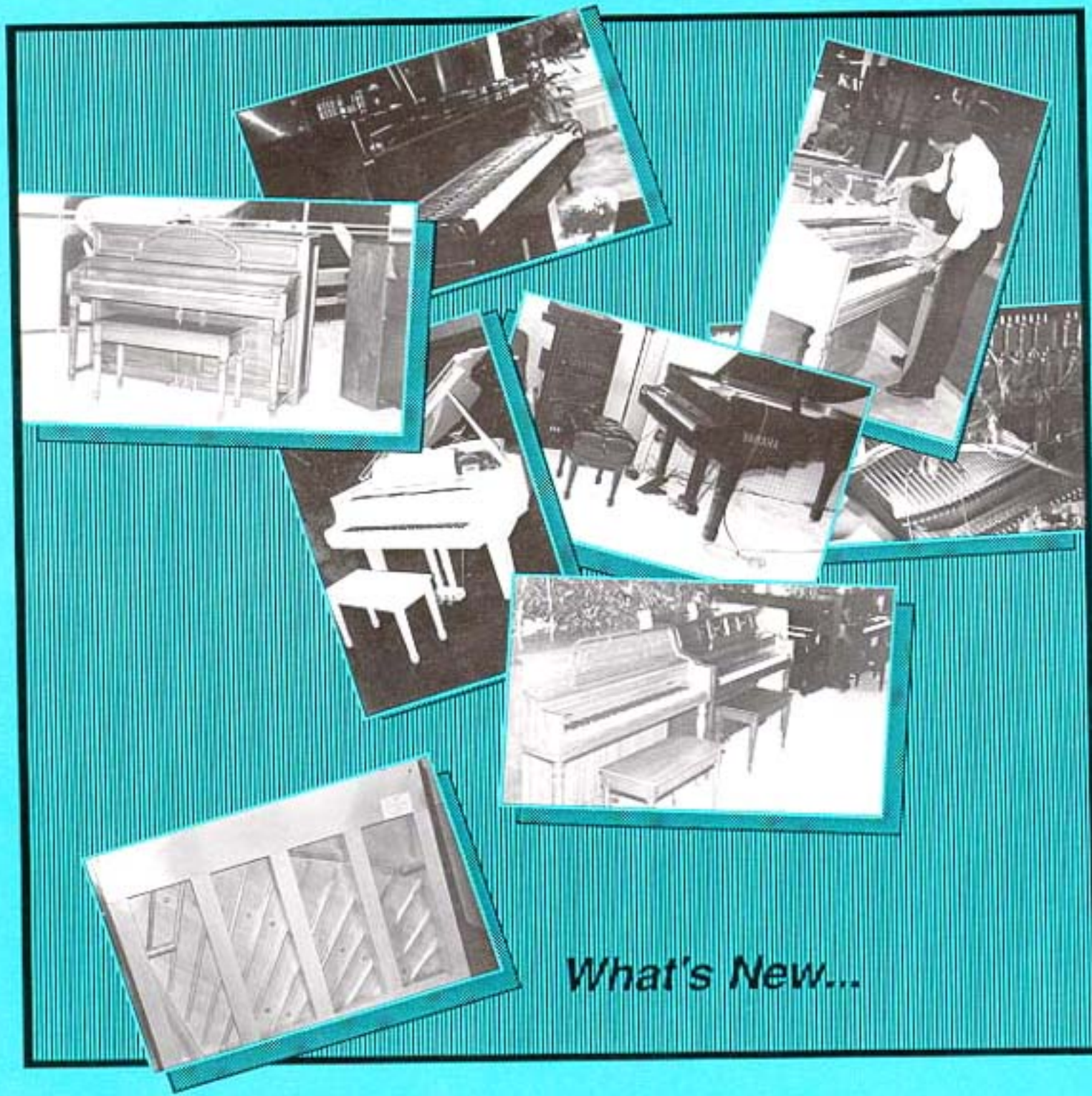
Piano Technicians

Journal

March 1987



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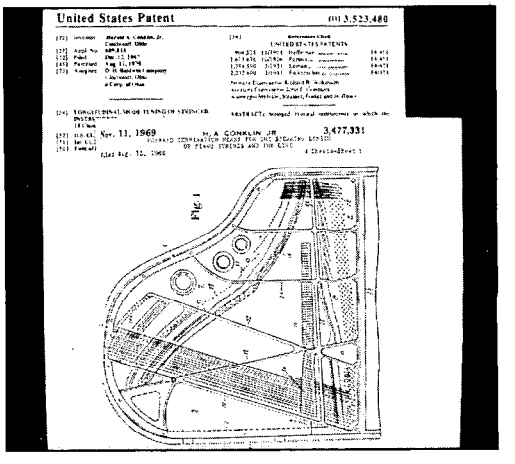
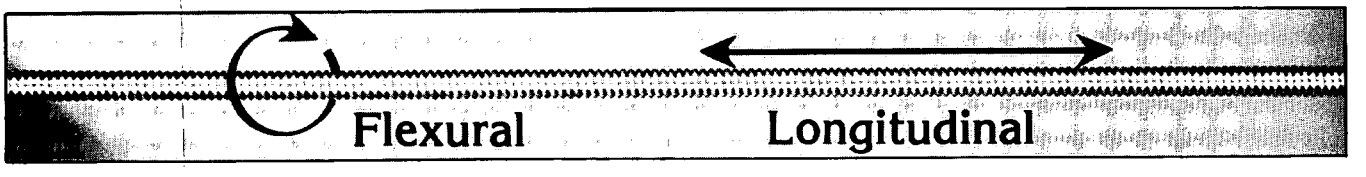

United States Patent

To take full advantage of this SynchroTone principle, we even invented a precision string winding machine, so different from the ordinary winding machines that it, too, is patented (U.S. Pat. No. 4,055,038).



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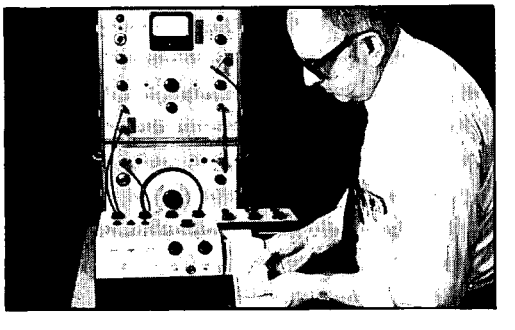

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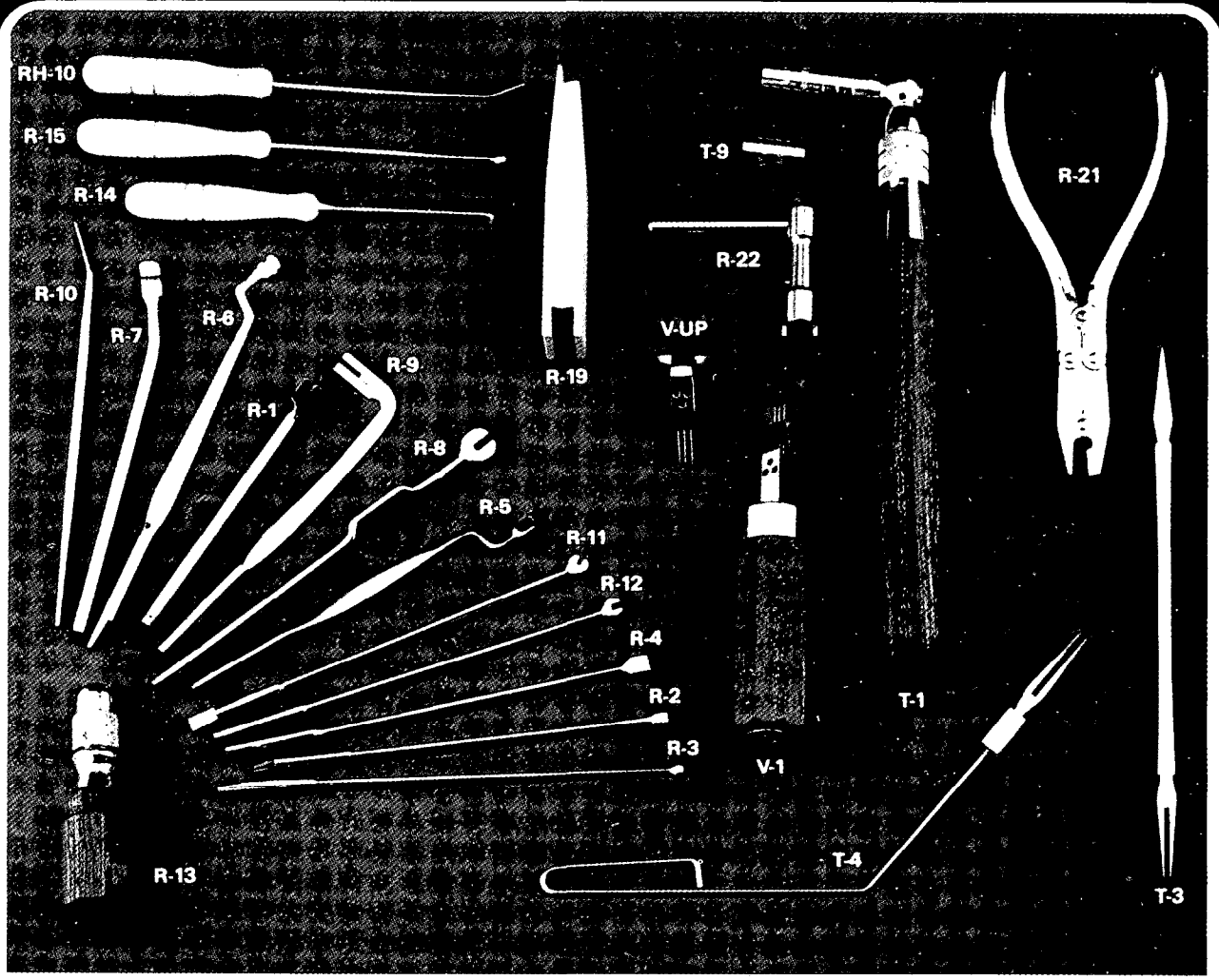

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The Piano Technicians Journal **March 1987**

Official Publication Of The Piano Technicians Guild, Inc.

Volume 30
Number 3

IN THIS ISSUE...

PLUS...

THE COVER . . .

Photos from the NAMM Winter Market. See page 26.

