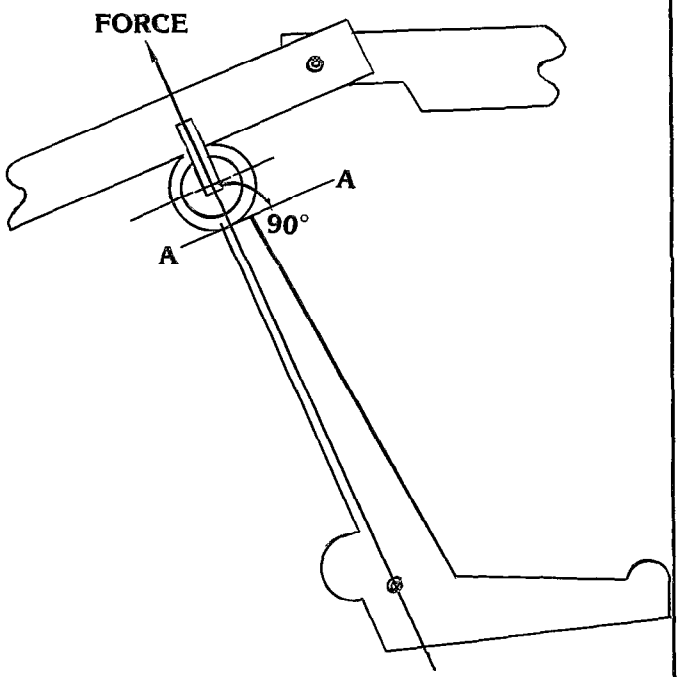


FIGURE 1
(HAMMER AT REST)

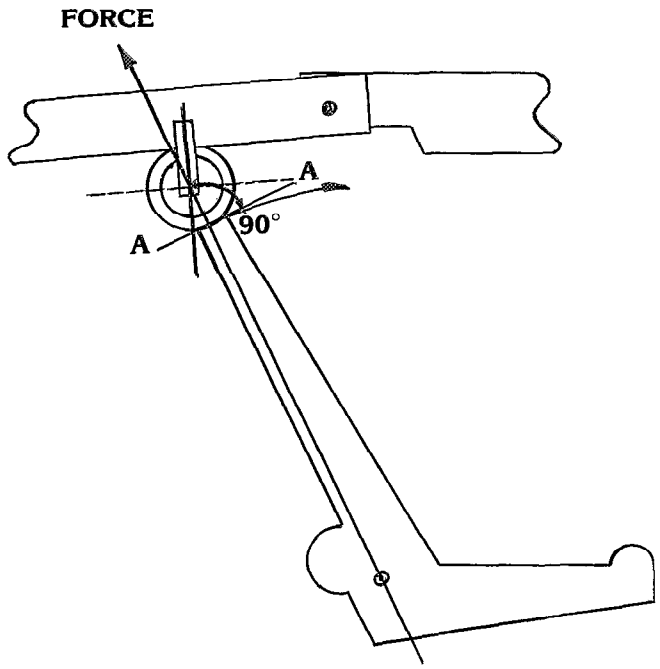


FIGURE 2
(HAMMER AT LET-OFF)

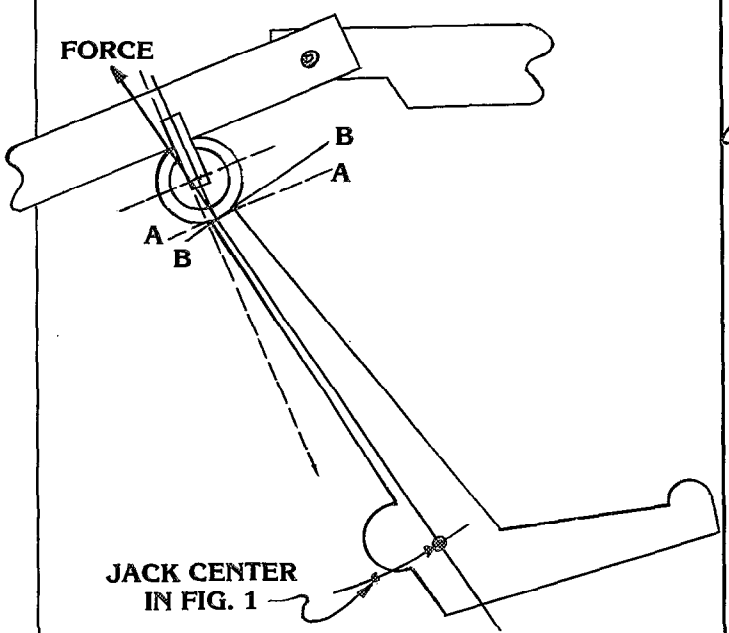


FIGURE 3
(HAMMER AT REST)

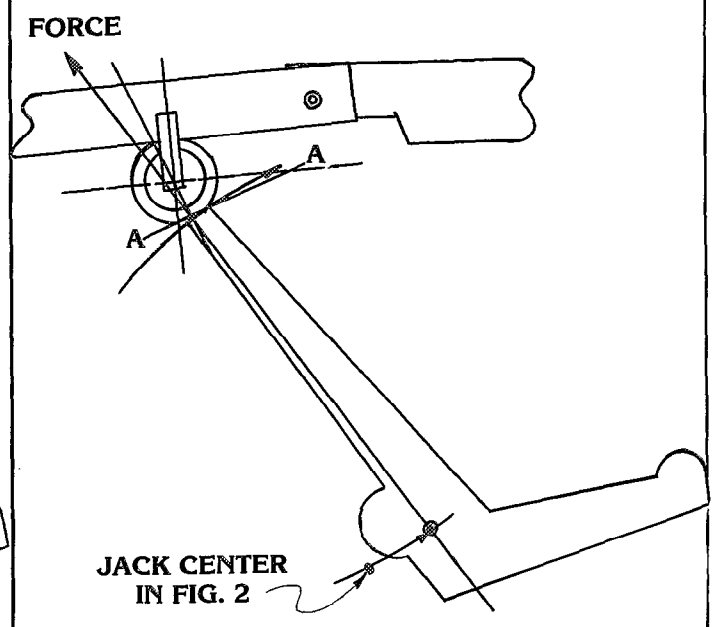


FIGURE 4
(HAMMER AT LET-OFF)

The digging persisted even to the point when continued forward adjustment caused premature leftoff during a soft blow. From this I determined the position of the jack under the knuckle was not the cause of the digging.

(2) When slowly depressing the key the touch felt smooth until the repetition lever contacted the drop screw. This is normal. I could hear nothing that indicated excess friction in the key or whippen during this phase of hammer travel.

(3) A few keys were non-offenders. Some were smooth feeling throughout letoff. When exchanging the hammer assembly (hammer, shank, flange) with the offenders, the problem followed the hammer assembly rather than staying with the key. Perhaps there was something wrong with the hammer assembly. Some of the non-offending parts were compared to the offenders; the knuckles on the non-offenders were set a little closer to the drop screw. This is an indicator of incompatible parts. Old parts were retrieved and compared to the new. Old parts matched the offenders, not the non-offenders. The difference was attributed to non-uniformity during parts manufacture. Also, since the parts were new, the problems normally associated with flat knuckles could not have contributed to this problem.

(4) The next observations put to use some engineering principles used in action design. Perhaps other things were contributing to this high friction rate, but the jack digging problem could not be ignored. It was time to determine if fault lay with the technician or action engineering. This is where the fun of piano technology begins and is the challenge all technicians face. Recommended reading is Walter Pfeiffer's mind-blowing book, *The Piano Key and Whippen*. A basic assumption had to be established or determined before continuing, and this was very important: the whippen, hammer, shank, and flange must be either an original or duplicate of factory design.

(A) Take a quick look at **Figures #1-#4** just to get the gist of this observation. For now, ignore all the lines and arcs. **Figures #1 and #3** represent the jack/knuckle relationship when the hammer is at rest. **Figures #2 and #4** represent the same relationship at the point where letoff begins. To avoid cluttering the figures with extraneous detail you will have to imagine the location of the drop screw and letoff button.

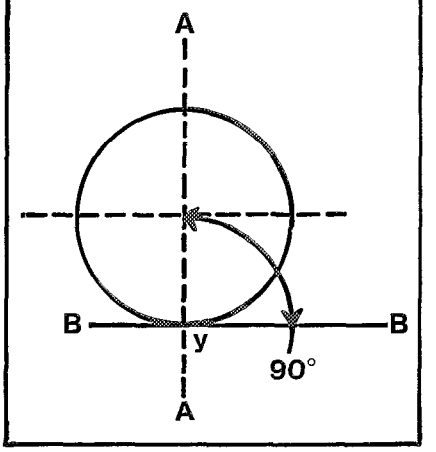
Figures #3 and #4 are similar to **#1 and #2** except the location of the jack center has been shifted to the right, or forward. If the whippen rail were moved forward it would produce the same effect. The result of doing this proves disastrous to action touch and control. It is fortunate many actions have the means in the action brackets to prohibit the indiscriminate movement of the whippen rail. In the action in question there was nothing to inhibit the positioning of the whippen rail outside of slotted holes in the rail where it is fastened to the action bracket.

The purpose of these four figures is to demonstrate how the "digging" effect can be caused even though the normal regulating adjustments have been properly made. **Figures #3 and #4** show why this digging occurs as well as offer an explanation to the problem of flat knuckles.

Let's digress a moment to appreciate what happens during the digging process. A knuckle is supposedly round. There is probably no such thing as a perfectly round knuckle, but it really needs to be round only from the point where it contacts the repetition lever forward to the point there is no more jack contact at letoff. Nevertheless, when engineers designed the action the knuckle was round on the drawing board. When the key is depressed all parts travel in an arc, the center of which is normally a center pin. Smoothness, power and control are strictly dependent upon the relationship and ratios of all these traveling parts. The knuckle is no exception.

Looking specifically at the knuckle, it may be represented as a circle having an undefined center since there is no center pin within the knuckle itself. Whenever there is a circle there is a center somewhere inside. All circles have tangent points on the circumference — or outer edge. Referring to **Figure A**, note the following:

FIGURE A



1. Line **AA** *is a line drawn through the center of the circle.*

2. Line **B-B** *is a line that is drawn on the circumference of the circle and touches the point where line* **A-A** *cuts through the circle. Line* **B-B** *is perpendicular (90°) to line* **A-A**. *This line, drawn to these specifications, is what is referred to as a* tangent line.

3. Note the intersecting point of line **A-A** *and* **B-B** *(point* **'y'**). *This is the* tangent point. *The circumference of the circle from point* **'y'** always *goes away from line* **B-B**. *This may be obvious yet it is noteworthy in so far as the digging process is concerned.*

Keeping **Figure A** in mind, refer now to **Figure #1**. Note there is a line drawn through the "center" of the knuckle (right down the middle of the insert) and extended down through the jack center. When the jack pivots during letoff the top of the jack forms an arc as it escapes. If the jack were permitted to travel all the way around it would be traveling in a circle and the jack centerpin would be the center of it. Because the line drawn through the center of the knuckle also protrudes through the center of the jack, the tangent line of

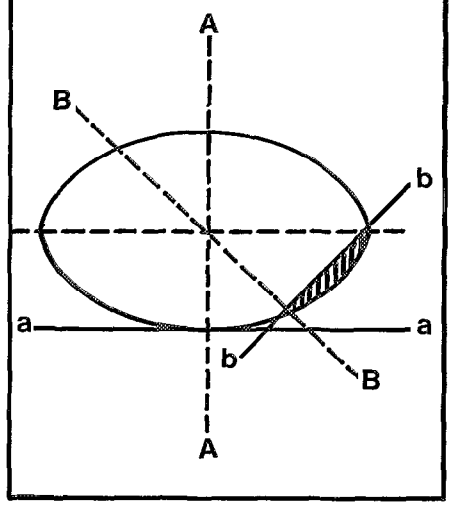
the jack and knuckle are the same (**see line A-A**). When adjusting the jack under the knuckle the technician is, in effect, attempting to establish coincidental tangent points between the jack and knuckle.

Referring to **Figure #2**, the letoff process is about to begin. Note the relationship of the jack/knuckle tangent point has remained unchanged (they still have coincidental tangent lines). The jack will follow the path shown by the arrow. Note this path is moving **away** from tangent line **A-A**. This produces maximum control and smoothness.

Let's observe what happens when the tangent points of the contacting parts do not coincide. In **Figures #3** and **#4**, the whippen rail was moved forward to change the location of the jack center. The jack was aligned under the knuckle similarly to **Figure #1**, but in the process of doing this the line drawn from the jack center through the top of the jack misses the center of the knuckle. Hence, no more coincidental tangency. In **Figure #3** line **A-A** is the tangent line belonging to the knuckle, and line **B-B** belongs to the jack. **Figure #4** shows the relationship at the point where letoff is about to begin. Note the relationships of the two tangent lines remain unchanged just as they did in **Figure #2**. The jack will follow the path of the arrow, but note it will go **above** the knuckle's tangent line **A-A**. Rather than slip away from the knuckle it will dig before it will slip.

The observations noted in **Figures #3 and #4** can be useful to explain the problems caused by flat knuckles which are not unlike those expressed in **Figures #3 and #4. Figure B** is the "artist's rendering of a flat knuckle". It is expressed as an ellipse only to demonstrate a point. The relationship of the jack and knuckle do not change when the key is depressed because the contacting surfaces "roll" against one another until letoff begins. Referring to **Figure B**, assume the jack contacts the knuckle (or ellipse) where line **A-A** protrudes through the bottom half. If letoff were to occur at this point, the flat knuckle would not be a problem since the arc formed by the jack would travel away from the tangent line **a-a**. Unfortunately, the jack "rolls" to a position close to the location where line **B-B** protrudes through the knuckle. Line **b-b** represents the line tangent to line **B-B**. When letoff begins, the jack will attempt to dig through the knuckle shown by the shaded area in **Figure B**. This will cause the knuckle to dig before escaping and the hammer to rise, giving a false point of letoff to the technician. All this will occur even if the jack/knuckle relationship is established similarly to what is shown in **Figure #1**. The only solution I can see (aside parts replacement or attempted reconditioning) is to set the jack farther forward to compensate and minimize digging. Care would be required to avoid premature letoff.

FIGURE B



Back to the problem at hand. If **Figure #3** were presented with the jack center to the **left** of the jack center in **Figure #1**, the digging process would not have occurred since the jack would not have the opportunity to dig into the knuckle during letoff. There would certainly be loss of power and control, and the probability of premature

letoff is greatly increased even though the jack may be properly positioned under the knuckle.

Since the action in question was digging during letoff, I felt safe in assuming **Figures #3 and #4** represented the problem. Also, while looking down from the knuckle, the jack veered forward rather than going in a straight line. The dashed line to the left of the jack in **Figure #3** shows where I felt the jack should have been (which coincides with where it is in **Figure #1**).

The observations and tests to this point supported a growing feeling that the whippen rail was too far forward. This observation in itself gave insufficient information to conclude any such thing. Further engineering observations were required.