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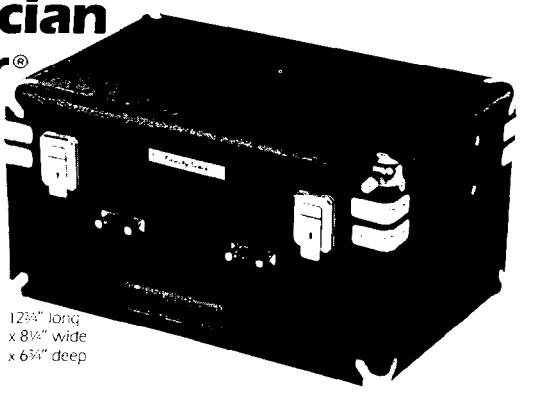

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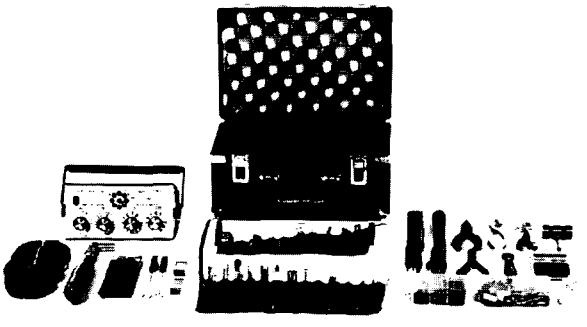

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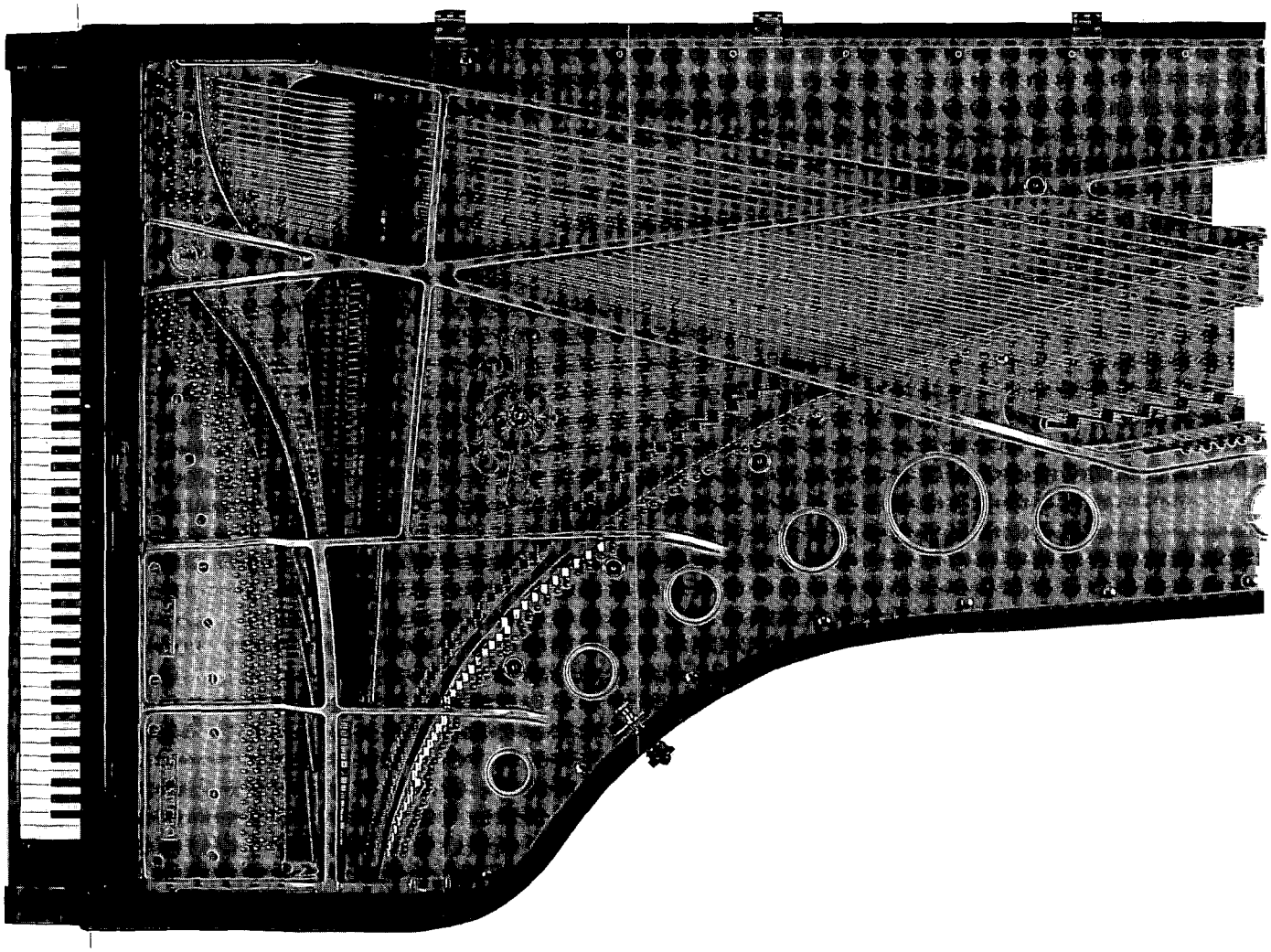
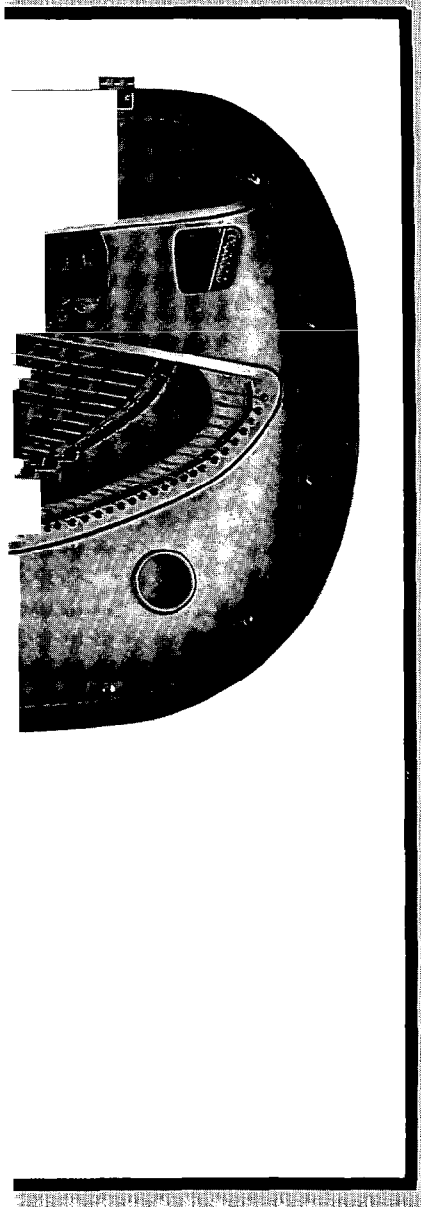
German Scale Design The Heart Of The World's Greatest Pianos





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THE PRESIDENT'S MESSAGE

M.B. Hawkins
President

Honoring Our Editors!

As we move about in our day to day activities, it is not difficult to overlook many things which in reality we should never allow to stray from our consciousness. Allow me to key on one of these items which for our membership should be rather significant: chapter newsletters — this little vehicle does a large job for us. It is one of the components which helps to keep our communication alive. While not all chapters have newsletters, I have noticed recently that a few new ones have appeared. They are certainly a welcome addition. As time goes on and the new newsletter becomes more and more an integral part of the chapter, chapter members may wonder how they got along without one for so long.

Unfortunately I do not receive a copy of all of the newsletters that are published, but those that I do receive are read each month from beginning to end. They help a great deal in staying abreast of what is going on in our various chapters. Many chapters work an exchange with other chapters and this is a very healthy idea. As a matter of fact, chapters have been requested to not only exchange newsletters but to seek out chapters that may not have a newsletter *yet* and send them a copy of yours. It will more than likely encourage the development of one in that chapter as well. When large chapters seek out a small chapter or two, or three to send their newsletter to, the benefit gained by the small chapter can be substantial. New friendships can also be formed through the exchange of newsletters.

I have also noticed that some excellent technical tips show up in these newsletters which says once more, we all have something to contribute. Why not jot a little piece about yourself or your activities or perhaps the area in which you serve and share it with your other chapter members via the chapter newsletter. You may be surprised when you are present at a seminar and meet someone from another part of the country who read your article. You may find that the two of you not only have pianos in common but share other interests as well. This is what the Guild family is all about so let's not forget to share with one another.

Speaking of sharing, let's spend a moment or so to share with everyone the great job of "sharing" the newsletter editor does. This person shares time each month so that other Guild members may be notified and further enlightened via the newsletter. I can't stop right there, however, because this group of newsletter editors deserves more than that.

Within this group we find many multi-talented people. They not only write, edit and compile information...they create names for newsletters, work out neat computer designs and often spend large chunks of time doing research which is really appreciated by the readership.

As I read through the various newsletters I always get charged up to learn about what's happening in other places. What a great feeling! I would like to write to each one of the editors and the chapter president who sometimes is the editor, but there are just not enough hours in the day to do this. There is a way, however, to give feedback to the newsletter editors. Here it is. Everyone could write a little something in appreciation for all of the good information we receive via the newsletter whether it is your chapter newsletteror that of another chapter. My outgoing mail is pretty heavy but those that do not have a lot of out-mail commitment certainly could become a part of this movement I am hoping to start. Know what it takes? It takes a few minutes *now*, not later, because if you put it off it more than likely will not happen.

I'll bet our membership could really cause our newsletter editors to feel more appreciated if we would each just take a few minutes to write a post card or note to a newsletter editor and

Editors . . .

let them know you appreciate what they are doing. You may say 'they know they are appreciated' but I believe that is not enough. Furthermore that type of attitude is just one more "cop-out." Why not take the time...you can spare it. Remember, we all have 24 hours in which to function and those newsletter editors find the time to do the newsletter, so you can surely find the time to write a short paragraph in appreciation.

With this writing I am declaring April 1987 as P.T.G. Newsletter Month. To celebrate P.T.G. Newsletter Month let's see how much mail we can generate in post cards and letters to our newsletter editors. In addition to that those chapters that do not now have a newsletter, why not make April the time to start one for your chapter?

I will be expecting feedback from the various newsletters as to how much correspondence was received to celebrate April '87 as P.T.G. Newsletter Month. Should we get the type of response I know this organization is capable of we can make this a real media event which will only help our cause.■

Economic Affairs

Henry L. "Lew" Jones
Chairman, Economic Affairs Committee

The Free Estimate

Are you still, for free, giving away your time? Are you still running out at the public's beck and call giving free estimates even though you know full well that many of those estimates will never amount to anything?

Unfortunately, the public has learned that it can do its window shopping at home by asking any number of people offering products or services to come and give them free estimates. So, you jump in your car (never mind that you're right in the middle of a paying job) and rush over to the caller's home, even though it's a half-hour drive each way plus gas, bridge toll and parking. You will usually spend an hour or more considering your estimate, proposing a solution to their problem and calculating material and labor costs. You are literally giving away your time and travel expenses, as well as years of training and experience. Don't ever forget, either, that the problem you've been asked to resolve is their problem, not yours.

Forever hopeful, you drive home to wait for the go-ahead. Never mind that it's now too late in the day for you to resume the paying job waiting in your shop. Now you're a day behind on that one.

Six weeks later you realize that you're never going to hear from the caller again and this "free estimate" has evaporated into a total waste of time and money. Furthermore, there's a good probability that the person you gave the estimate to made careful notes and turned your ideas over to someone even hungrier than you, who got the job by bidding it cheaper. Added insult on top of injury! Some people are like that.

As you no doubt guessed, a few suggestions are forthcoming on how to reduce or eliminate all that unnecessary waste. You can simply refine it, re-label it, and get paid for it.

If making an estimate or bid requires that you leave your shop, spend more than 15 minutes with someone or produce and itemized proposal of work, you can inform the possible client that you do not give free estimates. But you do offer a complete, comprehensive statement of work and a cost estimate. Then inform them that the fee for this professional service is "X" dollars an hour plus "Y" dollars for each visit to the site. You can, if you're so inclined, agree that, if you receive the bid, the cost of the bid will be subtracted from the final job cost. Some of us do this on a regular basis and I haven't lost a job yet because I charged for the estimate. I usually find a way to include the cost of the estimate in the total job estimate. You can, too.

If this type of price estimation is practiced in a professional manner by enough of our people in the piano technology profession, it may be possible that the public will eventually lose its expectation of receiving the time and talents of skilled people for nothing. How about it? ■

THE INTERNATIONAL SCENE

Fred Odenheimer
Chairman, International Relations Committee

The Piano In The World Market

It is that time of the year again, the NAMM Winter Market, followed by the Frankfurt Fair. It would be nice to go to both events but Anaheim is much closer to Van Nuys and besides hearing and reading about the cold spell in Europe, it is much more comfortable to bask in California sunshine!

This is written a few days before we will have a chance to look into the Anaheim Convention Center, but we have a list of exhibitors in front of us and there are some names that we have not run across in a number of years. A new import from Korea is Hyundai. Petrof, an old name from Czechoslovakia, seems to be exhibited for the first time out here. Then there are some names like Gulbransen and Weber, old names resurrected and very likely imports. Most other names we have seen previously, and we will be missing some that unfortunately had to close their operations.

In the *Music Trades* Magazine, an item in an article on "The Rise of the Oriental Music Industry" caught our attention. Amongst other items they show production figures of pianos in various countries: U.S.A. 91,000, Japan 290,000, Korea 1,250,000, Germany 27,000. Since the magazine shows a December 1986 date, I presume these figures are for 1985. Average hourly factory wages quoted are: $13.29 for U.S.A., $7.76 for Japan, $1.67 for Taiwan, $1.53 for Korea and $14.05 for Germany. I must again presume that these figures are for 1985. Since then the Dollar has lost value against the Yen and the German Mark and thus in comparison hourly wages in Germany and Japan should have increased when expressed in Dollars.

With the proliferation of electronic keyboards, their improvement of tone and quality and price advantage over cheaply built pianos, we have to ask ourselves what effect this will have on piano production. Over the long run we probably will have to concede that a piano where corners have been cut and with poor tone will not have a chance against the electronic keyboard; but I believe a good instrument will always find acceptance and they will be around for a long time to come. ■

Toronto — Discover The Feeling

The Historical Meeting Place

John Lillico
Host Chapter Chairman

With its startling collection of stately black, glittering silver and mirror-walled office towers thrusting into the clouds, Toronto is depicted as an ultra-modern, efficient metropolis and, as such, it becomes somewhat difficult to visualize its humble beginnings.

The first European to discover the area where the city now stands was the French explorer, Etienne Brule. The year was 1615. In 1750, Fort Rouille, the original white fur trading settlement, was established just 500 yards west of the present site of Exhibition Place stadium.

The land which Metropolitan Toronto now occupies was purchased by the British Government in 1787 from the Mississaugua Indians for the equivalent of $1,700. In 1791, the British decided to establish a permanent outpost upon the site and the task fell into the hands of Lt. Gov. Gen. John Graves Simcoe. Simcoe named the settlement "York" after the Duke of York, second son of the reigning King George III.

In 1834, York, often referred to as "Muddy York," was changed to Toronto and the City of Toronto was officially incorporated. The last of the British Armed Forces departed in 1870, three years after the Canadian Confederation.

With abundant forest and stream, Toronto witnessed its share of mills along the Don and Humber rivers. All the ingredients for construction were close at hand — lumber, sand, lime and stone.

Agriculture played an important part in the city's history. The Canadian National Exhibition, originally an agricultural fair, was opened in 1879. There were 23 buildings then, and a one-day attendance of 102,000 was recorded.

Toronto's early beginnings were situated east of the present downtown core between Jarvis and Princess streets, north to Adelaide Street East. A major fire in 1849 enveloped many of the businesses and residences along King Street and, in 1904, another flaming inferno struck at the fledgling financial district along Bay Street.

More than 160 buildings have been designated historical sites, the oldest being Scadding Cabin. This structure dates back to 1794. Once located near the Don River, Scadding Cabin has been since moved to the C.N.E. grounds. The original Bank of Upper Canada building, dating from 1825, remains at 252 Adelaide Street East. The Grange (now an Art Gallery) was constructed in 1817 and the Campbell House (1822) was moved 15 years ago from the head of Frederick Street "with a view of the bay" to 160 Queen Street West (at University).

Toronto's first post office, 260 Adelaide Street East, was built in 1833 and the two lighthouses on the Islands were constructed in 1808.

Toronto has a castle, too! Casa Loma, a magnificent structure built between 1911 and 1914 was the fancy of Sir Henry Pellatt, soldier, financier and industrialist. Sir Henry had a life-long

Casa Loma, a 98-room "dream castle" is one of many attractions to be seen in Toronto during the Guild's 30th annual Covention and Technical Institute. Photo courtesy Metro Toronto C & VA.

Toronto . . .

interest in the castles of medieval times and it was not surprising that he should use some of his amassed fortune to build a castle of his own. This 98-room landmark contains a Great Hall with a 60-foot ceiling, the Oak Room where three artisans worked for three years to fashion the French oak paneling, and an 800-foot tunnel leading to towered stables where some of the finest horses were once quartered.

In the early 1920's, Sir Henry found the cost of upkeep beyond even his ample means and the castle was taken over by the City of Toronto for back taxes.

The name Toronto means "meeting place" in the Huron Indian language. Plan early to be at the Guild's "toronto" this coming July in Toronto.

For further information regarding Toronto, you may write to the Metropolitan Toronto Convention and Visitors Assn., 220 Yonge Street, Ste. 110, Toronto, Ontario, Canada M5B 2H1. From Southern Ontario, New York, Ohio, Michigan and Pennsylvania, call toll free at 1-800-387-2999. ■

Toronto Institute 1987

Dick Bittinger
1987 Institute Director

There has been a campaign in Canada through the Piano Technicians Guild chapter presidents and Canadian members to seek names and addresses of non-members for our annual convention mailing list. I would like to report at this time the names are starting to roll in. (Please note; it's not too late to send any non-member names in to the Home Office c/o Larry Goldsmith, Executive Director.)

Wouldn't it be a shame for anyone in the piano trade to say, "Gee, if I had only known, I could have been there!" Let's make sure this doesn't happen. We are getting help from the piano manufacturers and supply houses in Canada on getting the word around and throughout the country about our annual convention at Toronto in July. They want every piano person to have the opportunity to attend this convention.

The Vice Presidents of each region were asked to notify the chapter presidents and membership to please check on non-members in their area and make sure the Home Office has the names and addresses. We need to keep an update on our convention list so we can help others to "Discover the Feeling."

In the coming months in the *Journal* there will be a picture layout of the instructors and class description, also the Institute schedule and mini-classes plus other Institute news.

So keep watching the progress and we will see you in Toronto in July to "Discover The Feeling." ■

THE
TECHNICAL
FORUM

Steel-Wrapped Bass Strings Bass Hammer Angle, Dumb Sales Claims, Muffled Tone, Grand Rebuilding and Reader Comments

Jack Krefting
Technical Editor

This issue marks an important milestone in *Journal* history in that, for the first time ever, we have not just one but *two* technical editors on the job. Rick Baldassin's first column appears in this issue, and we know all of our readers will join us in welcoming him to the PTJ staff. All technical correspondence relating specifically to tuning will be forwarded to Rick from now on, with all other tech materials coming to me as usual. I have asked Rick to introduce himself for the benefit of any who may not have already made his acquaintance, so please see his column in this issue.

Steel-Wrapped Bass Strings

Q: *Why not still have steel-wrapped bass stings? Cost, or what?*

Pharis Scoggins
Savannah, Georgia

A: Steel — or iron — windings are not more expensive than copper; in fact, the material is cheaper. Many cheap verticals in recent years have used "copper-loy" or copper-clad strings which are really copper-plated steel wound around the usual necessary music wire core. They look like copper windings, but they don't sound the same. Manufacturers use such materials either to save money on a price-leader model or as a marketing strategy; in the latter case, one reason the salesman can offer for buying the higher priced model is that it has solid copper-wound bass strings.

We have all seen good old grands that had steel-wrapped strings, especially in the upper part of the bass scale where the windings are very small in diameter. This was done for two reasons, neither of which had anything to do with the small cost savings afforded by the cheaper material.

There is a distinct tonal difference between the two, the steel being brighter and more nasal in quality than the copper, so this could be used as a scaling device by the designer. It can help to smooth out a rough scale break between copper-wound and plain steel strings, for example.

Another reason for using steel instead of copper is that steel is much stronger per unit of mass (weight), and therefore it is a lot easier to wind steel when the windings are very small in diameter. A copper wire of the diameter needed to produce the same mass would break very easily, a string-winder's nightmare. A trichord at the top of the bass in a concert grand, for instance, might easily require five thousand wraps of very fine wire per string; and if the copper breaks after 4,700 turns, the string is just so much scrap metal.

The major problem with steel windings is that they corrode so much more rapidly than do their copper counterparts. We have all seen pianos 15 to 30 years old with steel in the upper bass, with the steel-wound area completely dead and the copper section still sounding pretty good. For that reason, if no other, copper is obviously superior.

When restringing a piano with a mix of copper and steel wrappings, you can specify exact replacements or have the steel-wound section replaced with copper for greater durability and tonal uniformity, provided of course that the string-winder adjusts the diameter of the wind-

ing according to formula if he is going to replace steel with copper as is commonly done by custom string-winders.

Our same correspondent has another question:

Bass Hammer Angle

Q: *Most older grands have upper bass hammers across strings. New Baldwin bass hammers are aligned with strings. Is this a fairly new change?*

A: As has been stated many times before, here and elsewhere, everything in piano making is a compromise between the ideal and the practical, and this is no exception. We would like to see the agraffes turned perpendicular to the speaking length of the strings, the bridge notches also perpendicular so the speaking length of both (or all three) strings will be identical. We would also like to see the hammer hung at such an angle that the strike point of all the strings of that particular unison would be the same, which requirement would of course dictate that the hammers must be hung at the same angle as that of the strings.

On large grands, virtually every maker does this, partly because it's important and partly because it's relatively easy to do. On smaller pianos, however, there is a more radical overstring angle, making it difficult to align the hammers precisely with the strings and still maintain adequate clearance between hammers. To solve this dilemma, the maker can increase the scale spacing (widen the piano), or use narrower hammers, or compromise on the hammer boring angle.

Increasing the spacing would seem the best choice, but for the fact that this would increase the cost and width of what was supposed to be a compact, low-cost piano. If we are going to make it bigger, we would be better off making it longer rather than wider.

The narrow bass hammer solution is commonly used, especially in verticals, even though the angle is still compromised. The problem with that is that hammer weight is thus reduced and, worse yet, the hammer may not be wide enough at the striking surface to produce a good sound from all strings of its unison.

So what can be done? We cannot reduce the overstring angle without seriously affecting what is already a problematic, short scale; so compromises are always necessary, and the smaller the piano, the greater the extent of the compromises.

The Dumb Sales Claim Contest

Michael Travis, RTT, D.C. Chapter, sent along a copy of a flyer which is distributed by a local nonmember tuner. It includes the following blurb about tuning: "The length of time necessary for tuning is usually a half-hour or so. A much longer period is not a requisite for accuracy but rather implies a lack of skill, concentration and/or an excessive amount of pin turning which literally destroys the wood threads and the pin's ability to hold tightly."

Travis adds the cryptic comment, "Now, Steve Fairchild, eat your heart out!"

Muffled Tone

Q: *I'm a Guild member living on the island of Guam. I've found numerous pianos that sound very muffled. The high humidity year-round seems to do something to the hammers and I'd like to know what to do to correct the situation. I know how to voice to mellow the tone, but not what to do to correct the opposite situation.*

A: In localities where persistent high relative humidity is present, pianos tend to get muffled because the hammers absorb excessive amounts of moisture. The best way to deal with it, in my opinion, is to iron them. This drives out much of the moisture in the felt and immediately brightens the tone. Naturally, it won't stay bright indefinitely unless something is done to dehumidify the room, or at least the piano; but an extra five or ten minutes' worth of ironing each time the piano is tuned will keep it sounding good most of the time anyway. I keep a hammer iron in my tool case all the time, and in really humid areas it ought to be considered almost as important as a tuning hammer.

Electric hammer irons are available, but technicians who own them have reported that they get too hot and scorch the felt. We use the ordinary, unheated (cordless!) irons but must also bring or borrow an external heat source such as a hot plate or steam iron. It sounds primitive, but if you have two hammer irons, one can be in use while the other is heating up; we do it all the time and it works well, aside from the nuisance of waiting for the heat source to cool down before it can be safely transported. In your case, the solution might be to iron first and then tune while the iron cools.

Lacking the forethought to bring a hammer iron on a particular service call, the technician can still effect a noticeable improvement by borrowing an ordinary household iron and a piece of aluminum foil from the homeowner. Turn the iron up to the "wool" heat setting, wrap the foil around a group of hammers (except in the bass, where individual ironing is preferred) and iron all the way around the group of hammers. Start low on the shoulder and move the iron fairly quickly up to the shoulder and over the striking surface, down to the low shoulder on the opposite side.