(B) If a straight line were drawn between the whippen flange center pin and the balance hole on the bottom of the key, the capstan should contact the whippen heel at the point that would intersect this line (**see Figure #5**). This will produce maximum power and minimize the friction caused by the contacting profiles (capstan and whippen). It should be noted that the key must be half depressed for this measurement. Whichever method one chooses to produce a straight line is irrelevant as long as the point by the balance rail is lined up with the bottom of the key, not the balance rail itself (the difference being the thickness of paper and felt punchings). If the capstan contacts the whippen anywhere above or below this line, the result will be excess friction and loss of power. If the hammer line is improperly established, this measurement will be misleading.

Assuming everything is properly adjusted and the capstan/whippen contact point is above the line, there are indications the whippen rail may be too close to the front. Likewise, if they contact below the line, there are indications the whippen rail is too far back. However, other things can affect the location of the contacting points which have nothing to do with the position of the whippen rail:

1. The location of the capstan, in the key may have been altered forward or back.
2. A new set of hammers can cause the capstan to contact the whippen below the line if they are larger than the originals; or above the line if they are smaller than the originals.

These things must be carefully considered before drawing any conclusions about the position of the whippen rail. In short, this measurement is only an **indicator**, not a pointer to a problem.

On the piano in question, the capstan contacted the whippen well above this line (with new hammers). However, indentations on the whippen heel cloth could contribute to this, but the whippen cloth itself was well above the line. If the whippen rail were truly positioned too far forward, not only would the capstan contact the whippen above the line, but it would also move the jack center forward as depicted in **Figure #3**. The observations and findings of observations A and B coincided.

(C) The engineering of an action requires a thorough knowledge of the physics of mechanics (or leverages), an in-depth knowledge of forces, an expertise in trigonometry and geometry, and a variety of other skills. With all the various arcs and angles, the engineers did one thing to help the technician in maintaining these relationships: they provided a reference dimension which is the distance between the whippen flange center pin and the hammer flange center pin. It is precisely measured from the center of the centers (**see Figure #6**). Unfortunately, this information is not always available to the technician but is generally in the neighborhood of 4½ inches. In the action in question, the dimension measured at 4-24/64". This was good news indeed, since it confirmed the conclusions derived in the above observations.

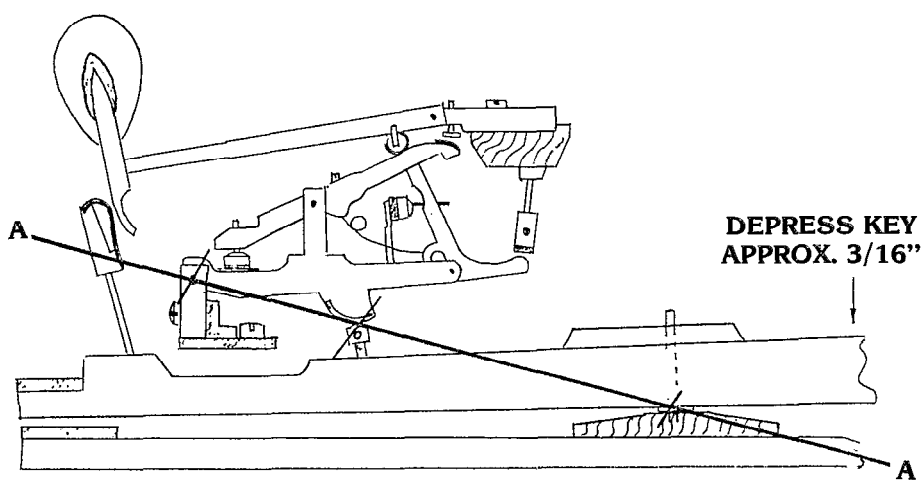


FIGURE 5
KEY DEPRESSED HALF WAY

THE EXPERIMENTS

Although the factory was able to supply the distance between centers (**Figure #6**), I chose to use it as an after-the-fact reference because I wanted to gain a feel for this problem without having to rely on the factory; a similar problem may very well arise again in the future and that piano may not have a factory to contact. Until I contacted the factory I was unsure of the validity of my conclusions. The experiments seemed almost anti-climactic; they involved moving the whippen rail to a point that would meet the engineering criteria. Previously mentioned was the indentations in the whippen heel cloth caused by the capstan. Now this would cause a problem. Moving the whippen rail back resulted in the capstan not being seated in the indentations. The cloth was filed down similarly to a hammer. There was plenty of remaining felt. It was too early to determine if replacement of all cloth was required.

Moving the whippen rail required continual adjustment of the test key since altering its position back changed the location and placement of the jack, and required subsequent adjustment of the hammer height, letoff, drop and key dip. It is rather difficult to set the whippen rail so the jack will have a coincidental tangent point when being adjusted under the knuckle, but a general rule of thumb exists to help in this regard: if the hammer shank is at right angles to the jack you would be fairly close; any slight difference will have a negligible effect. After much adjustment and checking, I was able to establish a whippen rail position that would satisfy the aforementioned engineering conditions. When measuring the distance between centers (**Figure #6**), I hit the factory specification right on the money!

The key felt like a key should. Smoothness was established throughout letoff. The same experiment was conducted on the lower tenor. Touch weight was remeasured — about 52 grams — and that was somewhat less than the 65 grams touch pressure that was originally noted. Moving the whippen rail back increased the mechanical advantage resulting in the lighter touch; it permitted the jack to escape without digging; and it reduced friction on all centers and contacting parts. However, not everything was rosy:

(1) A decision had to be made about replacing the whippen heel cloth. Samples of new cloth were matched to a heel whose felt had not been filed. The existing cloth was too small for thick cloth and too large for medium. Since the capstan now intersected the straight line depicted in **Figure #5**, a decision was made to recondition all 88 whippens, retaining the existing cloth.

(2) The position where the drop screw contacted the repetition level changed with the repositioning of the whippen rail. One-third of the drop screw was not making contact. The whole purpose of the drop screw is to terminate the upward movement of the repetition lever. This was still happening. I decided to overlook the problem.

(3) Similar alignment problems occurred between the jack tender and letoff button. In this action the letoff buttons were of a dowel type that screwed into a piece of wood that was glued to the bottom of the hammer rail. Fearful of damaging the piece during removal, each dowel screw was carefully bent into alignment. Care had to be exercised to assure old fatigued parts would not shear off.

An interesting point from all this is that there is sometimes a temptation to use the repetition lever/drop screw and jack tender/letoff button positions as the means to determine if the whippen rail is in the proper position. In this piano it obviously became a false reading.

THE OUTCOME

The action was regulated twice to re-establish consistency once the whippen rail was securely fastened in its new position. The after touch was set at 25 thousandths for white keys and 18 thousandths for blacks. This is what felt best. There was increased repetition, power, and control during soft blows.

THE EPILOG

No story is complete without its inborn philosophies or lessons. The big question concerning this problem is "who did it?". The whippen rail was very tightly secured to the action brackets as noted when the action was first disassembled. Also, the dimension between centers was carefully noted before disassembly. Nevertheless, it remained my responsibility to establish the proper action relationships. Whippen rails usually require tightening just as other action parts. By tightening the rail we may move it out of adjustment. Then, indeed, the action

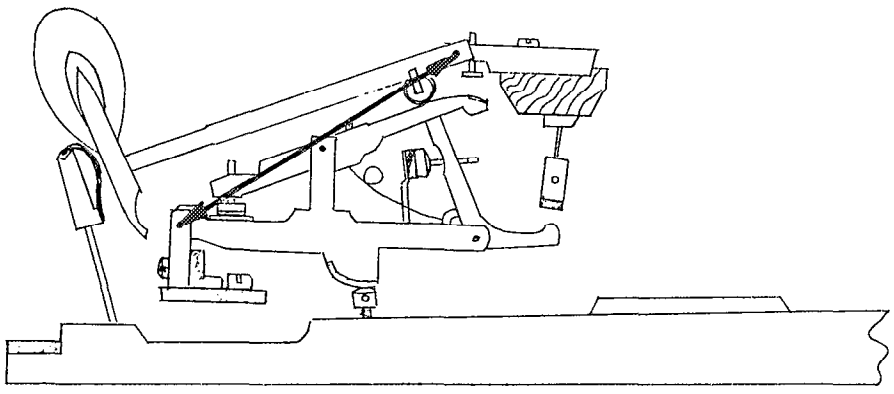


FIGURE 6

mechanics are altered, but by our doing. It behooves us as technicians to be sure we do not do something to give us the later excuse that fault lay with the instrument. The difference in the touch control is amazing when a component is moved such a short distance; in this case, only 3/64 inch.

The observations and experiments described above can take as long as anyone wants and is predicated on the interest and curiosity of the technician. Hopefully, through this explanation, others will take greater interest in this facet of piano technology and apply these theories before making any adjustments. In so doing this, the technician will at least become more familiar with the action and can make better judgments on the various compromises normally required during the regulating process. □

REBUTTAL:

Owen Jorgensen

Dr. Albert E. Sanderson wrote a review of the book "*Intervals, Scales and Temperaments*" by Lloyd and Boyle which was published on page 32 of the February 1980 issue of The Journal. It was Dr. Sanderson's privilege and right as an author to express his opinions concerning the qualities that offended him, but why didn't he balance this with a few words concerning the virtues of the book? Something must be good about the book or it would not be found in most libraries, and it would not have been reprinted in the present new edition.

Dr. Sanderson wrote, "I'm beginning to think that some of these anti-equal temperament authors have never heard the gorgeous sound of a perfectly tuned concert grand, slightly stretched octaves and all, in equal temperament." He also wrote, "The maximum resonance and reinforcement among the higher partials that make the instrument seem to shimmer and sparkle is possible only when the instrument is very carefully tuned in equal temperament." These two statements by Dr. Sanderson are the most ridiculous collections of words that ever appeared in print. It makes absolutely no difference what historical temperament one chooses to tune on a piano, the amount of octave stretch would be exactly the same as if the piano were tuned in equal temperament.

It is easily shown that Friedrich Wilhelm Marpurg's Temperament 1 with its identical and proportional beat speeds, which was published in 1776, has greater reinforcement among the higher partials than is possible in equal temperament. It is even easier to demonstrate that the meantone temperaments which contain reductions of up to 72% of the total amounts of beat speeds within their strict 12-degree scale limits, have much greater partial reinforcements than that of equal temperament. The ultimate, maximum "reinforcement among the higher partials" is possible only in complete just intonation (that is, within the 50% range of usable harmony on a keyboard instrument).

Of course, the restrictions of just intonation are impractical, but one can still seek "the maximum resonance and reinforcement among the higher partials" that is practical if he compromises and performs the keyboard music of a particular period in the style of temperament popular during that period. In other words, Bach sounds no worse in equal temperament than does Debussy in Werckmeister's temperament, but no one can deny that Bach sounds more resonant in Werkmeister while Debussy sounds more appropriate in the modern equal temperament. From Dr. Sanderson's review, it seems evident that he has never heard Mozart performed on a concert grand perfectly tuned with "slightly stretched octaves and all" in a Werkmeister - Kirnberger-Young style of classic 18th century temperament.

Dr. Sanderson wrote, "Certainly no temperament can be tuned with precision on unstable instruments such as these in one quarter of an hour." The latter statement is false. In Michigan where seasonal humidity changes are great, I still have been able to tune the typical Flemish style harpsichords with two sets of strings with perfect precision (that is, setting the temperament over all the four octaves plus using all the testing intervals) within 15 minutes. Other considerations are that 18th century harpsichords were constructed quite well, and they were kept in relatively unheated quarters by our standards. Also in Europe, the humidity and seasonal temperature problems are much less than in America. Therefore, Bach's instruments were probably quite stable.

The range of Bach's music in both volumes of his *"Well Tempered Clavier"* is only a little over four octaves. Considering that Bach probably taught, performed and composed on his instruments several hours a day, and also that Bach probably touched up or tuned his instruments once or twice a week in an environment

with greatly reduced humidity changes, it is quite conceivable that he performed excellent tuning and temperament work within his four octaves in 15 minutes, even if there were four sets of strings. Note also that tuning hammer and pin setting technique is far easier on a harpsichord and that the harmonics on a good harpsichord are extremely easy to hear. Many of the historical temperaments are easier to set than equal temperament. A lack of this knowledge is probably the basis for Dr. Sanderson's unfortunate statement that Boyle knows little "about the actual tuning of keyboard instruments."

In the final paragraph of the review, Dr. Sanderson wrote, "the reader is treated as a complete idiot.... Do you suppose this could have been written for the serious first grade student?" My responsibilities at Michigan State University consist of teaching acoustics and piano technology to music majors, some of whom are working towards a bachelor of music in piano technology degree. In these studies, a basic knowledge of mathematics is necessary, but among musicians this ability is usually below the ninth grade level. The average college musician can't add, subtract, divide or multiply simple numbers without using a calculator. Yes, perhaps in Dr. Sanderson's terminology, these musicians are probably idiots (mathematically). Herein lies the value of the Lloyd-Boyle book. Where else can these musicians find a treatise written in the language of musicians that bridges the gap between musical instincts and science? It is the only book which explains to musicians what they did in the past acoustically and what they are trying to do now. Studying the concepts and philosophies of this book could increase the common understanding between musicians and piano technicians. □

YOUR BOARD in ACTION

A SPECIAL REPORT by Walter Kerber, Southeast Regional Vice President

AID FOR THE HUNGRY

We hear it on the radio, we see it on TV, we read about it in magazines, newspapers, church bulletins. WE MUST SHARE OUR FOOD WITH THE HUNGRY OF THE WORLD. Look at the world, the country, your state, city, even your neighborhood. All the people in your neighborhood might be eating, yet there are those that are not nourished. They are hungry for good body-building foods and they don't realize it.

There is hunger in the piano profession, too. Technicians who have been working for years and yet do not comprehend their lack of knowledge. This is a hunger of the mind, a hidden hunger sometimes difficult to overcome. Here is where you and I can give aid to this unique group of people by sharing with them the opportunity to join the Piano Technicians Guild. What better way can we serve people than by passing along the knowledge we received from another before us.

Talk to a non-Guild member in your community today. Present him or her with an application for membership. That person might say no five times before understanding a hunger for more knowledge. But after becoming a member, you will be thanked many times over for caring; just as you did for the person who asked you to join. □

VACUUM LINE

Raye McCall

During the time I have been writing this column, I have made the request several times for you to send me your questions. In this way the information presented here can hopefully be more relevant. In the last few weeks there have been several letters arrive which contain questions and contributions. Those of you who have put forth the effort to write, please accept my gratitude.

The first of these comes from Tom Harr in Bainbridge, Ohio. He asks a question about the mandolin rail in the Model D Kimball player. "*When this rail is not in correct alignment to the strings, how does one go about making the correction?*" There are four screws (two at each end) which hold the top tray in place. These screws pass through slots in the top tray and screw into brackets which are attached to the inside ends of the case. The first suggestion would be to loosen all four screws which will allow the top tray to be moved to the right or left which should be sufficient to afford the needed correction. If, however, this amount of movement is not adequate, the next step would be to alter the mounting location of the chains on which the rail is suspended. There are two ball chains attached to the rail by means of rivets. These rivets could be drilled out and the holes in the rail elongated to the shape of the slots. Then the chains could be re-secured to the rail by means of very small slots. If someone has encountered a situation in which this would not be the correct procedure, let us hear from you.

Tom has a suggestion which is good advice for anyone servicing a Wurlitzer electric player: "*First raise the lid and insert your lid prop. Next, remove the two sliding doors and lay them aside. Then remove the upper front panel. If you do not know about this, it is somewhat embarrassing to have two loose doors bouncing around when you take the front panel loose. When reassembling these trimmings, be sure that the upper front panel is back on all of its pins otherwise the sliding doors will gouge horrible scratches in the finish.*" These are very worthwhile words, especially if you are not familiar with the Wurlitzer electric. Perhaps a principle should be restated here because it is important enough that it bears repetition. When you are confronted with a player with which you are not familiar, you should do one of three things:

1. *Leave it alone and refer it to someone who knows what he or she is doing.*
2. *Before you take anything apart, take the time to study out the most logical procedure.*
3. *Avail yourself of every opportunity to obtain information from any number of several resources at your disposal.*

I have been called in on several occasions where other technicians have been there ahead of me, and when I arrived the player still had problems which had not been corrected. If you leave without having done the job as it should be done, you probably will not be allowed the privilege of seeing that client again. In this business I believe the name of the game is repeat business. Know what you are doing, take the time to do the job right, and do NOT be afraid to charge for your services. If the first two are as they should be, the clients will be happy to pay the bill, knowing that now they can get some enjoyment from their piano — the reason they bought it in the first place!

Gerald Foye of Lemon Grove, California, responds to the servicing comments I wrote about the Kimball piano. Gerald writes, "*I find it more convenient to pull the mechanism (top tray) forward since there are now no vacuum lines in the way. Reaching over the top (to tune) does not present a problem.*" This would apply to Kimball Models A, B, and D. There is one precaution to be used in doing this. As he also pointed out in his letter, you must place a pad on the underside of each end of the tray to avoid scratching the case.

I have just recently encountered the newest model Kimball player and think it appropriate to make some comments about it. This new one they call their Model F. There

are several changes you should be apprised of. Upon walking up to the piano, the first change you will note is that the controls have been moved. They were formerly in the left-hand cheek block. In the Model F they are located at the left-hand end of the roll box. The only way for you to detect that this is a player piano without opening anything is by the split lid. To tune this unit, the top tray swivels forward to a stop instead of being lifted and set on the pinblock as before. This makes it necessary to stand while tuning because if you sit, you cannot see the tuning pins. Play and reroll is accomplished through the use of a reversing DC motor, a reduction gear box and a very simple transmission.

The Kimball Model F valves are very serviceable. They are single valves in a transparent plastic encasement. In the event of a malfunction the valve may easily be removed from the stack, taken all apart and cleaned, reassembled and immediately put back into service. The valves sit on a rubber gasket on the stack and are held in place by a small bar and nuts. Each bar spans three valves and has two nuts on top of it. No glue has been used and should it be necessary to remove a valve for servicing, DO NOT use any glue when replacing it. You will notice a tiny hole in the pouch. This is the bleed, so do not think the leather is defective.

Upon removing the kick panel, several changes will become obvious. At the left hand end of the piano you will see a sustain pneumatic. This is new for Kimball and, like the Aeolian unit, this one is "on" all the time. Therefore, any time the sustain hole in the tracker bar is uncovered, the dampers are lifted. Almost directly above the sustain pneumatic is the pressure regulator assembly. The playing volume of the instrument is controlled here. The signal comes from the loud-soft knob in the control box.

The next change which will be obvious is that the rectangular-shaped, vertical-mounted metal box is gone. In its place is a small aluminum box on top of which you will see a transformer and a large transistor. This box is mounted to the bottom board of the piano and is called the power supply chassis. There are two fuses (1 amp and 5 amp) located on the right-hand end of it. Along the front side is a hole for a screwdriver adjustment to calibrate the tempo control on the control panel. There are more electronics in this new unit than there have been in the past.

Kimball has a new service manual which deals exclusively with their Model F player. It is well written and readily available. Some of the communications which I have received have contained questions about pumps. The next article will be in regards to the different varieties of pumps and their associated parts. What do you do when certain parts must be replaced which are no longer available? I do not claim to have all the answers, but perhaps the discussion on pumps will be of interest and help to you. ☐

Piano Technicians Guild

July 14-18, 1980
23rd Annual Convention and Technical Institute

Philadelphia, Pennsylvania

WHERE IT ALL BEGAN!

Attending a Piano Technician Guild Annual Convention isn't all classwork; you can relax with your friends (old and new) and enjoy the many activities planned for you.

EXHIBITS:

This year, arrangements have been made for over 30 exhibits by many of the industry's top companies. It will be your opportunity to discuss ideas, problems and possible solutions with the very people most likely to know — the service representatives and company officers of piano manufacturers, supply companies, importers, trade schools, electronic tuning equipment firms and others. This year the exhibit will be located in a much more convenient area off the main lobby of the Ben Franklin Hotel.

BANQUET:

Each year the banquet serves as the convention's social highlight. The entertainment planned promises you a wonderful evening! You will be pleased to know that the banquet is being returned to our usual Wednesday evening and will be held in the glamorous Georgian designed "Crystal Ballroom". The spaciousness affords us adequate room for the reception and banquet, which will allow us to have the largest banquet the Guild has ever held.

SPECIAL FEATURES:

Plans have been finalized to add a special feature, "THE BLOCK PARTY" to be held in the Crystal Ballroom, Thursday evening. This event will create the atmosphere of a street carnival complete with booths, games, entertainment, clowns, street musicians, etc.

In addition, there will be a "Flea Market", allowing Technicians and Auxiliary to display their skills and unique items for sale. More details to follow regarding this exciting event. Note: This evening will be kicked off by an enticing "hors d'oeuvre" party to be held in the same Ballroom.

CLOSING LUNCHEON:

At the closing luncheon you'll bid farewell to retiring Guild officers and welcome their replacements, share in award presentations and say goodbye to friends for another year. This is a "must-attend" event that's guaranteed to make you glad you came to "WHERE IT ALL BEGAN!"

Be an "Early Bird" by completing and mailing to the Convention Registration Form to the Home Office.

BENJAMIN FRANKLIN HOTEL

"Blessed is he that expects nothing for he shall never be disappointed." — Benjamin Franklin, 1737

Conveniently centered in the heart of downtown Philadelphia activity, the Benjamin Franklin Hotel is but a short walk from our country's most revered historic shrines: Independence Hall, Carpenters' Hall, Christ Church, Betsy Ross House, Old Custom House, First Bank of the U.S., Elfreth's Alley, and many other reminders of our revolutionary past, including renowned Society Hill and its restored Colonial homes.

BE A WINNER!

"A penny saved is a penny earned." — Benjamin Franklin, 1740.

Register early (by May 15th) and be a winner! There will be two free dinners at the Benjamin Franklin Hotel awarded during the Opening Assembly, $100 awarded at the Closing Luncheon, and four nights lodging given at the Wednesday Evening Banquet. (Winner of the free lodging must be staying at the Benjamin Franklin and must be present at the Wednesday Evening Banquet.) One drawing ticket will be given with your deposit when you register early (May 15th).

REGISTRATION CANCELLATION POLICY

"Well done is better than well said." — Benjamin Franklin, 1738.

Full registration will be refunded if cancellation is received postmarked no later than June 10th. After this date, a 30 percent cancellation fee will apply to all refunds made prior to July 10, 1980. There will be no refund made on any registration cancelled on or after July 10.

Nonmember technicians may use $30 of the registration fee for membership application fee during the convention. It may not be used as dues. Nonmember spouses may use $6 of the registration fee as Auxiliary dues at the convention.

1980 Technical Institute Update

Centre Square Plaza, an exciting new complex of towering office buildings in downtown Philadelphia. Facing the plaza and adjacent to City Hall is the recently completed Dilworth Plaza. In front of the complex is sculptor Claes Oldenburg's "Clothespin," a new four-story high design.

The veteran Guild convention visitor surely knows that many times classes have interfered with each other due to the fact that meeting rooms are partitioned off with room dividers. Almost all Institute Directors have received letters at one time or another complaining about the condition, and requesting a change for the better. Unfortunately, this is not always possible.

Consider that Guild conventions are unique. Very few organizations need as many classrooms as we do and, on top of that, want them to be soundproof. Naturally we try to schedule the classes so that there is the least interference possible, but it is just impossible to make it ideal.

I am happy to inform you that at the Ben Franklin we will have very few problems in that respect. True, it isn't possible to have it all perfect, but I believe that "adjacent classroom noise" will be minimized.

And speaking about hotels, the Ben Franklin has a real lobby. It is one of the few hotels left that is individually owned and I have had all the cooperation from them I need.

Now for some more information on the institute.

In recent years, our technical institutes have become more and more sophisticated. No doubt if someone visited in 1950 and is coming back in 1980, he or she is in for quite a surprise. Standards have gone up, and I believe we can safely state that the Guild is greatly responsible for this upgrading.

This year I have tried to return to "basic" classes as much as possible, but at the same time, an effort has been made to maintain the high standards the Guild has developed. The results should be an institute with high standards of quality with a rather basic class structure. As you have probably noticed, there are quite a few repetitions. These are either very much "basic bread and butter classes," or the demand has been so great that the technical institute would be incomplete without them.

I have also tried to introduce some variety in the way of instructors. For instance, our "*Tuning Techniques*" class will be taught this time by the famous "man in the jumpsuit." As you know, Ben McKlveen was Institute Director two years ago in Cincinnati and did the tuning concert in Minneapolis last year. This time Ben will cover the various ways of using the tuning tools as well as discuss the various tuning techniques. If you ever have questions as to whether the bass should be tuned before the treble, or vice versa, and why, Ben will tell you his theory. He will talk about the "jerking" way of tuning as well as what "bending the pin" means. Aural and visual tuners alike will benefit from Ben McKlveen's class.

Piano tuner-technicians should know as much as possible about their craft - even the dangers involved. Walter Pearson will cover this most important topic in his class on "*Dangers of Piano Tuning.*"

One of the most popular instruments from Bach to super-modern music is the harpsichord. Bill Garlick will present a unique and most interesting class on "*Servicing the Harpsichord.*" Have your harpsichord questions ready.

More class information and some interesting surprises in future issues. Until next month,

—Ernie Juhn, Institute Director

The famous Mummers String Band has become a Philadelphia tradition via a custom of medieval times where plays recalling the victory of St. George over the Dragon or the famous battle between God and Lucifer were reinacted. The custom brought to this country by early immigrants also included the practice of dressing in costumes of clowns, women or grotesque figures and parading in the streets after the plays had ended.

In 1902 the Mummers first organized and began to parade down Broad Street in Philadelphia, creating a new tradition that celebrates each New Year and is known nationally. Each year the three divisions — comic, string band and fancy dress — compete for prizes as they delight hundreds of thousands who line the parade route or watch from their television sets at home.

1980 Technical Institute

New Classes

Sharpening the Tools of the Trade — a "hands-on" class with Priscilla and Joel Rappaport

Aftertouch in Grand and Vertical Pianos – with the "Yamaha Team" of LaRoy Edwards, Jack Caskey and Kenzo Utsunomiya

Grand Dampers — a "hands-on" class with Cliff Geers and Willard Sims

Tuning Techniques — with Ben McKlveen

Rebushing Workshop — a "hands-on" class with Evan Giller

Lubricating — When, Where and How — with John Ford

Grand Regulation — a "hands-on" class with models and tools presented by Roger Weisensteiner and his team

Grand Hammer Installation — another "hands-on" class with Willard Snyder, Homer Wagman and David Snyder

Selling the Job and Yourself — with Robert Wagner

Electronic Instrument Overview — with Kathryn Nickerson

Special Tools for Piano Technicians — a class oriented toward the visually impaired, presented by Paul and Jack Sprinkle

Piano Hammer Construction and Preparation — presented by Bob Johansen and Ray Negron

Inharmonicity — What It Is and How to Deal With It — presented by Dr. Albert Sanderson

Hazards of Piano Tuning — a lecture class presented by Walter Pearson

Servicing Harpsichords — with Bill Garlick

Repeat Classes

The Behavior of Strings — after a long absence at conventions, with Jim Hayes

Servicing Teflon Bushings — a "hands-on" class with Fred Drasche

Aural and Visual Tuning — with George Defebaugh and Jim Coleman

Voicing and Tone Regulating — with Norman Neblett

Vertical Servicing and Regulation — presented by Bob Hill, Bud Corey, Lou Herwig, Cliff Andersen and Larry Talbot

The Customer and You — income tax tips with Dick Flegle

Advanced Player Piano Repair and Servicing — with Norman Heischober

Servicing the Aeolian Player Piano — presented by Bob Snyder

Servicing the Rhodes Piano — with Harold Rhodes

Humidity Control Installation — presented by Allen Foote and Wendell Eaton

Special Classes

Complete Grand Rebuilding — this special class will be presented exclusively by Connecticut Chapter members Wally Brooks, Scott Welton, Chris Robinson and Frank Stopa

Pinblock Installation — with Jack Krefting, one day, six periods, repeated three times

Private Tutoring

There will be private aural and visual tutoring classes with the finest instructors possible— Newton Hunt, Carl Wicksell, Bud Willis, George Morgan and others.

MEMBER CALENDAR (Preliminary)

Saturday — July 12, 1980
1:30 pm- 6:00 pm Registration Open

Sunday — July 13, 1980
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 14, 1980
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 15, 1980
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
Free Evening

Wednesday — July 16, 1980
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

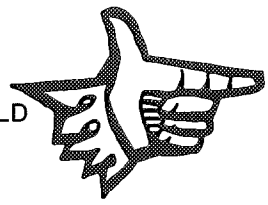
Thursday — July 17, 1980
7:30 am-12:00 n Exhibits (Drawing)
7:30 am- Membership Services
8:00 am- Registration All Day at Office
8:30 am-12:00 n Institute Classes in Session
11:45 am- 1:30 pm Membership Services Open
1:00 pm- 6:00 pm Exhibits (Drawing)
1:30 pm- 5:00 pm Institute Classes in Session
7:00 pm- 9:00 pm Block Party — Flea Market

Friday — July 18, 1980
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

SPOUSES CALENDAR

The spouses calendar will be similar to 1979 schedule with some adjustments caused by the Banquet being returned to Wednesday evening. Details later.

FILL OUT AND MAIL TO:
PIANO TECHNICIANS GUILD
113 Dexter Avenue North
Seattle, Washington 98109



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 Benjamin Franklin

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 June 1 ..... ☐ $ 80.00
Postmarked after June 1 ..... ☐ $100.00

Non-Guild Members

Postmarked by June 1 ..... ☐ $135.00
Postmarked after June 1 ..... ☐ $155.00

Private Tuning Tutoring (1½ Hours) ☐ $ 25.00
☐ Aural ☐ Visual

Grand Rebuilding ..... ☐ $ 25.00

Installing Grand Pin Blocks (1 Day) ☐ $ 5.00

SPOUSES AND CHILDREN

Auxiliary Member ..... ☐ $ 30.00
Non-Auxiliary Member ..... ☐ $ 40.00
Children (15 and under) ..... ☐ $ 5.00

OPTIONAL FUNCTIONS

Banquet ..... ☐ $ 17.50
Closing Luncheon ..... ☐ $ 12.50

TOTAL ENCLOSED $_____

Tickets for optional functions must be bought no later than 48 hours before the event.