When using a hammer iron, the results are enhanced by sliding the iron along the felt as it rolls around the hammer. Slide it in one direction only, the direction you are pushing the iron, and surface fibers will be pressed down to give a more precise attack on a soft blow.

Hammers can also be brightened by filing, of course, but in this instance we wouldn't recommend that because if the tone must be brightened at every tuning, the filing will radically shorten the life of the hammers. Ironing doesn't last as long, maybe, but it also doesn't take anything away from the hammer except the excess moisture.

Reader Comment

A reader from North Carolina has this to say about our January

issue advice on twisting strings:

...First and most important, not all wound strings are wound in the same direction, so the old "counter-clockwise" is not universal. It is best to look closely at the winding. I have even run across some Asian pianos...in which part of the bass strings were wound in one direction and part in the opposite direction. There are times when a small magnifying glass is necessary for the smallest strings.

Another suggestion: Explain to the novice what you mean when you say, "twist the strings." I know some young beginners who have not been taught the proper way to twist strings and that is a confusing instruction to one who does not understand. I realize that a novice shouldn't be replacing strings without supervision, but things are not always like they should be...

L.E. Minton
Clayton, N.C.

Please send all tech articles, tips, comments and questions for publication to me: Jack Krefting, P.O. Box 16066, Ludlow, KY 41016.

Grand Rebuilding

Lower tension on at least the wound strings, or on the entire scale if you prefer, and cut off the bass strings at the base of the coil, as close to the tuning pin as possible to eliminate damage to the plate by a whirling pigtail of wire. As to the treble strings, it is easier and faster to cut them while under tension. To prevent uneven stress on the plate, we suggest cutting the foremost string of every other unison throughout the tenor and treble; then remove that group of tuning pins and cut the next closest wires, and so on.

Whatever cutting tool is used, care should be taken not to damage the finish on the plate, as there is usually quite a bit of japanning under the gold and such scratches can go deep. Any scars will have to be filled and sanded later for a first-class rebronzing job, so a little care now will save time later.

Tuning pins can be removed with an impact tool, electric drill or air drill:

The table below would seem to indicate that no one tool will do the best job every time, and that has been our experience.

If you have not already done so, make locating wedges or tooling holes to relocate the plate, and take notes so you can remember what you did later. That done, remove the plate bolts and screws, and the nosebolt nuts. Next, push or bump the plate downward with the heel of the hand, all the way around, taking note of any plate rock that may be present and marking it accordingly on the teardown notes. It may be that the plate was not properly leveled into the case, or it could be that someone has misadjusted the nosebolts to try to alter hearing after the plate was installed. Either way, you will want to correct the condition when you reassemble the piano.

Now pull the plate out and stand it on its tuning pin end for storage, leaning against a wall or plate rack. This will help to prevent warpage. If you live in earthquake country, be sure that it is secured so it cannot fall down.

Next, remove the nosebolts and label them so they can be replaced in the same holes, tape over the nosebolt holes in the beams with wide masking tape, and wash the soundboard.■

Tool	Pro	Con
Air Drill	Fast, good for very loose pins	Very little torque at low speed.
3/8" Drill	Fairly fast, OK for loose tuning pins	Not much more torque than air drill
1/2" Drill	Lots of torque; pulls any pin	Awfully slow, and takes forever to stop
Impact Tool	Very fast, and plenty of power	Difficult to handle; can't be used on loose pins.

TUNING UP

An Introduction...

Rick Baldassin
Assistant Technical Editor

First may I say how pleased I am to have the opportunity to serve in this capacity. Jack asked that I give myself a brief introduction. I began my education at Brigham Young University, where I received a Bachelors Degree in Music Performance. My instrument was double bass (not piano). During that time, I became very interested in the acoustics of musical instruments, which resulted in an apprenticeship of sorts with Hammond Ashley, a luthier in Seattle, WA, over the period of several summers. During this time, I also studied musical acoustics as part of my course work at Brigham Young University.

After completing my degree, and being rather unemployable, I became aware of a piano technology course which was to be offered the following semester. I enrolled in the course and began learning the piano trade.

After two semesters, I attended a Guild convention at which Jim Coleman was teaching. One evening, about which we both still talk, we had a pizza together. While we were eating, I mentioned to Jim that I was having troubles tuning octaves in the bass of the piano. He asked what sort of test I was using. I replied that I was using the m3 - M6 test. He responded that it was a good test for the bass, and then said something that started making the bells and lights go off in my brain! He said that the m3 - M6 was the test for a 6:3 octave. Suddenly I realized that if the m3 - M6 test was the test for a 6:3 octave, that the M3 - M10 test must be the test for some other type of octave, and realized why the two could not be used interchangeably. Quickly applying the music theory which I had learned previously, I was able to classify what types of octaves the different tests would give, and was able to create a few new tests for types of octaves which were not talked about much back then, but are common now.

> "
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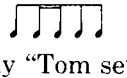
> "

During the same conversation, Jim mentioned he was having trouble counting five beats in the same amount of time that four beats had previously occurred, to be able to test by ear the 5:4 ratio of contiguous Major 3rds. As a music major, this was easy for me. My junior high orchestra teacher had taught us words to go along with the rhythms we were learning. When we saw:



we would say "Tom set a rat trap." Jim's problem was slightly

more complex. The rhythm would be notated:

Finding a word with five equal syllables would be difficult. Making a sentence using the word could be even tougher. While we were eating, the solution became clear: "Mary had an appendectomy." I gathered up my courage to suggest such a method to Jim, and then simply stated "You know, Jim, counting four against five is easy. You just say 'Ma-ry had an ap-pen-dec-to-my.'" This was as great a revelation to him as learning that the m3 - M6 test was the test for a 6:3 octave was for me. We have been friends ever since. (Jim paid for the pizza).

Since that time, the "On Pitch" series of articles in the *Journal* has covered in depth what was triggered by a simple but key piece of knowledge imparted over pizza in Provo, Utah.

Enough of this. Jack also asked that I come up with some sort of format for "Tuning Up." I envision a column which will deal with questions and answers, articles from regular or guest authors, reader comments and personal contributions dealing with the human as well as technical aspects of tuning. Technicians interested in submitting material should write to me at *2684 W. 220 North, Provo, UT 84601.*

Questions and Answers

Our first question comes from Larry Ellis of Brookings, Oregon. Larry writes:

I've read many books including Dr. White's Piano Tuning and Allied Arts. *Dr. White clearly states that intervals should gradually speed up coming up the scale. This includes fourths and fifths. He also states that that one particular interval such as a fourth should beat twice as fast as the same fourth one octave lower. For example: the fourth C5 to F5 should beat twice as fast as the fourth C4 to F4. Also the next fourth C6 to F6 should beat twice as fast as the fourth C5 to F5. By the time we would get to the end of the scale, the fourths and fifths would be beating quite rapidly. My question is this: Did Dr. White's piano tuning actually sound this way, that is, the way he tells us they should sound? Did his fourths and fifths up the scale beat rapidly like he says they should? This conflicts with many tuners tuning fourths and fifths coming up from the temperament beating about the same, or nearly one per second in practice, approaching purity towards the end of the scale. Please help me out because from where I sit it gets confusing.*

TABLE OF FREQUENCIES FOR EQUAL TEMPERAMENT

F 3	174.614
F#3	184.997
G 3	195.998
G#3	207.652
A 3	220.000
A#3	233.082
B 3	246.942
C 4	261.626
C#4	277.183
D 4	293.665
D#4	311.127
E 4	329.628
F 4	349.228

According to theory, an instrument tuned in equal temperament has fundamental frequencies in the ratio of 1:1.059463094, or one to the 12th root of two ($\sqrt[12]{2}$). Assuming that the instrument was tuned to A-440, the frequency of A3 would be 220. If we divide 220 by 1.059463094, we get 207.65, or the frequency of G♯3. If we then divide the frequency of G♯3 by 1.059463094, we get 195.98, or the frequency of G3. Continuing the process downward would net 184.98 for F♯3, and 174.61 for F3. To calculate from A3 upward, multiply 220 times 1.059463094. The result is 233.08, or the frequency of A♯3. If we then multiply the frequency of A♯3 by 1.059463094, we get 246.94, or the frequency of B3. Continuing the process upward would net 261.63 for C4, 277.18 for C♯4, 293.66 for D4, 311.13 for D♯4, 329.63 for E4, and finally 349.23 for F4.

To generate the beat rates for the various intervals, we must multiply these fundamental frequencies for the interval involved by the ratio of the coincident partials. Say, for instance, that we want to calculate the beat rate for the F3-A3 Major 3rd. The ratio of the coincident partials for a Major 3rd is 5:4, that is five times the fundamental frequency of F3, and four times the frequency of A3.

5 x 174.614 = 873.070.
4 x 220.000 = 880.000.
880.00 - 873.070 = 6.930.

This means that, in theory, when the F3-A3 Major 3rd is played, 6.93 beats per second are heard. If we perform the calculations again for the F♯3-A♯3 Major 3rd, we would find that:

5 x 184.997 = 924.985,
and that 4 x 233.082 = 932.328.
932.328 - 924.985 = 7.34 beats per second. If we divide 7.34 (F♯-A♯) by 6.93 (F-A), the result is 1.059, or the twelfth root of two. From this we can see that not only do the fundamental frequencies of the notes of equal temperament progress is the ratio of 1: 2, but so do the beat rates of the intervals made from these notes. From this, it is easy to see how Dr. White generated the beat rate tables in his book. If we carry the experiment up an octave to F4-A4, we would find that:

5 x 349.228 = 1746.14
and that 4 x 440 = 1760.
1760 - 1746.14 = 13.86 beats per second for F4-A4, which is 2 x 6.93 for F3-A2. From this we can see that the beat rates do indeed double every octave. The ratios of the coincident partials, and theo-

Fifth (3:2)		Fourth (4:3)		Major Third (5:4)		Major Sixth (5:3)	
F3-C4	0.59	F3-A#3	0.79	F3-A3	6.93	F3-D4	7.93
F#-C#4	0.63	F#2-B3	0.84	F#3-A#3	7.34	F#3-D#4	8.40
G3-D4	0.66	G3-C4	0.89	G3-B4	7.78	G3-E4	8.90
G#3 D# 4	0.70	G#3-C#4	0.94	G#3-C4	8.24	G#3-F4	9.42
A3-E4	0.74	A3-D4	1.00	A3-C#4	8.73		
A#3-F4	0.79	A#3-D#4	1.05	A#3-D4	9.25		
		B3-E4	1.12	B3-D#4	9.80		
		C4-F4	1.18	C4-E4	10.38		
				C#4-F4	11.00		

Figure 1

retical beat rates for the Fifth, Fourth, Major Third, and Major Sixth are listed here (Figure 1).

As one can see, the beat speeds do in fact speed up as we go up the scale. Not only do they speed up, but they speed in at a constant rate, the rate of $1:\sqrt[12]{2}$, and do in fact double every octave, as Dr. White indicated.

In answer to your question, I cannot say whether or not Dr. White's piano tunings sounded this way, as he and I did not live at the same time. I can only assume that they did not, and could not. The reason is the inharmonicity in the piano. All of Dr. White's tables and calculations work perfectly on a pipe organ, where the overtones are harmonic (assuming of course a pipe with all overtones present), but the numbers themselves are totally meaningless on the inharmonic piano. They simply will not work. Why? Because the beat rates were calculated from whole number multiples of the fundamental frequencies. The result of inharmonicity is that the actually frequencies of the partials are *not* whole number multiples of the fundamental frequencies, but slightly higher. In addition, because of inharmonicity, *it is impossible to tune the piano in equal temperament!* All of Dr. White's calculations were based on equal temperament. The numbers themselves are therefore meaningless when applied to the piano.