NOTE: Spouses of Piano Technician 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

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 Benjamin Franklin

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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OPTIONAL FUNCTIONS

Banquet ..... ☐ $ 17.50
Closing Luncheon ..... ☐ $ 12.50

TOTAL ENCLOSED $_____

DO NOT WRITE HERE

Date Rec. _____ Priority No. _____

Amt. Pd. _____
Cash _____ Check _____ Money Order _____

Chapter No. _____ Member No. _____

Classification _____

FILL OUT AND MAIL TO:
PIANO TECHNICIANS GUILD
113 Dexter Avenue North
Seattle, Washington 98109

THE AUXILIARY EXCHANGE

Luellyn Preuitt

President Jewell writes: "This month I have been reading and researching the early musical interests of our country and especially our 1980 convention city of Philadelphia. What I have learned is very interesting and much more than can be included in this column.

"Music played an important part in the forming of our country. The first immigrants loved to sing their psalms and play the compositions of popular celebrated composers such as Handel, Haydn, Carl Phillip Bach and Johann Christian Bach. There were also entertainments such as reels and jigs. Many immigrants brought their harpsichords, organs, violins, etc., with them from their homelands.

"Because his compositions were published (engraved) and preserved, Mr. Francis Hopkinson has been given the distinction of being America's first native-born composer. He was born in Philadelphia, September 21, 1737. At an early age, he wrote poetry and studied the harpsichord. While attending the College of Phialdelphia, he wrote and composed works for drama productions. After graduation he was admitted to the bar and became a prominent figure in the political, religious, educational and artistic life of his city. He served as a delegate to the Continental Congress, was a signer of the Declaration of Independence, and was appointed Judge of the Admiralty from Pennsylvania. With his poetry and humor, he helped make decisions at the Constitutional Congress. Hopkinson composed several songs and dedicated them to his good friends, George Washington and Thomas Jefferson. In 1759 he commenced copying a number of compositions by outstanding European composers, and included six of his own compositions in the volume.

"Another outstanding musical figure of the era was the person after whom our host hotel was named, Ben Franklin. We know of many other of his accomplishments, but few know of his musical talent. He played several instruments: the guitar, harp, violin, and carried with him while in Europe, a 'Sticcodo-Pastorale'. This was an instrument similar to a dulcimer, but instead of having wooden rods, it used glass rods with a three-octave range. He carried the Sticcodo in a box similar to a dispatch case.

"Among his greatest accomplishments in the musical world was his improvement of the musical glasses. These were well known, having been used in the Persian and Arab countries during the fourteenth century, later traveling westward to Europe. The glasses were stemmed and filled with various liquids such as brandy, wine, water, saltwater or oil, and played by moistening the fingers and rubbing the edge of the glass. Mr. Franklin mounted graduated glass bowls, without the stems, to a vertical rod which was rotated by a foot pedal and moistened with a wet sponge. This enabled the performer to sit comfortably at the instrument. Franklin named the instrument the 'Glassychord.' Later it was changed to 'Armonica' and even later, known as the 'glass harmonica.' It was popular both as a domestic and concert instrument. Vocal and instrumental soloists found it very useful as an accompanying instrument. Its tone was described as 'unearthly.' Another use for it was found by Franz Anton Mesmer, an exponent of hypnotism. He found it to be useful in placing his patients in a receptive frame of mind. In fact, it was said that the physiological effect of its tones could unnerve the strongest of persons — except Ben Franklin! In the collection of Fine Arts Museum in Washington, D.C., there is a model of the Glass-Harmonica. I have a photocopy and will bring it to Philadelphia this summer.

"Another gift that Mr. Franklin possessed was his ability to understand and analyze musical compositions, thus making him an outstanding music critic.

"Speaking of this summer, don't forget to include in your summer wardrobe cool, comfortable clothing, and especially walking shoes. There will be lots of things to see and do. Also, how are your ideas coming along for President Russell's Flea Market?

"As a followup to Martha Riley's fine writing in the March Journal, I hope we have several husbands or male friends join our activities this year. Thank you, Martha, for a superb article. In my planning I have tried to schedule something of interest to most everyone — be ye 'younge, olde, boye, girle, dignifyed or undignifyed' "—Jewell

Julie Berry, First Vice President and Membership Chairman, sends news of two new additions to the Auxiliary. We welcome **Barbara C. Mahone** (Charles), 6247 Creetown Drive, Jacksonville, FL 32216, Northeast Florida Chapter, and **Kathy McKinney** (Kenneth), 2573 W. Rowland Avenue, Anaheim, CA

92804. Kathy's husband Kenneth is a member of the Orange County chapter of the Guild. We hope to see both of these ladies in Philadelphia and give our warm welcome in person!

From **RoseZena Siewert** and **Pat Coleman** comes this fine report of the Arizona State Conference — "The Auxiliary of the Piano Technicians Guild of Phoenix, Arizona, met on January 11, 1980, in conjunction with the Arizona State Seminar. It was indeed thrilling to have 11 Auxiliary members attend! They arrived from Tempe, Tucson, Sun City, Scottsdale, Yuma and Claypool, Arizona, Salt Lake City, Utah, and Van Nuys and Claremont, California.

"The first morning, we met at 8:00 A.M. for a continental breakfast. After a short welcoming speech by Arizona Chapter Auxiliary President Patricia Coleman, we enjoyed WRVP Dan Evan's showing of slides taken during the 1979 tour of European piano factories.

"At noon we joined with the Guild members for a buffet luncheon at the Howard Johnson Motor Lodge in Tempe. To complete the day, we enjoyed a tour of the Pueblo Grand Indian Ruins in Phoenix, and the museum located there.

"On the second morning, we again met for a continental breakfast and held a short business meeting. Guild Vice President Sid Stone presented a most interesting and informative program. He showed the film, 'Vertical Action Renovation Procedure', produced by Ray Garner, a professional film maker. We were amazed at how much our ladies knew about the piano action and repairs thereof. One of our members is planning to terminate her job and join her husband in piano service. She was truly encouraged after hearing Sid Stone talk on 'How to Make a Million Dollars — or How to Help Your Husband To Be A Better Piano Technician'.

"Saturday afternoon, we toured Heard Museum, where we saw relics of the native Indians of Arizona. By now we were all good friends, and wrapped up the afternoon with a stop at Swenson's Ice Cream Parlor. We decided these were two days well spent, and are hoping more will join us next year. We'll be looking forward to seeing everyone again."

Thanks to RoseZena and Patricia for this article. How about it, Auxiliary members, don't you have a special program you could write about and send for all to enjoy?

It's been some time since we've heard from **Ginny Russell** in this column. She has written us one of her cheery little notes for this month, so let's listen — "Togetherness and communication are two important qualities of our Auxiliary. We all understand communication. We must make our thoughts, ideas, support, etc., known to our officers in order to grow and be a strong asset to our Guild. Togetherness is also important for our growth and strength. Due to the fact that we are spread over so many, many miles and areas, I believe that we should have an annual project to promote 'Togetherness in PTGA'.

"In past years, we have had a cookbook, and made a nice profit ... an auction, where everyone had the opportunity to display their talents ... a bazaar, another outlet for our energies ... our Idea Book, which gave everyone a chance to really donate their all!!

"There are many ideas for projects. Such things as: jig saw puzzles, stationery sale, white elephant sale at conventions, craft ideas for sale, etc. (Oh, I almost forgot. Jack Krefting had a wonderful idea for a little 'bird' Christmas tree ornament we could make. Thanks, Jack.) The list goes on and on. Through these projects we could gain financially while we enjoy the fun and excitement of it all.

"This year we are having a Flea Market so that every chapter can see a financial gain for themselves. Have you completed your project for the Philadelphia Flea Market? Wait until you see what the Cleveland Auxiliary is making! — You'll love it!

"Our Auxiliary supports the Guild. You support our Auxiliary. What a team! Bring your ideas, thoughts, support and togetherness to Philadelphia. See you there — Ginny"

IT'S THAT TIME OF YEAR

Time to begin to think about paying Auxiliary dues, that is. **Treasurer Dessie Cheatham** has sent a resume of activities during the past year, which are here summarized. (This report actually covers July, 1979, to January, 1980.) She took $50 cash to the 1979 convention to make change for all of our dues monies, cookbook and idea book payments. She paid officers' expenses (read your bylaws for amounts each officer receives). She deposited monies in July, August and September of $45 dues and $980.59 book sales. In September, October, November and December she deposited $178 in dues and sales. She received $90 from Home Office for registration of Auxiliary members taken by them at convention. She bought stamps. She had statements ready to mail in October to all who had not paid dues.

Then she says, "Seems October, November and some of December I wasn't much with it due to circumstances I could not help. But again, my sincere thanks for all the beautiful cards, letters, phone calls and flowers, which really did help me through a most difficult time. To know I had so many wonderful and true friends who were thinking of me and offering their prayers for me did so much to help comfort me.

"I have deposited all money received for dues. I will try to make up for some of my lost time and work. We have had 16 new members. Total savings as of January, $1,885.64. Total checking account, $1,494.98. Sincerely, Dessie Cheatham, Treasurer, PTGA."

If any Auxiliary member has given of her life and energy to the Auxiliary, it is truly Dessie Cheatham.

ONE MORE TIME
HAVE YOU SEEN
THE AUXILIARY BANNER?

And so — on to Philadelphia, "Where It All Began" — July 14-18, 1980. □

Calculating Technician

Part VIII

Dave Roberts

Last month, we indicated that this series of articles would begin concentrating on formulas for use in piano scale evaluation and modification. We have already presented formulas for calculating tension in piano strings (December 1979 and February 1980) and also a formula for calculating the approximate safe upper limit for string tension (March 1980). It was pointed out, however, that tension considerations alone are insufficient to evaluate or modify a piano scale or to design a sizable number of missing strings.

If a piano is missing a few strings, you may be able to determine what they were from the hitch-pin layout and measurements of adjacent wire sizes. If this is not enough, there is a 'rule of thumb' attributed to Wm. Braid White for treble scaling in pianos of basically modern design. This rule states that treble unisons should start with 13 or 13½ music gage at C88 and increase by half-sizes every five unisons; at the same time, the speaking lengths should increase by approximately 5⅔% per unison starting with about 2" at C88. Braid White's rule is seldom followed to the letter, but rarely do piano manufacturers stray far from this design precept. Most pianos, regardless of size or sequence of wire gages, still *average* about five unisons per half-size down to about Middle C. At Middle C the wire gage is usually 17½ if 13 gage was used at C88, or else 18 gage if 13½ was used at C88. The latter is common in concert grands and so-called high tension scales.

But now we come to the question of what to do below Middle C where speaking lengths often do not continue to increase at the rate specified above (problems due to foreshortening of proper scaling lengths were discussed last month). Also, what do we do about the design of wound strings on the bass bridge? Should there be wound strings on the treble bridge? How do you blend plain and wound strings?

Although 'rules of thumb' may occasionally give sufficient clues to cope with the missing strings problem, it is clear that more rigorous rules are desirable, especially if you wish to evaluate or modify a section of the scale. Last month, we described a number of aural and visual clues to possible scaling problems. It was indicated that one can usually resolve the question of faulty scaling by calculating three important acoustical quantities for each unison in the suspect part(s) of the scale:

- String inharmonicity
- Unison loudness/sustaining factor
- Hammer/string contact time

Measurements show that, with few exceptions, the above acoustical quantities tend to change from note to note in a remarkably *smooth* fashion in good scales. As these articles proceed, we'll describe in some detail what effect each of these three quantities has on such important attributes of a piano as its tunability, tone and voicing uniformity. Then it will become evident why these quantities *should* change smoothly in a good scale.

Let's deal with the last acoustical quantity first; namely, hammer/string contact time — i.e., the period of time during which at least some portion of the hammer felt is under momentary compression due to hammer contact with the strings. Most of you know that a piano tone contains a number of higher partials (overtones) in addition to the 1st partial (or fundamental). To a great extent, piano tone quality is determined by the relative strengths of these partials. There are many factors which determine the relative partial strengths by the time a piano tone finally reaches our perceptory senses, but the one we are particularly concerned with in regard to piano scale design is the hammer / string contact time. Although a large number of partial tones are excited by the hammer striking the string, some of them are damped out due to lingering contact of the hammer felt with the string(s). Partials whose period of vibration is less than the hammer/string contact time contribute very little to the piano tone. Without going into a great deal of complicated physics, suffice it to say that the hammer/string contact time will change in a smooth fashion from note to note if the mass, shape and softness of the hammers change smoothly and if a certain ratio containing measurable or calculable quantities also changes smoothly. This ratio can be written algebraically as **NT/H** and can be calculated for each unison of interest as follows. First, calculate the "unison tension," **N** times **T**, where **N** is the number of strings in the unison and **T** is the tension in each string. Then divide this unison tension by the strike point distance **H**, which is the distance from the capo bar or agraffe to the point where the hammer touches the string(s).

For example, suppose we have a trichord unison (**N=3**) with string tension **T = 160 pounds** and strike point distance **H = 6**

inches. Then the ratio **NT/H** will be **3** times **160** (which is 480) divided by **6** which equals **80.** The physical significance of this number is that the larger it is (everything else being equal), the *faster the hammer will rebound* from the strings, resulting in a larger percentage of upper partials. Since the strike point distance is quite small at C88 and much larger at A1, whereas unison tension changes much less over the scale, we expect the ratio **NT/H** to *increase* smoothly from note to note as we proceed *up* the keyboard in a well-scaled piano. Though you might therefore conclude that the higher keyboard notes have a larger percentage of upper partials, this is not the case because several other factors act to decrease this percentage.

Let's look at how **NT/H** changes in a Steinway concert grand near the bass/treble break. In the table, **m** is the number of the note as it lies on the keyboard and the other letter symbols were explained previously. The interesting feature of this scale is that, although there is a 32% jump in strike point distance **H** from unison 20 to unison 21 (reflecting a similar 32% jump in speaking length), there is a remarkably *smooth* transition in the hammer/string contact time factor **NT/H** across this break due to a corresponding jump in unison tension. This is as it should be, since it helps insure that there will be only a very small difference in the corresponding relative partial strengths for these two notes, *hence minimizing voicing problems across this transition.*

m	N	T	H	NT/H
18	3	160	7.4	65
19	3	152	7.1	64
20	3	151	6.8	67
bass/treble break				
21	3	201	9.0	67
22	3	207	8.6	72
23	3	208	8.2	76
24	3	213	7.8	82

Let's look at another example, this time a much smaller grand whose scale was modified several years ago. Note the unusually large jump in **NT/H** in the original scale and how much more smoothly it changes from unison 24 to unison 31 in the modified scale.

	NT/H	
m	original scale	modified scale
24	83	83
25	117	78
26	126	82
bass/treble break		
27	64	82
28	70	81
29	78	85
29	78	85
30	88	87
31	89	89

I want to emphasize at this point that, just as tension considerations alone are not sufficient to evaluate or modify a piano scale, neither is consideration of only the hammer/string contact time factor. We still have to deal properly with string inharmonicity and the unison loudness/sustaining factor. As a matter of fact, we'll see that consideration of **all** three of these acoustical quantities will sometimes lead to conflict concerning the direction in which to proceed when modifying a scale, so compromise must be used. More about this in upcoming articles.

You may be wondering how scaling errors of the sort indicated in the small grand above could have survived listening tests or arisen on the drawing board in the first place. One reason is that it is doubtful that piano manufacturers approached scale design from a physical acoustics point of view, such as suggested here. As far as I know, mathematics used near the turn of the century, and for many years thereafter, was confined primarily to the layout of bridges, agraffe (or capo bar) lines and strike points. These layouts were done according to rather simple, empirically determined, geometric relationships such as discussed in Wm. Braid White's *Theory and Practice of Pianoforte Building* (Edw. Lyman Bill, Publisher, New York), and Samuel Wolfenden's *Pianoforte Construction* (Unwin Bros. Ltd., the Gresham Press, England). Thus, the acoustical quantity **NT/H** was probably never considered at all. The rough scaling in the small grand mentioned above quite possibly may have resulted from compromising with other problems. For instance, it was mentioned last month that foreshortening of the proper scaling lengths in the lower treble due to a hook in the bass end of the treble bridge can cause increased stridency in these notes. This was, in fact, the situation with the aforementioned small grand. Rather than design wound strings on the bass end of the treble bridge, which is a proper way to cope with this problem, the manufacturer apparently chose to add a third string to the two uppermost wound bichord unisons on the bass bridge. The resulting increase in loudness coupled with a higher percentage of upper partials therefore made these two unisons blend better aurally with the strident lower treble unisons. Although trade-offs of this sort work to a limited extent, usually the problems simply become compounded.

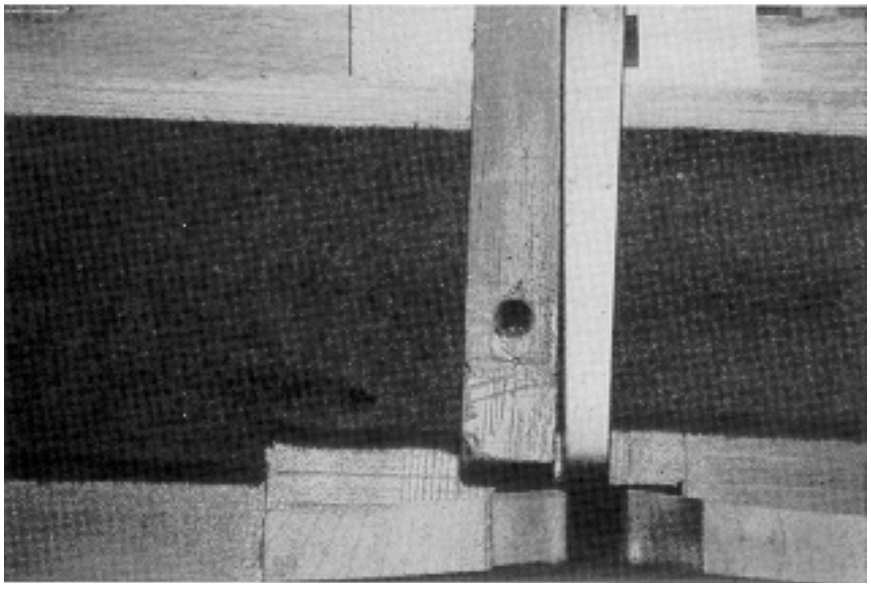
Piano manufacturers today are more knowledgeable in physical acoustics. As a result, scaling in some of the newer small grands and verticals has improved significantly. It is hoped that piano rebuilders who wish to rectify scaling problems in many otherwise fine older instruments will utilize the same knowledge of acoustics being used by the more progressive manufacturers of today.

Next month, we'll take a look at the second of our three acoustical quantities, the so-called loudness/sustaining factor. Two months from now we'll tackle inharmonicity in plain and wound strings, so stay tuned to this column. . . . □

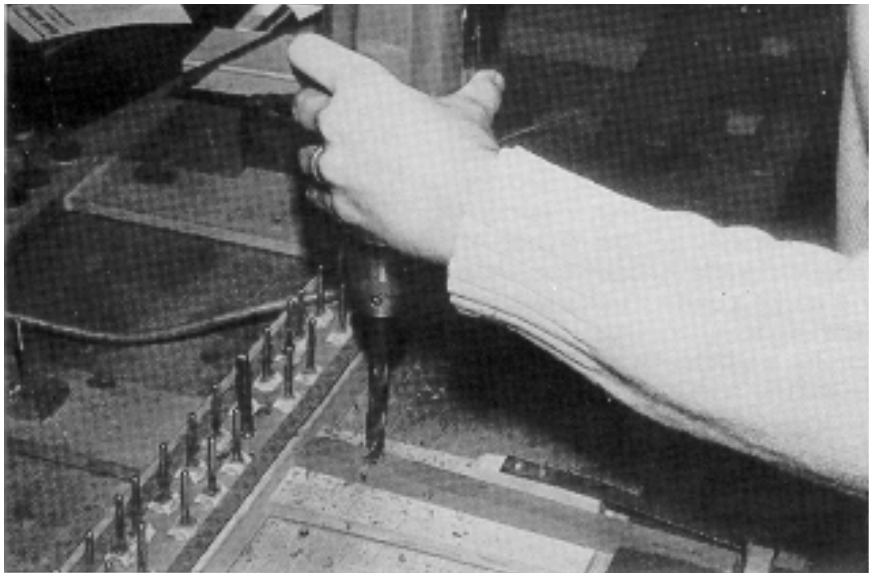
Reference: *Fundamentals of Musical Acoustics*, A. H. Benade, Oxford University Press, New York (1976).

VON DER WERKSTATT

Priscilla and Joel Rappaport



#1. Stripped hole in action support wood. Larger screw was used and wood didn't hold. Wood had deteriorated.



#2. Drilling out screw with ½" drill for ½" plug.

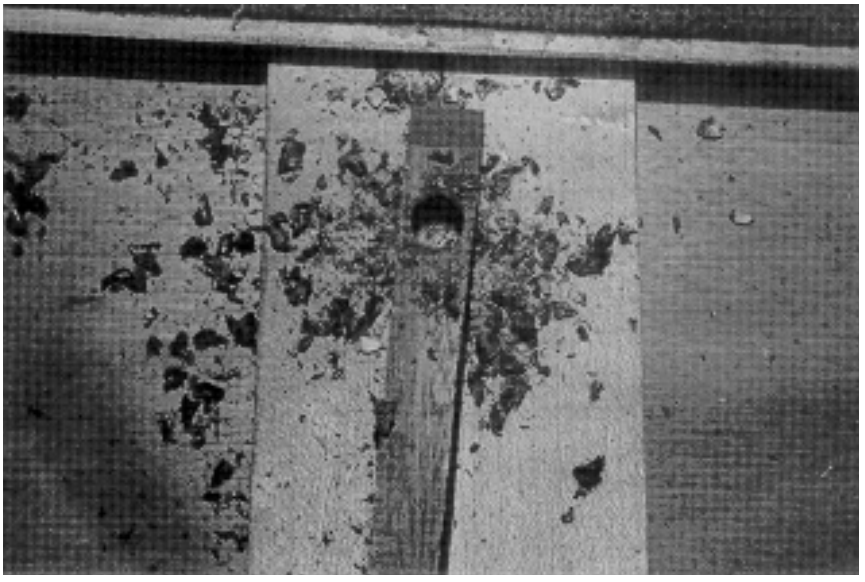
LOOSE SCREWS

Has this ever happened to you? You go to tighten up the action bracket screws in a grand and the screw keeps turning and turning. Since it is quite important that the action stack be securely fastened, you must make that screw tight. That's no problem, of course. The simplest solution is to use a slightly larger and/or longer screw! This will usually work if the wood is not excessively mutilated. Another remedy is to insert some veneer or glue flat toothpicks into the hole so that the screw will have some wood to bite into. However, quite often these quick remedies don't hold up, especially if the screw still doesn't hold the action brackets down tightly. If the action is in the shop, you have a chance to do a permanent repair: replace the wood and drill a new hole.

Usually, replacing the worn-out wood area with a ½-inch plug is sufficient to give enough new wood around the screw to ensure a tight fit. The plugs should be made out of a hardwood or ideally the same wood as the bracket support. If the bracket support is mahogany, make mahogany plugs. Should mahogany wood not be readily available, maple or walnut will also suffice. A very important consideration in making plugs is to have the grain of the plugs match the grain of the bracket support. Usually the direction of grain is vertical (quartersawn wood), to give the best support to the action bracket and to resist splitting. Therefore, plugs made from long dowels that show end grain on the round surface are not the best. Usually, you have to make your own plugs using a plug cutter in a drill press.

When using ½-inch plugs, a regular spiral drill measuring ½-inch is used — one that will effectively clean out and enlarge the hole for the plug. If you are new to plugging up holes, try tests on a junk piece of wood to make sure the drill hole and the plug match closely.

A slit is made in the side of the plug down its entire length so as to let air and excess glue escape. This can be done by holding the plug in a vise and making a shallow



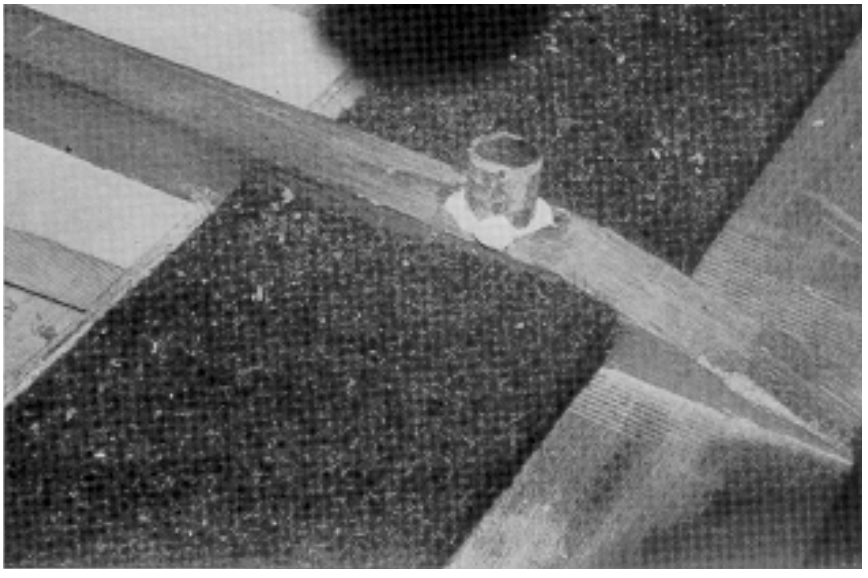
#3. Stop when you are through the support wood only; don't drill through frame wood.

cut with a saw. If the plug fits slightly tight, roll it with a wood file on a flat surface. This will reduce the diameter slightly, making the plug fit better. If the plug is too tight you risk splitting the support wood when hammering the plug in.

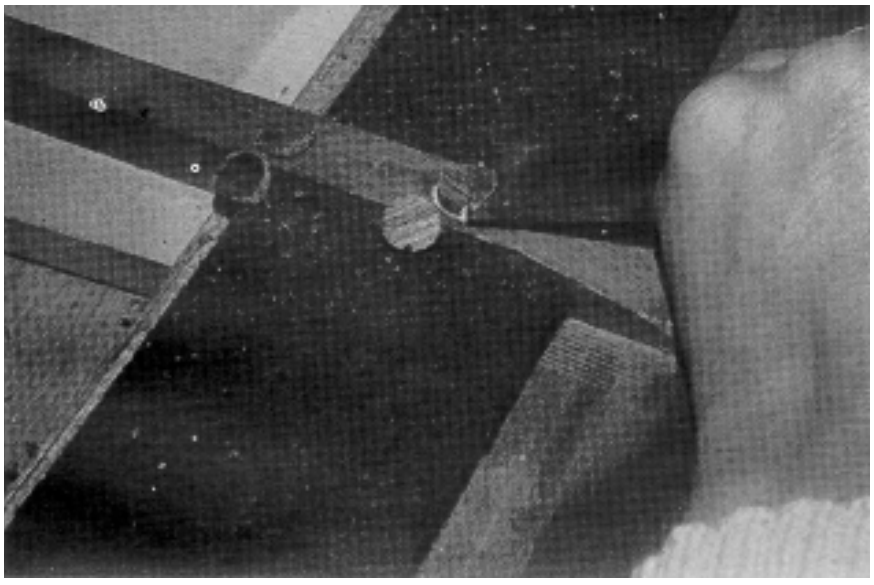
After the plug is glued in and the excess trimmed away, flush with the surrounding surface, the stack is replaced and fastened into position with several screws. The screw that will be used is put into the hole in the bracket and given a light tap with a hammer. This will mark where the new hole will go. Remove the stack and drill the hole with a bit that is the same diameter as the body of the screw but not the threads. This should be drilled down as far as the screw will go into the wood. A little soap on the screw will help it bite into the wood and cut its new threads.

The following pictures show a procedure for plugging up a stripped hole. □

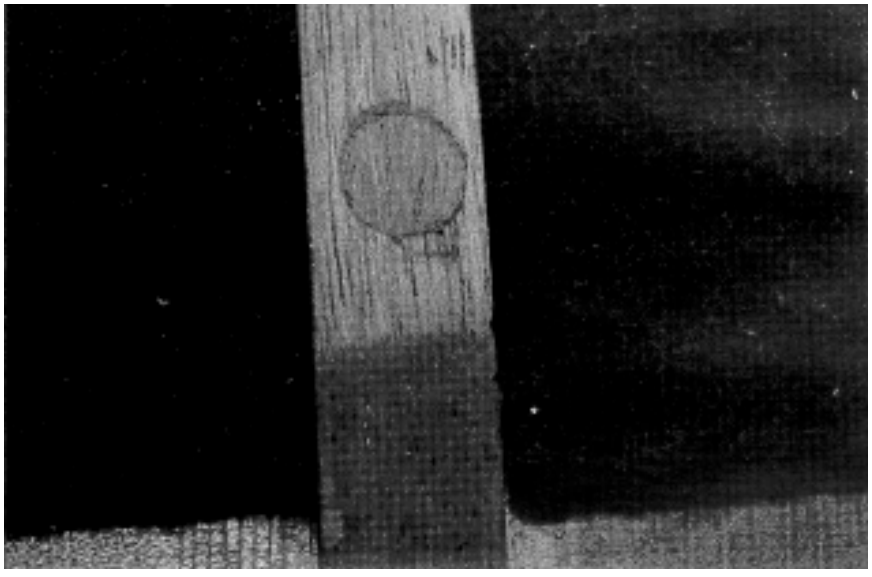
#4. One-half-inch walnut, mahogany and maple plugs ready for use.