What are useful are the patterns and tendencies which the numbers generate. Patterns such as the beat rates speeding up as we go up the scale. When we tune the piano in our attempt at equal temperament, we strive to have the beat rates speed up as we go up the scale. They will not, however, speed up at the rate of $1:\sqrt[12]{2}$, and double every octave, but something slightly less than that. The reason is that inharmonicity of a given partial is approximately the inharmonicity coefficient times the square of the partial. This means that for a Fourth, for instance, we would multiply the coefficient of the lower note by 16 (4^2), while multiplying the co-efficient of the upper note times 9 (3^2). The fourth partial of the lower note in this case is relatively sharper than the third partial of the upper note. Since the lower note is subtracted from the upper note in this case (because the fourth is expanded) the net beat rate will be less. For example let us compare what could be a real piano fourth, and a theoretical fourth (Figure 2).

In this example, the 4th partial of the lower note was sharp of theoretical by 3.5 cents, 1.414 beats, while the 3rd partial of the upper note was sharp of theoretical by only 1.9 cents, or 0.767 beats. The net result is that the piano fourth, with both fundamental frequencies tuned to the same frequencies as the theoretical fourth, beats 0.647 beats slower than the theoretical fourth. The same principle would hold true for the Major Thirds and Major Sixths.

Let us look for a moment at the fifth. If the same held true for the fifth, we would expect that the fifths would beat faster than the theoretical frequencies, since the Fourths, Major Thirds, and Major Sixths (expanded intervals) beat slower. Let us compare what could be a real piano fifth, and a theoretical fifth (Figure 3).

In the above example, the 3rd partial of the lower note was sharp of theoretical by 0.33 cents, or 0.1 beats, while the 2nd partial of the upper note was sharp by 0.40 cents, or 0.121 beats. The net result is that the piano fifth, with fundamental frequencies tuned to the same frequencies as the theoretical fifth, beats 0.021 beats *slower* than the theoretical fifth. This is the opposite of what was expected. The explanation lies in the fact that although the inharmonicity co-efficients are still being multiplied by the square of the partials, the co-efficients themselves are increasing. The coefficient of C4 is greater than that of F3, enough so that the 2nd partial of C4 is relatively sharper than the 3rd partial of F3, in spite of the fact that the co-efficient of C4 was multiplied by 4 (2^2), and the coefficient of F3 was multiplied by 9 (3^2).

From the above it is clear that the calculation of theoretical beat rates will not work on the inharmonic piano. The patterns which they establish are things we strive to incorporate in our attempts at equal temperament, namely, the speeding up of parallel intervals going up the scale. The calculations also give us general indications as to what we might expect in terms of beat speeds when starting to tune the temperament (Fifths about 1/2, Fourths about 1, and F-A 3rd about 7, etc.). The beat speeds do increase going up the scale, but because of inharmonicity, do not double every octave. Fortunately for us, octave stretching tends to make the Fifths somewhat more pure, and the tonal spectra of the treble notes act in such a way that by the time the Fourths are beating rapidly, we cannot hear them any more.

Our second question comes from Mark Stivers of Sacramento, California. Mark writes:

In the July Journal, *Susan Graham says that "big pianos want more stretch." During a meticulous seminar on temperament tuning, I heard Michael Kimbell say the same thing. However, isn't it the small pianos which have more inharmonicity and therefore want more stretch?*

In answer to your question, I believe that big pianos want more stretch, and that small pianos want to be big pianos. Actually, it depends a little bit on your per-

Figure 2

	Note	Fund Freq.	4th Part.	Note	Fund. Freq.	3rd Part.	Beats
Piano	F3	174.614	699.870	A#3	233.082	700.013	0.143
Theory	F3	174.614	698.456	A#3	133.082	699.246	0.790

Figure 3

	Note	Fund. Freq.	3rd Part.	Note	Fund. Freq.	2nd Part.	Beats
Piano	F3	174.614	523.942	C4	261.626	523.372	0.570
Theory	F3	174.614	523.842	C4	261.626	523.251	0.591

spective. In art, perspective is a means by which we draw things in a way which we know they are not, so that they look right. (The train tracks never really do come together). We must distinguish whether we are talking about octave stretch, or what has come to be known as the "Tuning Curve" of a piano. In practice, the tuning curve tells us *nothing* about how much the octaves are stretched. To tell how much an octave has been stretched, we must consider which level of partials have been matched. This subject requires more attention than can be given it this month, and I will continue on with it next month. In the meantime, remember that to the members of the Flat Earth Society, a pizza looks like a basketball.

Please remember to send your tuning questions, comments, ideas for future articles, articles for possible publication, and good stories to me:

Rick Baldassin
2684 W. 220 North
Provo, UT 84601

TOOLS OF THE TRADE

Does Anyone Have A Better Mousetrap?

Richard Hassig
Quad Cities, IL, Chapter

No, I don't really want to catch mice. nor do I want to sell mouse traps to my customers. You know the old story about building a better one, and the world beating a path to your door? Personally, I have come to put little credence in that old saying. This isn't a plug for advertising, but how will the world know you have a better trap if nobody tells anybody. My "mouse trap" is my tool case. I have come to hate mine, and I would like to find a better one.

One of the first things I want in a tool case is that it makes a good appearance. For example, I don't want people to think that I am going fishing or anything like that. I have nothing against fishing, you understand, it's just that is not the impression which I wish to convey. The attache case, which I have carried for several years, fits that requirement quite nicely. That is about the only thing about it which I like.

The second thing about my case I desire is that tools can be well organized. I thought this case would fill that need very well. It has all those nice pockets. But stuff doesn't stay put. I never know where things are going to end up.

Since much of my traveling is by buses and taxi cabs, it would be nice if I could carry a reasonable amount of supplies. This case falls far short of that. This ideal case should also be able to carry all this stuff and be light in the bargain.

I do not expect my tool kit to like me, but it sure would be nice if it didn't dislike me. Mine, when I least expect it, slams the lid down on my hands while I am looking for something which it has hidden.

What I am looking for then, is a beautiful, spacious, well organized tool case. One that gets lighter as you put stuff into it, and has a friendly disposition. Does anyone know of a mouse trap, excuse me, tool case like that?

I had very much hoped to see something in Las Vegas that I would like better, but I didn't. While at the display of tools and such, I commented to someone my opinion of the case which I carry. He suggested that might be a possible article. Whoever that was, this article is his fault. Several people at the convention commented favorably on my magazine pieces. I appreciate that very much.■

G O O D

VIBRATIONS

A Specific Soundboard

Nick Gravagne
New Mexico Chapter

The first article of this series discussed several theoretical aspects of piano soundboards. The main point of that discussion was simply that soundboards must be flexible and responsive. If they are not, the energy from the vibrating string will be insufficient to move a rigid or heavy soundboard and, to the extent the board doesn't move, there will be loss of power and tonal color. This idea of encouraging soundboard responsiveness is in evidence in a number of familiar structural applications, for example: ribs pared down at their ends (the board is stiffer at its glued perimeter), most instruments have bass bridges with cantilever design, tenor sections of some treble bridges are "stepped out" (glued to the soundboard only where a rib is located, such as on the Steinway M and some pre-Accu-Just Baldwin grands), the grand piano inner rim gluing surface area in the extreme treble is reduced, the long bridge is narrowed where glued to the soundboard.

Piano builders are aware of the importance of a responsive soundboard. It was for one company, however, to take this idea in an interesting direction. The company was Steinway, the time the 1930s, and their innovation was, and is, called the diaphragmatic soundboard. Although the spruce sheet on this board has a unique taper to it (parabolic, more or less) the designation of diaphragmatic is descriptive not of its physical characteristics, but of its intended action — a vibrating diaphragm.

The following is a somewhat condensed report of the findings of a series of technical experiments regarding soundboard responsiveness. The particulars were originally published in the *Journal of the Acoustical Society of America* in 1940. A more complete disclosure of the publishing information appears at the end of this article and a more complete treatment of the subject matter is in the published account itself. It is not the design of this article to suggest that Steinway's concept of soundboard design is superior to that of any other builder. In fact, the technique of tapering and thinning soundboards in order to make them more vibrant had been around for many years prior to the time that the following experiments were conducted.

"

The development history of the piano soundboard is replete with examples of structures which testify to the difficulty of designing a single apparatus capable of responding to the full frequency range of the piano scale.

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The development history of the piano soundboard is replete with examples of structures which testify to the difficulty of designing a single apparatus capable of responding to the full frequency range of the piano scale. Since the range covers 27.5 cycles per second to 4186 cycles, any type of board will tend to discriminate against certain frequencies while encouraging others. The higher frequencies, particularly the treble ranges, present a peculiar problem in that, along with more vibrations per second, these ranges utilize strings which are shorter, stiffer, and whose imparted energy is soon dissipated. Strings in the lower ranges have more length and mass and the energy they deliver to the soundboard is not so soon dissipated. It could be said that "the string tones in the treble region are much weaker in energy and shorter in duration."

As a result, a great deal of experimentation has been undertaken relative to soundboard dimensions, materials, shapes, mountings and other physical and theoretical characteristics. Some examples are boards as much as one-inch thick and as little as 3/16- inch thick; built with metal, parchment and plywood, separately and in combination; cylindrical and box-like configurations; leverage devices and auxiliary boards. All of these were eventu-

ally abandoned in favor of the general type of board now in existence as no discernible improvement was recognized in any of them.

It became apparent that measuring the soundboard vibrations in an actual piano might reveal a great deal of information. If soundboard responsiveness was required it would be a good idea to have some notion of whether soundboards were best fulfilling this prime function or not. In order to determine this the experimenter (Paul Bilhuber from Steinway and C.A. Johnson, E.E. Free Laboratories) developed a suitable vibration pick-up which was made to contact the soundboard from the top at all accessible areas. The pick-up was placed in a mounting grill which allowed it to be moved to various placements and a slender probe was made to contact the board at the center of each square in a gridwork consisting of two-inch squares. The vibration of the soundboard was mechanically transmitted to the pick-up via the probe and the output signal was coupled to a standard soundmeter system so that the "relative level of vibration could be measured for accessible squares on the board." A motor-driven striker was also developed in order to deliver a controllable and repeatable blow to the piano keys of several selected notes in the scale.

The first set of experiments was made on the Steinway (pre-diaphragmatic) 5′ 7″ grand piano which was judged to have "a very acceptable tone quality." The piano was Steinway state-of-the-art at that time — untampered-with and containing the usual standard materials and workmanship. The results of the vibration pick-up system were recorded on topographical maps showing the grand board outline with the two-inch squares shaded. Dark shades indicated relatively more movement and lighter shades indicated little to no movement. Arbitrary percentages were assigned to the shading spectrum with a higher vibrational output having a higher percentage.

Next, the very same piano was used to conduct another round of observations. This time the compression on the soundboard was deliberately maladjusted in the direction of too much downbearing in an non-uniform manner. An audible change, both in intensity and duration of tone, for certain sections of the scale was perceived. The two sets of topographical maps were placed side by side and a visual comparison indicated the following: (1) the average decibel level in the uniform compression test was 4db higher than the non-uniform test; (2) a greater area of soundboard was active for the condition of uniform compression. This second set of vibrational pick-up tests graphically corroborated what the ears had judged to be better piano tone.

It was concluded that uneven and excessive downbearing introduces buckling strains in the soundboard which tended to stiffen certain portions of the board rendering them incapable of free movement. A board under uniform and not excessive compression not only has greater responsiveness to string energy but vibrates more nearly like a diaphragm, fully and evenly. These preliminary results indicated a larger principle to the experimenters — "anything that could be done to encourage the diaphragmatic response of the board would result in better tone." In terms of improving a soundboard design it appeared that any change which would increase soundboard responsiveness would improve tone quality and general performance. This is especially true of shorter scaled instruments with reduced soundboard area.