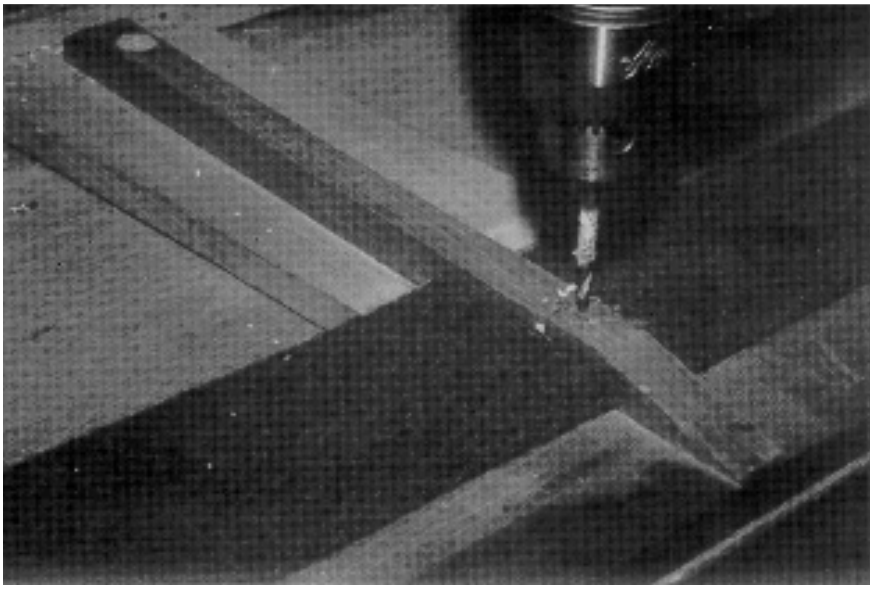
#5. Plug in wood support. Notice slit in side of plug where excess glue and air can come out. Frame under wood support should be supported, so as not to loosen any frame-glue joints.



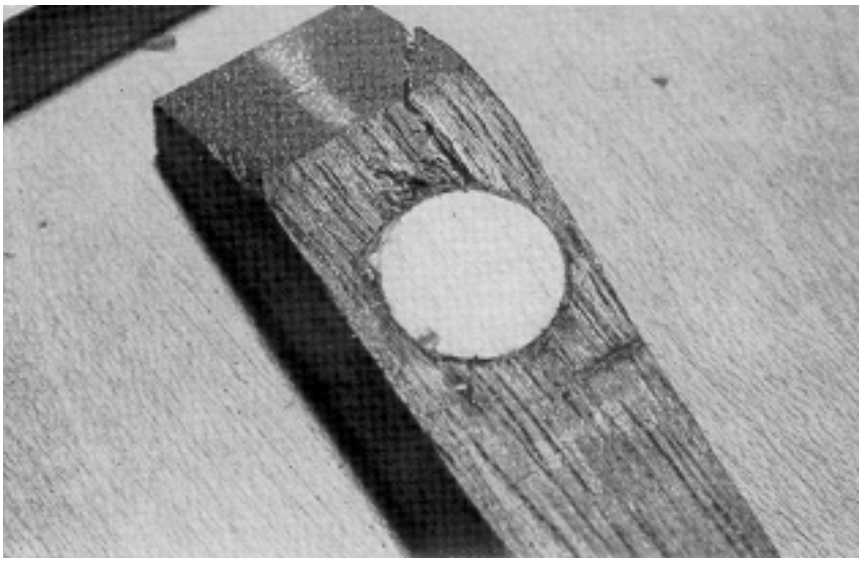
#6. Trimming off excess wood from plug so that surface is even with existing wood suppor



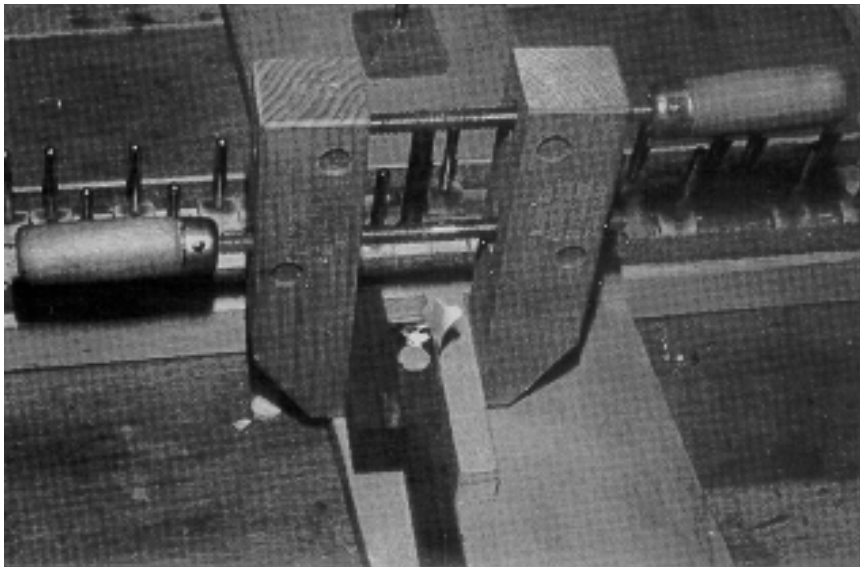
#7. Note that the round surface of the plug shows flat grain (matching the flat grain of the support wood) not end grain as is found in long hardwood dowels purchased at the hardware store.



#8. After having marked where screw will go, drill for screw with correct drill to the correct depth.



#9. Oops! Another repair! The plug was slightly too tight. Banging it in with hammer caused the edge of support wood to crack.



#10-11. This crack was not serious enough to have to drill the plug out and fix crack and replug. We repaired it by gluing it up and clamping it overnight. Those are two pieces of wood left and right to brace the repair. A folded piece of newspaper is placed between the surfaces on the right where glue may seep out and try to glue the brace wood to the support wood. The braces are later removed and the newspaper sanded away to clean up the repair. □

After Touch

David W. Pitsch

COMPLETE PIANO SERVICING

This is the first of a series of articles discussing the realm of regulation and voicing. Although there have been numerous articles written on these topics before, I feel that The Journal needs a regular monthly article devoted to these subjects. Perhaps an exhaustive, detailed discussion will prompt more tuners to become technicians and to devote more time to this type of work.

Other Journal writers have spoken of the great need for pianos to be maintained in voicing and regulating as well as the everyday "bread and butter" tuning we do. The Yamaha group has put this concept together into what is now known as the Kenzoid, named after Kenzo Utsunomiya (see December 1978 Journal). But in spite of all that has been written in The Journal, and all of the technical classes that have been offered to us, the great majority of the pianos in the country are in terrible shape. Especially the grands! Just ask a touring concert artist how many times he or she has had to perform on a piano that was in less than desirable condition. Then deduce what shape the average home piano must be in, since it does not get nearly the attention that a concert piano does. Granted this may not always be the technician's fault, but how many of us are actively doing something to correct the situation?

In the area where I live, near Salt Lake City, Utah, there are so many neglected grands that I have coined the phrase "chronic pianoitis." Of course, it would be impossible to tune, regulate and voice each piano in every home. But we ought to maintain on a high level the many quality grand pianos which are used for concerts, teaching and practicing.

Therefore, the main thrust of "After Touch" will be on grand regulation and voicing. Lesser emphasis will be devoted to vertical regulation and voicing, and of course some overlap into tuning, repairing and rebuilding is inevitable. The real crime is to tune a nice expensive grand and never even look inside to see how things are. I am sure that if we did, there would always be something to correct or improve upon. Unfortunately, if the fallboard, keyblocks and key slip are removed, it is usually to retrieve a lost pencil. Then, to keep from being late for the next tuning, the case parts are quickly reassembled back together without the chance to see if the action is functioning properly.

If every time we tune a piano we would spend just an extra five or ten minutes improving the way it plays or sounds, our reputations would grow, we would get more repeat customers, and have the chance to earn more money. A piano that has "settled in" takes only a few minutes to bring back into prime shape, often by just raising the capstans. Once a customer sees how much better five or ten minutes can improve a piano, the customer is much more willing to pay for a complete regulation or voicing.

I do this extra ten minutes worth of work on every piano as part of my tuning fee. So when I am asked why my prices are higher than another tuner's, I just answer that I do more than just tune the piano, collect my money and head for the door! Also, as a side benefit, by doing a little voicing and regulating each day, I have a chance to sharpen my skills in these areas and to become better acquainted with the many different designs and features on the market.

Since I started this approach a number of years ago, my ratio of time spent working on verticals versus grands has literally reversed. To spend a whole day on just one piano (tuning, regulating, reshaping the hammers, voicing, minor action repairs) is a common occurrence. Believe it or not, more money can be made this way. Think of all the time gained by not having to travel from house to house. Then add in the costs such as gasoline, car upkeep, traffic tickets and billing pads!

Seriously, though, there are two reasons for not completely servicing a grand piano. One is that the tuner doesn't know how. Hopefully, we can correct that. The other is that the average home piano owners have not been educated about the regular maintenance that their prized beauties need. Using the Kenzoid approach to piano servicing and passing out the Guild pamphlets on piano care should help here. All that remain are excuses. If you dread the thought of tuning four to five pianos a day from now to when you lose your hearing, why not add some variety?

Perhaps I'm coming on too strong, for surely many craftspeople are taking their status to heart and are already giving complete piano service. For those readers we will be offering a review of the voicing and regulation steps, hopefully in a different light from what has been said before, and probably announcing some new ideas or methods on the servicing of grands in the home. Most of what will be discussed will be taken from a practical viewpoint, like how to best spend your valuable time while in the home, or how to diagnose the problems quickly and easily so that less time is wasted on finding the source of the illness.

Is it beginning to sound like a doctor's office? "Chronic pianoitis" is not something that can be cured with tuning alone. Like the professionals that we are, we should approach a piano with the same training, care and trust that we expect from a doctor. Next month we will be discussing "A Checkup and a Check". The check, of course, goes to the bank of your choice. □

Your Security Blanket

Eloise Ross,
Sunset Insurance Associates

Insurance policies offered by the Guild insurance broker are made available as a membership service and are neither endorsed nor recommended by the Guild in preference to other similar plans.

At random!

There has been an added "flurry of correspondence since the increase in the medical portion of the Comprehensive Health and Dental Insurance Plan. Only two, however, have elected to change plans.

Our point is this — be **sure** that the comparison of plans is equal coverage. You know comparing "likes," as the saying goes: apples with apples; not apples with oranges.

We are sorry to report that we have an unhappy client in the Tool and Bailee' Customer plan. Therefore, we thought a brief explanation of claims settlement would be in order.

When notice of loss is received in our office, we take all details, advise the client what to do and refer them to the nearest INA office; there is one near **YOU**, as INA is nationwide. An adjuster will require a listing of the property at **today's** replacement cost. A schedule of depreciation is applied (In the case of tools, the client's cooperation can be of utmost benefit by explaining the **longevity**, thus a higher number of years, perhaps 30 in place of the usual 20 years may be used. The depreciation schedule is negotiable), the deductible is applied and the balance is paid to the insured. In the case of a piano being restored and about half finished, the value would be established at that point. Perhaps the value at time of pickup was only $500 and quoted finish at $1,500, a loss prior to completion would be somewhere between these figures.

You have determined by this that we do not adjust the claims — no way, that is a specialized field. **However**, in case of disagreement or poor communication (misinterpretation of coverage or misunderstanding), we take the part of the client for just settlement. Case in point. A claim was declined because breakage is not covered. However, the instrument was on the dolly, still in process of being unloaded; therefore, it was covered and the claim paid.

A most important item has been brought to our attention! Additions to the family are **not** automatically included in the Comprehensive Health and Dental insurance coverage. We **must** be notified, the sooner the better. If notified within 30 days, only the member's signature on a "Change of Dependent Status" form is required. However, after 30 days, a full application with medical history details (which might have to be followed up, causing delay in approval date) is necessary. There will be an additional premium for the first child, but none for any others; the rate is for child and/or children.

The increasing divorce rate has its effect on our business, too. We must be notified for deletion of a spouse, and/or children. This usually requires a change of beneficiary on the Group Life, too.

Also, children do grow up, finish school and go on their own. We must be notified and take them off the policy. The last one to leave home will reduce the premium.

We welcome questions, so write us at: Sunset Insurance Associates, 510 NE 65th, Seattle, WA 98115.

Hope you had a great day February 29, an extra day in our big, beautiful world! Enjoy! □

New Members/Reclassifications

REGISTERED TECHNICIANS

Cleveland Chapter
BRATTON, DONALD W.
987 Sanford St.
Vermilion, OH 44089

BRUNO, PAUL A.
6906 Snow Rd.
Parma, OH 44129

Central Illinois Chapter
MORRIS, ROBERT
2512 Trafalgar Sq.
Champaign, IL 61820

Dallas Chapter
BAUM, R. PATRICK
7719 Bellaire Blvd.
Houston, TX 77036

Central North Carolina Chapter
SEAFORD, JACK A.
Rt. 3, Box 20, Crestview Drive
Mocksville, NC 27028

Kansas City Chapter
McCLURE, KATHLEEN F.
4600 Wallace
Kansas City, MO 64129

Lansing Chapter
EASTHAM, ROBERT M.
4799 Nancy Dr.
Vassar, MI 48768

KIMBERLIN, DAVID P.
122 Baker St.
Spring Arbor, MI 49283

Long Island Cristofori Brotherhood Chapter
BRENNAN, GEORGE F.
36 Starlight Drive
East Islip, NY 11730

New Hampshire Chapter
GREY, PETER W.
Box 117 Newton Jct. Rd.
Kingston, NH 03898

San Francisco Chapter
CALLAHAN, JAMES J.
776 Kingston Ave.
Piedmont, CA 94611

South Bay Chapter
CHARLTON, PHILIP S.
13451 Camilla St., #13
Whittier, CA 90601

Southern Tier Chapter
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WOLCOTT, RALPH C.
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Oswego, NY 13827

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Sweden

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Santa Clara Chapter
COOMBE, SALLY J.
5524 Sean Circle #51
San Jose, CA 95123

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H-16
Tucson, AZ 85713

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Silver Spring, MD 20901

DE FERRARI, TOM
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Aliquippa, PA 15001

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Seattle, WA 98103

HAYNES, CHRISTINE
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Cleveland, OH 44121

MAHONE, CHARLES F.
6247 Creetown Drive
Jacksonville, FL 32216

WELLS, STEPHEN J.
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Natchitoches, LA 91457

APPRENTICE

SYLVESTER, DAVID E.
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Pawtucket, RI 02860

Obituaries

Roy N. Coffman
Oklahoma Chapter

William W. Abbott, Jr.
Minnesota-North Iowa Chapter

Amplifications and Clarifications

The late **Eugene Prendergast** was incorrectly identified as being a member of the Lansing Chapter in the February issue of The Journal.

Mr. Prendergast was a member of the Central Michigan Chapter.

Ring the Bell

Everyone wants a chance to receive the prestigious President's Club award or to sport a Bell Ringers or a Restorers Club ribbon at the annual convention. To insure that every Bell Ringer point is credited to your "account," and that every Restorer of a former member is recognized, the Membership Department requests the following:

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, as The Journal goes to print some weeks ahead of receipt.

The following points are scored for signing up the various ratings:

Craftsman — six points. Apprentice — five points. Allied Tradesman — four points. Associate — three points. Affiliate — two points. Student — one point.

When you have a total of 24 points you become a member of the President's Club; all others are Bell Ringers.

Sponsor a new member and win points in the Bell Ringers Club. Join the celebration at the 1980 convention in Philadelphia.

Bell Ringers Club	Points
ABBOTT, William Jr.	6
ACH, Philip	3
BAIRD, John	18
BAKER, Dean	6
BALIGIAN, Agnooni	16
BARRETT, Bruce	1
BARRUS, Ralph	6
BERRY, Ronald	5
BIBLE, Dana	1
BITTINGER, Dick	16
BLAND, Robert R.	6
BLANTON, Tom	6
BROOKSHIRE, Jerry	3
BROWN, Walter	1
CALLAHAN, John C.	6
CATE, Allan	1
CAUETTE, Louis	5
CAUNTER, Gerry	14
CLARK, Peter M.	1
CLOPTON, John	4
COLEMAN, Jim, Jr.	2
COX, Merrill	2
CROY, Ronald	12
DANIEL, Pat	6
DANTE, Richard	6
DOERFLER, Richard	1
DROST, Michael	18
DRAINE, Robert	23
ERBSMEHL, Charles	1
ERLANDSON, Robert W.	6
FAIRCHILD, Steven	1
FISHER, Allen	6
FISHER, Leroy	6
FRANZ, Dennis L.	1
FRANZ, Earl M.	6
GERLER, Kenneth	1
GILLER, Evan	12
GOETSCH, Lawrence	12
GULLIXSON, Elisha	6
HANCOCK, William	6
HARMON, Clayton	7
HARRIS, Vaughn	6
HART, W. D.	6
HAWKINS, Marshall	6
HEINDSELMAN, Lois	17
HESS, Jamse	9
HILBERT, Felton, Jr.	1
HOHF, Robert	6
JOHNS, Barney	1
JONES, Joel A.	5
KAST, Frank	10
KERBER, Walter	15
KINGSBURY, Richard	6
KLEIN, William N.	2
KOFORD, Lyn	5
LEARY, Jane t S.	1
LEWIS, Max E.	6
LICHT, Kenneth B.	6
LINDEMAN, Doug	23
MACCONAGHY, Henry	7
MACKINNON, Karl	1
MARLING, Harold	5
MARTIN, Barbara	1
MATTHEWS, John	1
McANINCH, Daniel	1
MEEHAN, Joseph	18
MEHAFFEY, Francis	11
MEISSNER, Walter, Jr.	6
METZ, Albert J.	1
MOONAN, William	1
NICHOLSON, Steve	1
OLIVER, Stanley	1
OVENTROP, Edward	6
OWENS, Bruce	1
PEARLMAN, Sam	1
PERKINS, Robert	23
PETERS, George	12
PETERSON, Gerald	1
PHILLIPS, Webb	5
POTTER, Randal F.	5
PRATT, Orman D.	6
PREUITT, Ernest	11
REITER, Michael	6
REQUE, Styrk	1
RICHARDSON, James	11
RILEY, Martha	1
ROE, Eugene	6
SANDERS, John	6
SEABERN, Paul	4
SCHEER, Bob	6
SCHMITT, Paul	1
SCHNEIDER, William	6
SCOTT, Dennis	1
SELLER, Marion	10
SERVISS, Kenneth	6
SEVERANCE, Davie	7
SHANK, Dean	5
SHELL, Roger	6
SHROYER, Al	1
SMITH, Arthur	1
SNELL, Marvin	1
SNYDER, Cecil	5
SNYDER, Willis	4
SORG, Herbert	6
SPEIR, Leon	6
STATON, Rocker	1
STONE, Sid	7
SWARTZ, Vern	1
TAPP, Kenneth	4
TAYLOR, Kendal	9
TITTLE, Martin	1
UPHAM, Russ	1
WALKUP, Kenneth	16
WARMINGTON, Carl	6
WEST, Richard E.	6
WHITTING, Ted	4
WICKSELL, Carl	1
WIGENT, Don	6
WILLIAMS, Arthur	6
WILLIAMS, Robert V.	6
WILLIS, Aubrey	10
WILSON, Richard D.	1
WINTERS, Kenneth	4
WOODS, Edwin	5
ZEHME, Uwe	6

President's Club

DRAINE, Robert	28
LILLICO, John	70

Restorers Club

BITTINGER, Dick
HAWKINS, Marshall
KERBER, Walter
SCHEER, Bob

Classified Advertising

CLASSIFIED ADVERTISING RATES are 15 cents per word with a $3.00 minimum. Full payment should 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.

FOR SALE

FOR SALE — Piano and organ store in Central Texas' fast-growing area. Excellent franchises, good lease on building. $18,000 plus any amount of inventory you want. You can triple this amount in profit the first year. Organ sales could boom for the right people. No economy slump here. **For details, write P.O. Box 1224, Lockhart, TX 78644**

FOR SALE—Steinway Grand, built in 1897, Model B, art case of light mahogany. In beautiful playing condition, has been properly maintained. Interesting history. $9,200. **(603) 524-7970, 119 Gilford Avenue, Laconia, NH 03246, c/o Weeks**

KEY RECOVERING MACHINE — Build your own precision key recovering machine from stock machine parts. Demonstrated 1978 California convention and Pacific Northwest 1979. Send $10 p.p. for accurate machine drawing instruction, photos to: **Solenberger Piano Service, 1551 Lynn Court, Santa Rosa, CA 94505**

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**

QUALIFIED TECHNICIAN wanted to purchase established business in sunny California. Write for details, state qualifications. **Walt Eckstein, 1020 West Las Flores Way, Santa Maria, CA 93454**

WANTED

WANTED — One Aeolian American grand piano fallboard spring. **Accardi, 3330 Taylor, Bridgeton, MO 63044 (314) 291-5222**

WANTED — Information on an early 20th century unmarked, cherrywood baby grand belonging to Ferrars, Tows, of Pineleigh Estates, Sharon, Connecticut. Reply to: **Peggy M. Clarke, 1001 St. Nicholas Avenue, New York, NY 10032**

WANTED TO BUY — Mason & Hamlin Grand Piano. Want one that was a player. I have a player mechanism to install. Will pay handsome reward. **Brady, 4609 Crankbrook, Indianapolis, IN 46250 — (317) 259-4305 after 5 p.m. (317) 849-1469**

HELP WANTED

EXPERIENCED TECHNICIAN with special interest in historical instruments, trained at Western Iowa Tech (72-73), looking for part-time position with music school. Any location. Contact **Scott Watkins, 250 Burns Street, Strathroy, Ontario, Canada (315) 245-3522.**

PIANO TECHNICIAN WANTED — Good pay, good working conditions. Benefits. **Ansdell Piano, Anaheim, CA (714) 821-3311**

SUPERVISOR OF KEYBOARD TECHNOLOGY at University of Michigan School of Music. Responsible for 92 grand and 182 upright pianos; two additional technicians on staff. Qualifications: Considerable full-time experience (preferably in large school of music); previous supervisory experience; degree in music desirable. Salary: $14,400-$22,800. Apply by sending resume to **Office of Professional and Administrative Staff Services, University of Michigan, 1020 "T" Literature Science and the Arts Building, Ann Arbor, MI 48109.** A non-discriminatory, affirmative action employer.

HELP WANTED — Piano tuner/technician, 6 years experience. Able to tune, regulate and repair all pianos. Conduct practicum in introductory technology for students. Salary: $10,400 plus travel allowance and insurance. 40 hours per week. Apply: **Dr. Robert Cowan, University of Montevallo, Montevallo, AL 35115**

RTT WOULD LIKE JOB with institution or quality rebuilding shop. I have three years experience, including some rebuilding and player work. Willing to relocate. Write **Michael Shapiro, 118 Berkshire Street, Cambridge, MA or call (617) 864-0317**

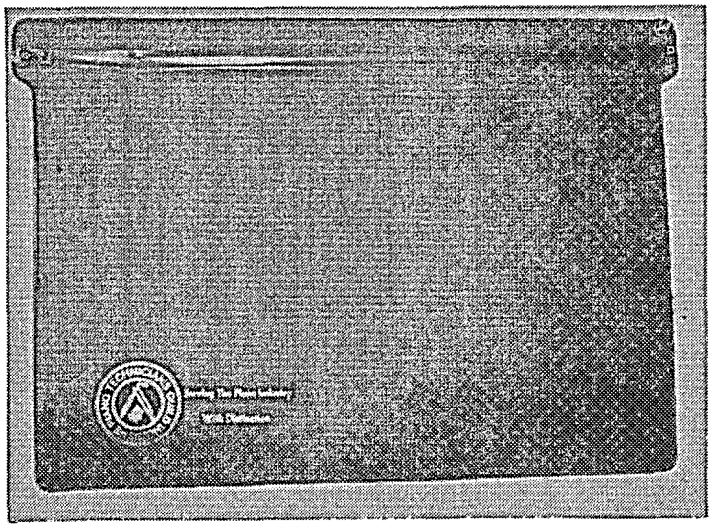
MISCELLANEOUS

TUNERDATA: (1) Mail reminders make money for you; (2) geographical files make money for you; (3) we'll do them both for you. **Write Ed Fesler, 11315 Rich Circle, Minneapolis, MN 55437**

KEEP YOUR TOOLS SHARP
ATTEND A "HANDS-ON" CLASS
AT THE
1980 PTG CONVENTION

NEW!

New from your Piano Technicians Guild Sales Department



Meeting and Sales Portfolio

In response to popular demand, we now have available these navy blue, zippered, vinyl portfolios. They measure 16"x12" and have the Guild logo in gold stamped on them. Quantity discounts!

Quantity	Price
1–25	$2.50 each
26–99	$2.25 each
100 & over	$1.95 each

(Don't forget to include handling and shipping costs with your order.)

Piano Technicians Guild, Inc.

PLEASE SEND:	Quantity	Price	Total

SUBTOTAL

ADD SHIPPING AND HANDLING

If order totals:	Below $5.00	$5 to $9.99	$10 to $14.99	$15 to $24.99	$25 or More
Add:	$1.00	$1.50	$2.00	$2.50	None

Washington State residents only add 5.3% sales tax

Enclose check or money order for this amount **TOTAL U.S. FUNDS**

ORDERS UNDER $10 MUST BE PAID IN ADVANCE.

Name _____

Address _____

City/State or Province _____

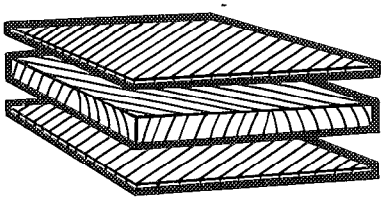
Zip/Postal Code _____ Phone _____

Chapter _____ Nonmember _____

MAIL TO: PIANO TECHNICIANS GUILD
113 DEXTER AVENUE NORTH
SEATTLE, WASHINGTON 98109

PLEASE FEEL FREE TO PHOTOCOPY THIS ORDER FORM

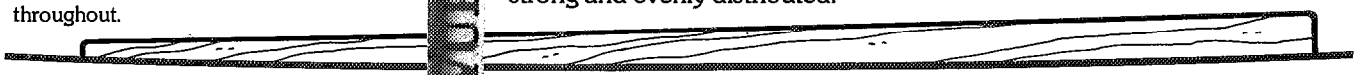
Pencil point proves performance of new Wurlitzer Soundboard



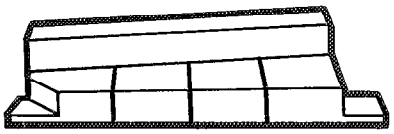
The grain of the wood in both top and bottom layers of the new soundboard runs parallel to the general direction of the treble bridge. The fine grain of the inside layer runs in the direction of the ribs.

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

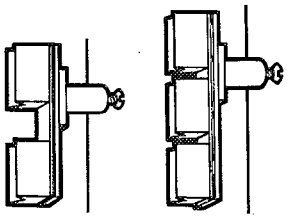
Wurlitzer's new all-spruce Duraphonic Multi-radial™ Soundboard transmits string vibrations more efficiently than any other.
To prove its responsiveness, touch the point of a sharp pencil to any area of the board and strike a note as you hold the pencil gently against the surface. Test it top, bottom,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



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



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

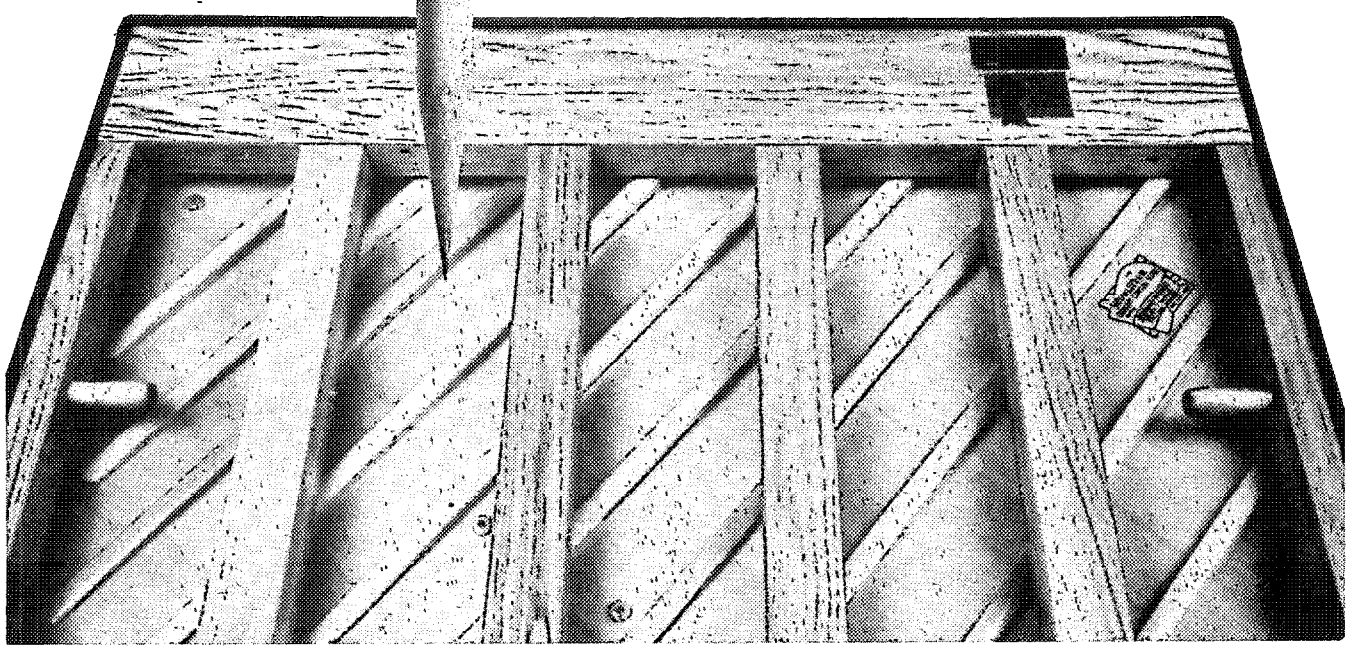


That is because Wurlitzer now uses three separate layers of mountain-grown spruce in all of its finer pianos. These layers are placed at scientific angles so they transmit string vibrations (which travel mostly with the grain) to all corners of the board. The result is more volume, richer tone, and greater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

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

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

WURLITZER®
The Music People
DeKalb, Illinois 60115



PIANO TECHNICIANS GUILD

APRIL 1980 UPDATE

Do You Want To Build Your Membership?

—Don L. Santy, Executive Director

Growth is a biological necessity of life! Chapters must experience growth if they are to even stay even — to say nothing of maintaining a viable organization.