The next step was inexorable. A study of soundboard construction was undertaken with two objectives: (1) reduction of mass and stiffness; (2) elimination of any cross or buckling strains in the structure and its mounting. Perhaps a board could be made which more nearly fulfilled its function of best response to string vibrations. The minimum mass/stiffness in any soundboard is fixed by the requirements for mechanical strength and resistance to the compressive force of downbearing. The team determined for a structural analysis of the standard board in that piano that it would be possible to make the board thinner at its perimeter and still satisfy the mechanical requirements of strength. It was hypothesized that a soundboard which was thinner all around the edges would allow for greater board movement throughout and would, to some extent, counteract the effects of the unavoidable and critical stiffness right at the gluing surface.

A new board was made — the first of its type. A parabolic taper was introduced into the spruce sheet from the center of the area toward all the edges. Because of the irregular perimetrical shape of the grand soundboard the board is thickest at its center of area and thinnest in the extreme treble area. (Imagine a circular spruce sheet with uniform parabolic taper. The perimeter would have a uniform thickness dimension all around. Now superimpose a grand soundboard over the circle and coincide the centers of area. Cut out the grand shape and it can readily be seen that the treble region lies farther out in the thinner areas than does the rest of the board. Incidentally, diaphragmatic boards are not made in this fashion.) This tapering reduced the weight of the standard board by seven percent and stiffness by 20 percent according to static load tests. It can be seen that stiffness decreased by three times the weight reduction.

Next, a review of the method of mounting the board to the rim revealed a possible source of buckling strains. Because there is a crown in a soundboard the indented edge along the treble side lies in a higher plane than the other edges. However, usual piano construction practice was to press the board to its rim for gluing in one common plane. In order to eliminate the buckling strain caused by this practice, the gluing surface at the indentation was raised to meet the raised edge of the board. (The reader is advised to see last month's article which included a graphic representation of this idea.)

So, at this point the revision of soundboard structure and mounting involved three definite changes:

1. minimizing adverse strains of excessive and non-uniform downward compression by meas-

uring downbearing and adjusting to a predetermined optimum

2. reducing mass and stiffness in the soundboard by parabolic taper

3. eliminating buckling strains in the mounting of the board by raising the gluing surface along the side indentation of the treble edge.

This "new type" board, as it was called, was installed in the 5′ 1″ model and was compared to another piano of the same size which had the "old type" board. Provision was made to use the same action in both pianos so that the only real difference between the two was the soundboard and mounting. The bearing adjustments were as identical as practically possible. Did it work? Was there an improvement?

Listening tests came first. Pianists and musical experts, not knowing which piano was "new and improved," indicated a decided preference for the new, calling it more "lively." The pick-up tests were the obvious next step and they bore out in graphic and measurable terms what the pianists observed. Without going into too much statistical data, the test for vibrational intensity, air-borne sound, and decay rates all confirmed the superiority of the new-type over the old. The high points are this:

1. average gain in decibels in the new-type board was 2.5db, with the highest gain of 4.8 in the first octave and the lowest gain of 1db in the seventh octave.

2. air-borne energy measured in a plane two feet above the board and at a ten foot radius was increased an average of 1.6dbs with 2.3dbs in the first octave and 1.2dbs in the seventh octave.

3. decay rates for the fifth to eighth octaves all increased an average of 32 percent over the old-type board (longer sustain time).

The team's conclusions were summed up as follows:

1. The changes in structure of the soundboard and its mounting have increased its tendency to vibrate like a diaphragm with the maximum amplitude near the center of the board.

2. A systematic method of adjusting the downward pressure of the strings permits an optimum equalization of the pressure for different sections of the bridge.

3. The increased response of the board has resulted in a small increase in intensity level of the air-borne sound. The pianist can produce slightly louder tones with the same amount of playing effort.

4. The increased response of the board has definitely increased the duration of tone for a given intensity of strike. This is a major factor in increasing what the musician calls the "liveliness" of the piano.

The diaphragmatic soundboard has been standard equipment in all Steinway pianos since 1936. The ribs are placed and dimensioned with the same guiding principle, striking the fine balance of required strength to responsiveness ratio.

To keep the foregoing in perspective, it should be pointed out that other fine pianos are built with soundboards of uniform thickness throughout or tapers in selected areas. Nevertheless, good vibrations in the soundboard, however obtained, are a significant factor in determining the quality of piano tone.

Next month, the bearing of all this on the rebuilder.■

"The influence of the Soundboard on Piano Tone Quality," by P.H. Bilhuber and C.A. Johnson

Experiments conducted in the 1930s, paper of results presented to Acoustical Society of America in October of 1939, published 1940 in *Journal*, 11 (3), 311-320. Can be found in any good library such as exists in a university.

The account can also be found in the book, *Musical Acoustics, Piano and Wind Instruments*, an anthology of technical papers edited by Dr. Earle L. Kent, RTT. The book is listed as being available from the Guild library.

Stein Advancements In Piano Design

Jack Greenfield
Chicago Chapter

Stein's Production After Ending Work On Church Organs

After Johann Andreas Stein gave up work on the construction of church organs in 1766, he devoted more time to piano building while continuing to make harpsichords and clavichords. Among the papers Stein left is an undated list of 30 instruments he built, customers, and the prices he received early during this period (shown in Russell's *The Harpsichord and the Clavichord).* The list, probably compiled before the demand for his pianos became greater, includes nine *Forte Pianos,* 12 harpsichords and nine clavichords. Some references believe the list represents the output of one year of work in Stein's shop. Other authorities believe he built 20 to 25 instruments per year but a more reasonable figure for Stein's annual production suggested by Loesser (*Men, Women and Pianos*) is 17 to 18 as determined by calculations based on Stein's known lifetime production.

Stein's Experimental Instruments

Stein also carried on work on experimental instruments. He had an interest in double action keyboard combinations. During his trips to Paris he may have become familiar with the earlier 1716 design by Marius combining hammers and harpsichord jacks (*Journal,* p. 20, May 1986). No instrument with this Marius action was ever made but the records of *L'Academie Royale des Sciences* published in 1735 contain a drawing of a four-note action model that had been built. According to contemporary accounts cited by Marcuse (*A Survey of Musical Instruments*), hybrid keyboard instruments with hammers and harpsichord jacks or with hammers and clavichord tangents were frequently made by German builders during the middle decades of the 18th century. The best known and most satisfactory of these instruments appears to have been the "Poli-Toni-Clavichordium" of Stein described in the October 5, 1769 *Augsburger Intelligenzblatt.* The rectangular case actually contained two separate instruments, a harpsichord fixed on the top of a piano. The harpsichord section with two manuals contained three sets of

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. . . hybrid keyboard instruments with hammers and harpsichord jacks or with hammers and clavichord tangents were frequently made by German builders during the middle decades of the 18th century.

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eight-foot and one set of 16-foot strings. The piano section had a separate set of stings and a damper lift operated by a knee pedal. Stein pointed out that strings struck by hammers required a different scale than those plucked by harpsichord jacks. All keyboards could be coupled.

Stein and some of his contemporaries also built combinations of piano with small pipe organ. Previously harpsichord/organ combinations had been built as early as the second half of the 16th century. After about 1800, the reed organ replaced the pipe organ in the combined instruments that were still made during the 19th century.

Stein built a "clavecin organize" or "claviorganum" — the terms applied to such instruments — for a Swedish customer. The instrument has an upper keyboard for the piano and a lower keyboard for the organ, each with the range F1 - F6. There are four ranks of organ pipes in the lower part of the case. This instrument dated 1770 has been preserved in the Historika museum Goteburg, Sweden.

A design Stein invented for conversion of any piano into an organ combination was the "Melodika" described in the *Beschreibung meiner Melodika, eines neurfundenen Clavier instruments* he published in Augsburg in 1772. The Melodika itself was a small organ with square wooden pipes arranged horizontally in a wing-shaped case suitable for placement on top of a grand piano. The Melodika with a range of three and one-half octaves beginning at G below middle C was designed to provide a melody voice to the accompaniment of the piano.

Stein advertised locally but finding no buyers for the Poli-Toni-Clavichord and Melodika in Augsburg he took these instruments with him on another trip to Paris in 1773. He was able to sell both of these instruments before returning to Augsburg.

Early Bumping Action Designs

Considering Stein's training and experience, he was probably familiar with other piano actions also but he chose to work with bumping actions, the type then being used by many German piano makers because such actions were simpler and cost less to construct. Bumping actions have the following characteristics according to the classification of Pfeiffer (*The Piano Hammer*, 1948):

1. The hammer head/shank/butt assembly is supported on the key and acts as a two-armed lever pivoting several inches from the bottom end of the shank or butt.
2. As the key is depressed, the hammer head is thrown upward when the opposite lever end bumps up against an obstacle — the *Prelleist*, a bumper rail in the early designs or some other type of stop in later designs.

Several different stages in the development of the bumping action progressing to the Stein design can be seen in existing examples of pianos built after the middle of the 18th century. The earliest and simplest bumping action is found in a small square piano in a collection in Stuttgart (*Journal*, January, 1979, p. 12). The action is not much more than a simple modified clavichord action. The hammer and shank lie on top of the key lever with the hammer head toward the front. The back end of the key lever is beveled downward several inches before the end. This allows the lower end of the shank to swing downward from the leather hinge attached between the shank several inches above the bottom end and the top of the key lever at the start of the bevel. There is no escapement and there are no dampers or back checks.

In the next stage, dampers were added and the leather hinge was replaced with attachment of the shank or butt to pivot from a screw in the side of the key lever narrowed at the rear to allow room for the hammer. Several different variations of keyside mounted hammer assemblies are used in existing old German pianos.

In the third stage of development, seen in pianos built from about 1760 on, the hammer assembly is held in a large wooden or metal flange known as the *Kapsel*, set on the top of the key lever, usually near the back end. *Kapsel* mountings allow much more freedom of movement and were widely used in more or less modified forms in later bumping actions. The originator of the *Kapsel* design is unknown.

"

The Prellmechanic of the 1760s served its purpose in the small square pianos played in the home by amateurs but it still had a serious deficiency, the lack of escapement. This made it difficult to produce much variation in the force of the hammer blow without causing the hammers to block.

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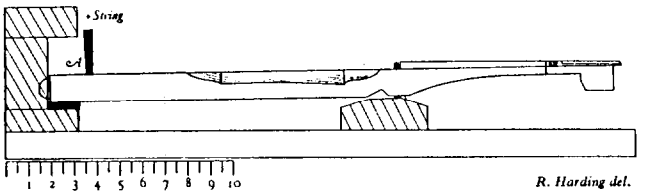
Stein's Improvement Of The Bumping Action

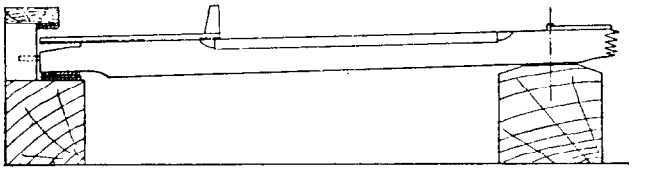
The *Prellmechanic* of the 1760s served its purpose in the small square pianos played in the home by amateurs but it still had a serious deficiency, the lack of escapement. This made it difficult to produce much variation in the force of the hammer blow without causing the hammers to block.