If your chapter is losing ground, or if you feel that an area in close proximity to your own should have a chapter, then start talking about a **Membership Drive.** Actually most strong, meaningful, effective organizations hold membership drives periodically. Most chapters don't go about it right, so an effort of this kind can bog down in a "cop-out" compromise such as, "Okay, everyone go out and get one member and we'll double our membership." This is the numbers game. It doesn't work well and it never will.

No prospective member is dispensable. Most qualified prospects in your chapter area are eagerly waiting for the opportunity to pitch in and help upgrade and improve the industry, as well as get to know their associates in piano technology. They simply need to be invited.

Remember!

For want of a nail, the shoe is lost.
For want of a shoe, the horse is lost.
For want of a horse, the rider is lost.
For want of a rider, the battle is lost.
For want of a battle, the kingdom is lost.

We could update George Herbert's familiar quotation (published in 1640) to read, "For want of members, the chapter is lost," for that is a fact. We have some chapters throughout the country that are falling apart! They are falling apart for want of members. There are technicians out there who have not been told of the great benefits and advantages of the Guild. As a result, the industry is wanting. The piano owner is wanting. And the independent piano tuner-technicians who could gain immensely from membership affiliation are wanting.

If that seems far fetched, just pause and reflect a moment. All of those fine members whose participation is now vital to our organization, including the officers, the board and those many, many men and women who respond so quickly with their time and effort in serving on committees and in seminars, were all, at one time, NEW members. What made them join? Did someone invite them? How did they hear about the Guild?

For the want of them, would we have as an effective a Guild as we have today?

It is hard to overstate the importance of new members. We can take some liberty with another famous quotation and state for a fact that, "No man or woman is dispensable". Associations like our Guild represent upward mobility. The door to our membership opens onto a staircase upon which our members climb. It is not an escalator. Ascenders earn their way through service. They mingle deeds with recognition and the combination of the two put them on top. In the process, they help their fellow members — and they still help themselves just as much. They cannot help but contribute to their personal and professional growth.

We render a disservice to our Guild when we fail to invite and

(Continued on page two.)

"Where Can I Learn Piano Tuning?"

—Sid Stone, Vice President

How many times have you been asked this question — over the phone, in a letter or after you have finished tuning a piano? It has often been said that the Piano Technicians Guild is not in the business of teaching piano tuning and repair; but within the Guild there seems to be a growing concern over the quality and training of people coming into our profession.

With the advent of electronic aids to tuning and the emergence of get-rich-quick correspondence courses in piano servicing, there is real concern that the market may be flooded with untrained, ill-equipped and even unethical persons posing as piano tuners. Such people venture forth with an instrument in one hand and a diploma in the other, and they are more successful at smearing a noble profession than making a fortune.

Most of us, I'm sure, have been met at the door with, "Do you use a machine to tune the piano? For if you do, you can't tune my piano." Even as aural tuners we then feel it necessary to go into a lengthy discussion that the "machine" itself is good — it does an acceptable job in telling how much a certain pin is to be turned to be at the proper pitch or tune, provided the charts and instructions are followed carefully. However, the instrument does not tell the user how to set the pins so the tuning will hold — nor does it tell the user how to make minor repairs and regulations that often

(Continued on page three.)

(Membership, continued from page one.)

involve eligible technicians in our fine organization. Every new member approved by a chapter augments our strength, adds to our power to move forward as a viable industry, and adds to our collective voice. With new memberships, we gain new viewpoints, new ideas, new approaches, fresh winds of knowledge and compounded experiences. Don't be apathetic about membership growth. The prospects you sign up today may be the "nails" we will sorely need tomorrow.

Think About It!

You don't buy a newspaper; you buy news.
You don't buy life insurance; you buy security.
You don't buy glasses; you buy vision.
You don't buy awnings; you buy shade.
You don't buy membership in your association; you buy cooperation and the help of the ablest men and women in the profession today with whom you can join hands to do things that you cannot do alone.

How do we go about getting new members? First, the prospective member has to know we are around. Chapter publicity in the local papers helps. Broadside mailings to all technicians from a list supplied by your State Department of Commerce will certainly help. Notices in music retail outlets, on bulletin boards, posters and fliers prominently displayed wherever piano technicians are apt to hang out, also bring results.

Most people must be contacted several times before they begin to respond. Remember the cold facts about sales: Top salespeople are those who make at least seven calls on prospects, and 80% of all sales occur after the fifth call. The problem is, 43% of salespeople make only one call then quit, 25% try twice and 12% give up after the third attempt. This leaves only 20% of the sales force making 80% of the sales.

By sending potential members meeting notices, special announcements and occasional chapter notes, you may attract their attention and perhaps soften them up; but it in itself will not bring them in. It takes face to face confrontation, sometimes several times, to achieve success. It takes a dedicated and committed member telling the story of the Guild in an enthusiastic and sincere way to a nonmember, with a follow-up as many times as necessary.

How to go about this, therefore, is the question before us. Obviously, the first thing that one must do when we want to build membership is to find out where potential members are. Once they are located, the selection process then takes place. As we all know, **not everyone tuning pianos today is fully qualified to be Registered Technician and member of the Guild.** We must locate and ferret out those we believe are qualified, or could be, and convince them to take the test and their places among the piano industry's elite. Lists of tuners and rebuilders must, therefore, be carefully scrutinized. Once you have targeted those people who could contribute to the chapter, the Guild and the industry, contact with them should be made. They should be invited to a meeting. They should receive some back issues of The Journal. They should be made aware of the advantages and benefits of the Guild. Then a member should be assigned to cultivate their interest in terms of joining.

There are essentially two ways of building membership. One is an all-out **Full-Scale Campaign**, usually held once each year in which every active member of the chapter accepts from three to five prospects to contact. They should be given literature explaining the Guild, it's benefits and a clear-cut case for joining. The caller should be trained in what to say — how to say it — and when to say it. The prospect should be the subject of a planned approach. Sometimes two members can do a better job than one. Prospects are often impressed when two busy technicians take the time and effort to call on them.

The secret of success in an "all-out campaign" is **Organization.** Workers must be lined up, signed up and committed. They must be organized, coordinated, trained, equipped with promotional literature and preliminary applications (subject to passing the test), and given an assignment for a specific number of calls with a deadline for getting the calls made. Workers must attend report meetings and stand up to be counted in terms of their progress. This is a **concerted** effort. The chapter members must respond, hopefully every man and woman, and each agree to devote the time necessary to do the job.

The mechanics are simple. Cards (and duplicates) are made up on all prospects selected for calls. They are laid out on a table at a chapter meeting and each member is expected to take from three to five cards. The membership chairman has the duplicates, and places the name of the person making the call on the bottom of the duplicate card. Usually workers are divided up into teams. Each team has a captain and it is the captain's responsibility to follow up on the worker to see that the job is being done. All prospects must be accounted for and if the call is unsuccessful (depending on the reason), another worker should be assigned to make the call at a later time. Each subsequent chapter meeting can be a report meeting, with the third meeting a victory dinner and ceremony for the acceptance of the new members. Prizes can be awarded for the worker signing up the most new members. Competition can be developed between teams and the campaign can be a fun-filled and pleasant experience for everyone.

This is a brief description of an ALL OUT campaign. The second method of membership development used by many organizations is the **Cultivation Meeting.** Twenty-five or so key prospects are invited to a breakfast, lunch or dinner meeting. A letter is personally written and signed by the chapter president and co-signed by someone who knows the prospect if possible. Follow-up phone calls and personal invitations may be necessary. The more follow-up, the better chance for success. The affair should be no-host or you'll get the idle curious and the non-serious. You will also get some freeloaders who don't intend to join or who are not even eligible. Sometimes it's a good idea for the chapter to host a bar before dinner since this helps

break the ice and adds to the occasion

Most mailings will result in about a one-half to one-third turnout. The meeting should be pleasant, relaxed and friendly. There should be some key people from your chapter and they should make sure they mix and mingle. Have plenty of promotional literature present and some sort of **preliminary** application (subject to passing the test and becoming qualified) should be available for each respondent to sign later.

After a pleasant meal and some chit-chat, the chairman should open the meeting with a welcome and an explanation as to what the Guild is all about. An older member should give testimony as to what it has meant to him or her, and this should be followed by a progress report on the activities of the chapter and a prognosis for the future. Some pressing problems of the industry should be discussed enough to convey the idea that the Guild is working on them and for the good of the industry.

The pitch should be made after the **entire story has been told.** An application should be handed each one and they should be asked to sign it as evidence of "good faith." Have a member that was pre-sold start the ball rolling and the rest usually will follow. Explain that this application is not carved in granite and it is not a legal document. They can change their minds at any time and besides membership is subject to the testing program anyway. If you don't get their signature **before they leave** you will probably never see them again, so **get them to sign at that time.** Most people dislike pressure even though very little of any importance is ever accomplished without it. If the job can be done with simple persuasion so much the better, but somebody who is good at it had better do it.

For those who were unable to make this meeting, schedule another and still another until you get most of them out, then you can at least say that you did your best. Remember how many times a successful salesperson makes calls to make a sale. Selling somebody a membership is exactly that. Have the reasons you belong to the Guild firmly in mind and be able to vocalize them. Do so with conviction and sincerity and it will make the proper impression.

Cultivation meetings are more simple to put together than a full-scale campaign but it takes a lot longer to build your membership. It is a method that combines sociability, interesting conversation and the opportunity for new acquaintances all in one fell swoop. You can expect about one-third of those who respond to join. How long they stay is up to you and your chapter.

(Where Can I, continued from page one.)

go along with tuning. As a result, tuning instruments get a bad name, our profession suffers, and the public is cheated.

"Where can I learn piano tuning?" Working in a factory can be a worthwhile experience but the learning opportunity may be too limited. There are some fine resident schools available, but in most cases that would require relocating. A few colleges and universities are offering courses in piano tuning, and more would like to if they could find competent instructors who can fit into a small budget. Most such courses give but an introduction to piano tuning and repair. Only two correspondence courses have ever been approved by the Piano Technicians Guild, and both of these encourage their students to continue training under a Registered Technician member of the Guild.

This article may seem to be directed to the aspiring piano tuner-technician, but it is directed instead to Registered Technicians of the Guild who have or are considering developing a course on piano servicing.

If you have such a course, we want to hear about it. In a coming issue of the Journal one of the courses sent in will be printed; and if sufficient interest is engendered, resumes of other courses may be forthcoming. In order to have uniformity of response you are asked to include the following:

(1) How many years have you had a systematic course for piano tuner-technicians?

(2) How many students do you have at one time?

(3) How long is the course?

(4) How many hours per week is required?

(5) What kind of contract do you have with the students?

(6) What are the financial arrangements; i.e., tuition charged or wages paid?

(7) How do you screen out unwanted applicants? Or how can you tell if an applicant has what it takes to be a success in this field?

(8) What is your responsibility toward accidents or injuries involving students while in training?

(9) What other responsibilities do you feel the instructor has toward the student and what expectations should the student have from the instructor?

(10) Which do you teach first: tuning or repair?

(11) Which do you teach first: aural or visual tuning?

(12) What does the course cover? (Give a detailed outline and schedule.)

We are hoping several course outlines will be submitted from which more Registered Technician members of the Guild will be encouraged to consider their responsibility to assure that some of the newcomers in our field will be trained to a degree that they will not bring discredit to our profession. However, if there is no interest or no response, then this endeavor will have the same fate as the late "Rosette" column.

BUSINESS PRACTICES
EXPERTLY TAUGHT
AT THE
1980 PTG CONVENTION

Special Institute Notes for Visually Impaired Members

Plans for the 1980 institute classes are well under way. Jewel Sprinkle and Jeff Hudson will be giving a quick orientation of the classrooms at the Ben Franklin Hotel just prior to the opening of the exhibits at the 1980 convention in Philadelphia. Also, there will be personal assistance for the first two or three days or orientation for those people requesting it.

Members who know of appliances designed especially for the blind which could be incorporated into the institute classes planned for the visually impaired are invited to write to Jack or Paul Sprinkle with their suggestions.

Jack Sprinkle
6033 N. 19th Rd.
Arlington, VA 22205

Paul Sprinkle
1530 Winston Dr.
Macon, GA 31206

William Abbott, Jr.

Minnesota-North Iowa Chapter member William Walter Abbott, Jr. died February 14th in River Falls, Wisconsin at the age of 59.

Upon receiving his Ph.D. in music theory from Indiana University in 1956, Mr. Abbott joined the music faculty of the University of Wisconsin-River Falls as music department chairman in 1957. He served in that capacity until 1969.

Mr. Abbott instituted and directed a piano and the allied arts program. He developed a piano technology minor at UW-Falls River, and conducted summer workshops at the UW Extension Indianhead Arts Center at Shell Lake, Wisconsin. He played bassoon with the Fargo-Moorhead Symphony Orchestra, tympani with the St. Paul Chamber Orchestra, and piano for the Guthrie Theater productions.

Mr. Abbott had been a certified tuner-technician of the Piano Technicians Guild since 1970, and was a delegate to the national conventions on several occasions. He will be missed by the Minnesota-North Iowa Chapter.

Letters . . .

Journal Staff:

I greatly appreciate your efforts in getting The Journal out on time. Jack Krefting is doing a great job with the technical section, and in general the contents of The Journal are interesting and informative.

Sincerely,
—Matthew R. Grossman,
Memphis, Tennessee

Piano Technicians Guild
Executive Board of Directors,
President Bob Russell:

Have received certificate of Chapter Sustaining Membership together with explanatory letter and congratulations.

Heartfelt thanks for same, also to members and friends of the New York City Chapter.

I may add that the many years of active membership in the former ASPT and the present PTG have been to my gain as well as my pleasure. And I look forward to future fellowship at special times.

I urge anyone planning a career in the piano service field to join the Guild as the first important step toward a successful vocation.

Sincerely,
—Arthur L. Gray,
Jackson Heights,
New York

Don L. Santy,
Executive Director

Dear Don:

I realize it is quite late to comment on an editorial of November 1979. However, I must do so.

I have known Chris Robinson for some while, and I must say that his editorial writings of November surely confirm my assessment of the man.

He says all of the things many of us feel, and says them so well.

I should add at this time that it seems to me that The Journal is getting better and better and better!

Keep up the good work.

Very truly yours,
—Al Kelley,
Agawam, Massachusetts

1980 Nominating Committee Final Report

—Charles Burbach, Chairman

The following are the only nominations received by the Nominating Committee this year:

President ... **Bob Russell**
Vice President ... **Sid Stone**
Secretary/Treasurer ... **Charles Huether**

The following are the only names submitted to the committee as nominees for Regional Vice Presidents:

Northeast RVP ... **Dick Bittinger**
Southeast RVP ... **Walter Kerber**
South Central RVP ... **Tom Blanton**
Central East RVP ... **Ron Orr**
Central West RVP ... **William Brandom**
Western RVP ... **Daniel Evans**

All of the above have received the official "Outline of Duties" form pertaining to their respective offices, and have agreed to serve if elected. The first three officers are elected during Council; the RVPs are elected in their respective regional caucuses held during the annual convention.

Any additional nominations are in order prior to, or on the Council floor, or at the regional caucuses in the case of RVPs, provided that the said nominee be informed of the duties of the office and sign the "Consent to Serve" form.