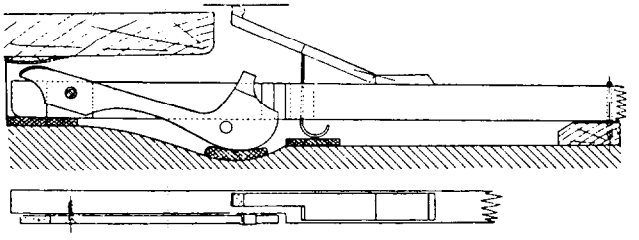
Although definite documentation is lacking, Stein is believed to be the sole inventor of the action escapement mechanism that finally made the piano more acceptable to professional musicians of Germany and Vienna. The first pianos with the Stein escapement were instruments he built in 1773. In these, individual hinged and light spring-loaded escapement levers set behind the back end of each of the key levers, take the place of the continuous fixed bumper rail of the earlier bumping actions. The bottom end of the hammer butt extending beyond the pivot toward the back, terminates in a beak-shaped projection. The "beak" fits in the notch of the escapement



Clavichord action

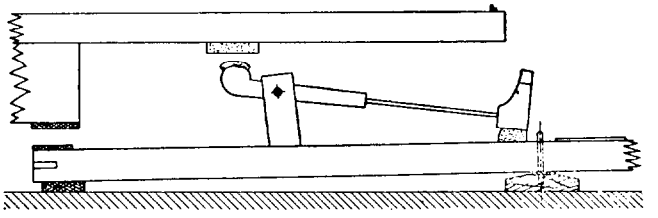
Basic bumping action

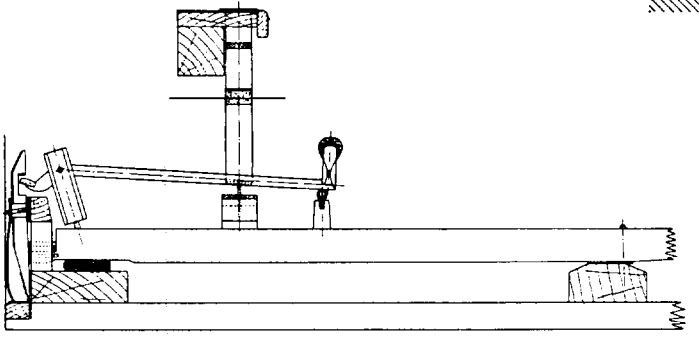




Bumping action with side-mounted hammer

Bumping action with hammer supported by Kapsel (flange)





Bumping action with Stein escapement

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lever. When the key is depressed and the *kapsel* rises on the back side of the key lever, the beak remains caught in the notch thereby causing the hammer to lift. The beak is finally released as the arc of travel of the *kapsel* and hammer draws it out from the notch just before the hammer strikes the string. After release of the key, as the back end of the key lever descends, the beak slides down across the front returning to the notch of the escapement lever. Short shallow key motions, not deep enough to cause the beak to escape, are used for rapid repetition.

Stein built his actions with small light hammers, with two different types of hammer heads. One type consisted of hollow cylinders of leather attached to short pieces of hazelwood molding. The others were made up of a small solid tapered pieces of pearwood with a thin leather covering. The hammer head weights given in Pfeifer's study are 1.0 grams in the bass to 0.45 grams in the treble, approximately the same weight as Cristofori's hammer heads. The figures shown for a modern piano (1943) are 8.4 to 4.1 grams.

In rest position, the backs of the hammer heads lie on short rest posts attached on top of the key levers. The rest posts are covered with a soft thick cloth that absorbs the shock so that the hammer heads do not bounce. The rest posts thus function as backchecks.

Individual dampers are raised by a damper rod support on each key between the *kapsel* and the hammer rest post. The dampers fit in a lift rack which can be raised for sustained tones by means of a knee lever linked to the rack.

Stein's escapement operates on different principles than used in the jack-type actions of Silbermann's pianos or those shown by Schroter in 1764 in the only drawing of an action of his ever published. Other important differences make it doubtful that there was any connection between Stein's escapement design and the known work of Silbermann or Schroter.

Other Details Of Stein's Pianos

Following is a summary of other details of the excellent construction of Stein's pianos given in the section "Pianoforte" in *Grove Dictionary of Music* (1980):

Grand Case Construction: double wall curved bentside frame braced by two or three frame members perpendicular to the straight side and several diagonal supports, case bottom closed by a thick board.

Soundboard: quarter-sawn spruce of graduated thickness supported by ribbing glued to underside.

Stringing: most pianos double-strung except for triple-strung top one to one and one-half octaves, a few Stein pianos are double or triple strung throughout.

Keyboard: keys constructed of spruce, coloring reverse of modern keys - ebony tops on naturals and sharps pearwood topped with bone or ivory, usual range five octaves F1 - F6.

Examples of Earliest Pianos With Stein's Escapement Action

A Stein grand piano dated 1773 in the Wurttemberg State Museum, Stuttgart, is one of the first containing his escapement action. Pfeiffer's examination found the touch very light, let-off resistance barely noticeable, repetition excellent, key dip about six millimeters and touch weight 30 grams beginning in the bass rising to an additional 20 grams in the treble. The reason for the rise is not given by Pfeiffer. Other Stein grand pianos built about the same time are in the Karl Marx University Collection, Leipzip and the Neupert Collection, German National Museum, Nurnberg.

The Smithsonian Institute has a fine German grand piano with a 1773 Stein label. The label was discovered to be a false copy when the piano was disassembled for restoration. Traces of the signature of Louis (Ludwig) Dulcken were found on the soundboard then. Dulcken was a highly regarded late 18th century builder who prospered after moving from Amsterdam where he made harpsichords to Munich where he produced pianos. The Stein label was probably put in the piano later by someone who wanted to drive up the price of the instrument.■

AT

LARGE

What's New
— Report From The NAMM Winter Market

Larry Goldsmith
Executive Director

The distinction between acoustic pianos and electronic instruments, and for that matter the piano industry in general, became even more blurred as exhibitors at the recent National Association of Music Merchants Winter Market in Anaheim, CA, attempted to provide something for every conceivable segment of the market.

There were acoustic pianos that sounded like synthesizers, electronic keyboards that tried to look like traditional pianos and furniture designed to make electronic keyboards look like traditional pianos. There were plenty of players, both high- and low-tech. There were new imports, and, from the manufacturers who share the largest portion of the domestic market, there were subtle and not-so-subtle adjustments designed to capture a precious few additional share points.

Both Yamaha and Kawai showed MIDI-equipped pianos, adding a whole new electronic language to the instrument's traditional voice. In fact, MIDI, which stands for "Musical Instrument Digital Interface," has become the buzzword of the music industry. Put simply, MIDI is an attempt to establish an industry-wide standard communications language allowing all manner of electronic devices such as keyboards and drum machines to control each other. In the case of the Yamaha and Kawai instruments, pressure-sensitive contacts are added below the keys and are connected to a control panel. Kawai's control unit, a factory-installed black box mounted under the keybed, is apparently available to dealers now.

Yamaha showed three prototype MIDI-equipped Conservatory Grands, two of them in a series of splashy twin-piano performances by pianists Norman Landsberg and Robert Yount. Synthesizers, drum machines and other voices definitely overshadowed the sounds the instruments were originally designed to make.

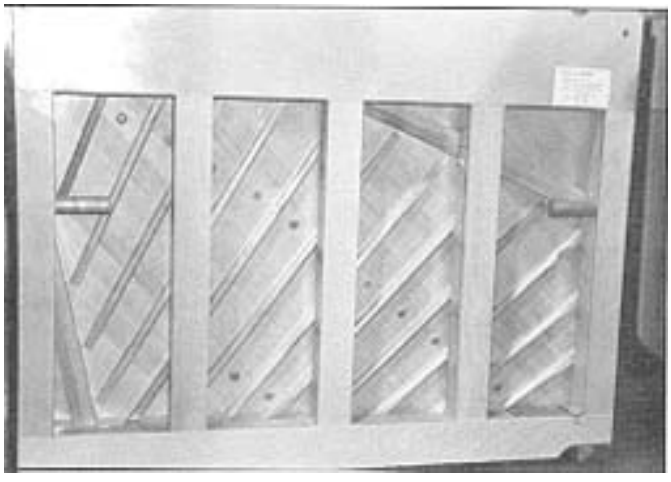
> "There were acoustic pianos that sounded like synthesizers, electronic keyboards that tried to look like traditional pianos and furniture designed to make electronic keyboards look like traditional pianos."

Yamaha mounted MIDI controls in the fallboard, showing discreetly as a black panel containing switches, indicator lights and a digital readout. Thumbwheels for electronically "bending" pitch and changing modulation were mounted in the cheekblocks, and the instrument had not one or two but four additional pedals, although they were not structurally attached to the pianos.

Yamaha also showed its WX-7 52" upright, a replacement for its U7AR.

Baldwin showed modifications in prototype form to its long- running Hamilton 5000 Series upright from its Trumann, AR, research and development lab. The modifications displayed should have been made during the regular production run by the time you read this, a fairly radical step for a manufacturer as large as Baldwin.

The most obvious departure involves a new fan-shaped soundboard rib pattern in which the ribs sweep in somewhat of a sunburst with the center at lower left. The plate has been stiffened, with the addition of three



Both Kawai (top left) and Yamaha (top right) showed midi-equipped pianos while Kurzweil (left) had an electronic "Ensemble Grande." Weber (center), now owned by Young Chang America, returned, while Baldwin (right) showed modifications to its Hamilton upright including a radial rib design.

threaded nosebolts. The shape of the bass bridge apron also has been altered.

In a separate booth near the Baldwin display was a seldom-staffed Pratt-Win Corp. booth displaying keys and actions. It was not, however, listed separately in the show program book.

Steinway, which traditionally has distanced itself from the rest by confining its activities to a suite in a nearby hotel, came closer this year to joining the rest of the show. Although the company kept its suite, it also displayed pianos in a tastefully appointed room just off the main exhibit floor. The room, a sharp contrast to the bright and noisy show floor, was designed to show dealers the company's idea of how pianos should be displayed.

One newcomer to the show was an old name, Weber. Owned for years by Aeolian Corp., the Weber name was purchased after that company's demise by Young Chang America. Wever is headed by Bob Laube, late of Aeolian. The Weber line is completely different from that of Young Chang America, a Weber sales manager noted, because of their more traditional American styling, different sizes and separate scales. He enthused over the marketing advantages of a fine old American name attached to a Korean-made piano. The seven- and nine-foot grands had Renner actions. Stylings were by Ron Watson, who designed Aeolian's lines.

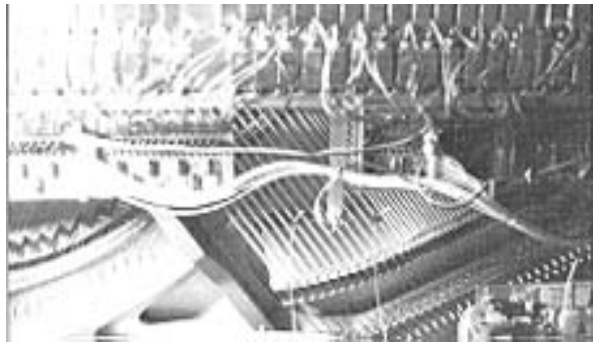
At Young Chang's huge new booth, the new-product emphasis also was on American-type stylings. Young Chang launched four new "F-108" upright models featuring solid lumber construction, Royal George felt hammers, solid wood action parts, solid Sitka spruce soundboard and vacuum-cast plates. The new models also boasted hand-rubbed lacquer finishes and new matte-surface sharps.

One trend shared by several companies was a move away from polyester finishes to new lacquer finishes. A representative of one manufacturer noted ironically that this has caused some minor problems with their manufacturing personnel because those plants have always been set up for polyester finishes. "We've spent quite a bit of time working with them on this, because in a lot of ways, lacquer represents new technology to them," he said.

Tadashi in particular showed a rich-looking lacquer finish its representatives said had been obtained from a Swedish manufacturer. The finish is said to be UV- and fade-resistant, doesn't chip, and repairs like lacquer.

Tadashi showed no grands, preferring to display its new model T-14 uprights. They showed three models, all with serial numbers below 30, and all prominently displaying "Made in Canada" tags. They sported vacuum-cast plates, Langer actions, solid spruce soundboards and six backposts.

Samick showed six new grand lines and eight verticals, including an 85-note 50″ and a 75-note 48″ all in a wide variety of finishes and styles. The finishing touches on the grands included gilded glourishes (pure gold, a representative assured us) on both black and white finishes, and European-style inlay work. Samick has added Renner parts and all grands now have butterfly wippens.



Tadashi (far left) showed its new model T-14 uprights with lacquer finish. Pratt-Win Corp. (left) had its own booth within the Baldwin complex. Inlay work and gilding (left) were new touches added to Samick's grand pianos, while Wurlitzer (left) showed Wurlitzer and Chickering verticals made in Holly Springs, MS. With renewed interest in players, Yamaha (far left) showed a computer-based vertical not yet on the U.S market, while Pianocorder displayed an installation of one of its units in a vertical.

At Sohmer, representatives said the priority would be getting back to the original designs for the Mason & Hamlin line, including the A, B, BB and CC, and getting the recently reintroduced Knabe line into full production. The Mason & Hamlins are to be aimed more at the institutional market, while Sohmer pianos will be marketed to individuals and families.

The company has purchased the Charles Ramsey Corp., and will now be distributing hardware under that name. It has stopped production on its 42" upright and is now producing similar case styles in both upright and grand versions; for instance, a Louis XIV style is available in 5' and 5'7" grands and in an upright version. Sohmer is also using a different lacquer finish, one which has a higher solids content.

The 5' and 5'7" grands have been rescaled and now use heavier Standard 14- and 16-pound hammers. Sohmer also is experimenting with a Herrburger Brooks action.

Kimball's booth was in a high-traffic area through which most of the show's attendees passed at one time or several. On display literally at the point of the booth, was Kimball's La Petite 53 5/16-inch baby grand available in cherry, walnut, black and white. The spec sheet lists a Pratt Read U7 action and laminated basswood-poplar soundboard. The company also showed new designs in its larger grands of a traditional oak and a high- polish French provincial cherry.

The mood was optimistic at Wurlitzer, presumably thanks to a recent influx of capital provided by the sale of 51 percent of the company's stock to Wurlitzer Investment Co., a company headed by investors Sid Weiss and Leonard Friedman. Both

Weiss and Friedman were very much on the scene in Wurlitzer's traditional spot on the exhibit floor.

Wurlitzer showed an abundance of small Wurlitzer and Chickering vertical models produced in its Holly Springs, MS plant. It also showed a pneumatic player piano, having purchased the Aeolian player line.

Things were also upbeat across the aisle at Charles Walter Piano Co., where five instruments were on display. Walter's line has not undergone any changes recently, but company representatives said they were increasing production and even adding some staff to handle additional recent orders.

There seemed to be increased interest in player pianos. At the high-tech end, Yamaha showed a computer-based upright which has apparently been on the market for a couple of years in Japan, but which is not yet available in North America. The computer unit is built discreetly into the piano's top lid and uses 3 1/2-inch "mini-floppy" computer disks for storage, editing and playback.

Pianocorder, a business unit of the Marantz Co., also displayed its tape-based reproducing system and representatives said the company is continuing its series of technical seminars on installing the mechanism.

Baldwin displayed a pneumatic player piano in its booth, and there were at least three other companies marketing their own player setups. One, Ragtime, showed a unit which included a built-in xylophone, tambourine and drums, and QRS had display racks of player rolls in other manufacturers' booths.

Astin-Weight, which normally has been located in a room with most of the piano companies, showed its verticals in an open area near the registration desks. Also near the front of the convention center was the National Piano Foundation/Piano Manufacturers Association International booth.

Another old/new friend in Anaheim was Dampp-Chaser Electronics, its new management represented at the show by president Steve Smith and his wife Nancy.

One company that has been an increasing presence at recent NAMM shows is Sojin, which this year had a fairly large display of both grands and verticals. Sojin, which has apparently beefed up its North American marketing efforts, is a division of Daewoo Corp., a $6 billion Korean giant which manufacturers everything from ships to shirts to submachine guns. Daewoo, which in Korean means "grand universe," purchased Sojin several years ago.

Sojin's brochure indicates three grand models in lengths from 5'2" to 5'10" and nine uprights from 41 to 52 inches in height. Most use a Schwander-type action. Grands have solid soundboards, while the uprights are evenly split between solid and laminated boards.

Schumann displayed 5'1", 5'9" and 6'10" grands and 42", 45" and 48" verticals. Also on the scene were several small Fazer uprights, one of them bearing the sign, "This piano has not been tuned since it left Finland seven weeks ago," and seven or eight Story & Clark verticals from Lowrey Corp. Jasper American Corp. also had a much larger display than usual, showing 10 uprights and two small grands.

Of the European contingent, Petrof displayed two six-foot grands and four uprights in a variety of finishes. From the far east, displays also featured Han Dock, Tokai and Hyundai pianos.

For NAMM, this was apparently a very successful show, bigger even than the traditionally larger summer expo in Chicago in terms of attendance. Over 230,000 square feet of space were assigned to 508 exhibiting companies, stretching the Anaheim Convention Center to its limits, and preregistrations were up over last year by 50 percent. From a purely subjective viewpoint, the enthusiasm with which attendees tested the wide variety of instruments, and the resulting decibel level, reached new heights. Fortunately, many of the piano exhibits were located in a large room off the main exhibit areas, affording some relief from the nonstop barrage.

For those who keep track of such things, NAMM has coordinated its show for music dealers and their employees with that of the Frankfurt Music Fair for the next three years. This summer's expo will be June 27-30 in Chicago's McCormick Place. In 1988, the Winter Market will be Jan. 15-17, and the Summer Expo will be June 25-28 in Atlanta's Georgia World Congress Center. The German fair will be March 12-16. In 1989, the Anaheim market will be Jan. 20-22, and the summer Expo will be back in Chicago June 17-20. Frankfurt's fair will be Jan. 28-Feb.1.■

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MEMBERSHIP

What Is An Associate Member?

Ronald L. Berry
Vice President

After the membership restructure we have a rather all inclusive category of membership called Associate. Just what this category is and who it includes seems to be a little hazy in some people's minds. Associate is basically an all-inclusive category for everyone other than RTT. It is wide open as far as who may join. "Anyone with a professional or a vocational interest in piano technology" may join in this category. This would include people just beginning as technicians, professional technicians who are not yet qualified for RTT, technicians who are qualified for RTT but haven't taken tests yet, piano dealers, manufacturers, and suppliers who wish to support the Piano Technicians Guild. It can also include people who do some phase of piano work but are not qualified in all areas required to become RTT (such as tuners who don't do repairs and rebuilders who don't tune). Everyone joins the Guild as an Associate member and the only requirement is that their application be ratified by the chapter. All applications must come through chapters, so those who come to seminars and conventions will receive applications to return to their local chapter.

Benefits of membership include the Journal, PTG life insurance policy, member rates at convention and seminars, and the right to identify themselves as "Associate Member, Piano Technicians Guild." The largest member benefit is that the member is now part of the greatest source of information about piano technology anywhere. The member is welcome to chapter meetings and the friendships that come from them.

Those technicians who have the goal of becoming RTT will be aided to reaching that goal by the chapter, the regional seminars, and the conventions. The dues level for Associates is the same as that for RTTs to encourage upgrading to that level and to maintain the membership with those who are serious about their connection with the world of piano technology.

Membership as an Associate is meant to be the doorway to improving skills and becoming an RTT as well as a place for the valued group who support our organization. ■

New Associate Members During January 1987

REGION 1

Connecticut — 64
Francis C. Tanguay
416 Wilson Street
Waterbury, CT 06708

Syracuse — 131
Martin J. Kupelian
211 AugustaDr., #3
No. Syracuse, NY 13212

REGION 2

Long Island-Suffolk — 117
Peri Fairchild
P. O. Box 217
49 Carlson Ave.
Kings Park, NY 11754

Washington, D.C. — 201
W. David Taylor
10709 Trafton Dr.
Upper Marlboro, MD 20772

Baltimore, MD — 212
Robert Kelly
101 W. Jarrettsville Rd.
Forest Hill, MD 21050

Western Maryland — 217
Howard T. Muir
107 West Foundry St.
Woodstock, VA 22664

William Simpson
RT #3, Box 180, Bedford Rd.
Cumberland, MD 21502

Miss. Gulf Coast — 395

Alton Blanton
Rt. 3
Ackerman, MS 39735

William Kidd
P. O. Box 2243
Columbus, MS 39704

REGION 3

El Paso — 799
Robert Walshe
4232 Canterbury
El Paso, TX 79902

REGION 4

Dayton, OH — 454
Rick D. Cox
1843 Cheviot Hills Dr.
Springfield, OH 45505

Milwaukee — 532
Rollin Ruedebusch
5062 Ruedebusch Rd.
Burlington, WI 53105

Chicago — 601
Gary Bergmark
6416 Forest Ave.
Hammond, IN 46324

Robert Knowles
9717 Woodlawn
Chicago, IL 60628

REGION 5

Calgary — 01
William D. Harvey
3240 Robinson St.
Regina, Sask.,
CANADA S4S 1V7

Ozark, MO — 653
Michael Carr
Old Highway 63 South
Thayer, MO 65791

REGION 6

Salt Lake City — 841
Diana Belka
7343 Milne
Midvale, UT 84047

Modesto, CA — 953
Gordon Zentner
P. O. Box 1191
Los Banos, CA 93635

Reclassification

REGION 6

Golden Gate — 945
Kendall Bean*
3220 Meadowview Lane
Walnut Creek, CA 94598

**Joined as new Associate, tested and was reclassified to Reg. Tech., all during January.*

The Auxiliary Exchange

President's Message

During the 1986 Auxiliary Executive Board meeting, we discussed the necessity of a brochure explaining the purpose of the Piano Technicians Guild Auxiliary. A budget was set up for the purpose of having such a brochure printed. Through the efforts of Pauline Miller, Los Angeles Chapter and myself, with the concurrence of the Auxiliary Board, this has been accomplished and is now available for hand-outs at all Regional Seminars, State and International Conventions.

The dilemma arose as how to reach the non-members and encourage them to join. I requested of the Piano Technicians Executive Board that they include in their agenda at the Mid- winter Board meeting, permission for Home Office to enclose in their new member welcome letter out brochure, thus informing the new spouses of our existence and therefore our purpose. It is my pleasure to announce that the Executive Board passed this request with an affirmative vote, and in the future all spouses of new members will receive the brochure: "The Piano Technicians Guild Auxiliary...What It Is...What It Does...What It Means...to be a Member."

It is my hope that State Convention Chairpersons, Regional Chairpersons, and P.T.G. Chapter Presidents will feel free to make this brochure available at their local level. A strong and growing Auxiliary benefits P.T.G. in many ways, and we are there to support them.

Any spouse who is already a member and did not receive one with their new membership card for 1987 and would like to have one, please drop me a note and I will send you one by return mail.

Ginger Bryant, President

Toronto — Discover the Feeling

This being the theme for the 1987 convention, the Auxiliary is going to do just that - "Discover The Feeling." What better way than to venture away from the normal and have our traditional tea some 45 minutes away from the hotel in the beautiful setting of Parkwood Estates. We will leave by bus on Tuesday at 1:00 pm to arrive at Parkwood Estates in the city of Oshawa. There we will tour the 55-room mansion of Col. R.S. McLaughlin and be given a rare insight into a bygone era of gracious living that very few have ever experienced. Every room is furnished with priceless antiques from all over the world. A gilded Steinway grand piano in the drawing room reveals a beautiful painted scene when the top is in an upright position. Ornaments of rare and delicate china grace almost every room. Many of the walls and ceilings are adorned with hand-painted murals which are outstanding examples of the art of fresco, or covered with rich, imported tapestries.

Parkwood Gardens alone is worth the visit. Seldom can one see grounds so breathtakingly beautiful as Parkwood's 12 acres. We will be served "High Tea" in the Tea House overlooking the fountains at the end of the long pool, while also viewing the statuary of European and Canadian origin which is placed strategically throughout the grounds.

I have toured several historical mansions. This one has a unique "lived-in" quality that makes one feel almost like an intruder, expecting the McLaughlin family to return home momentarily!

Ginger Bryant

Some weeks ago there was a letter in Ann Landers' newpaper column from a Canadian woman. She was not seeking advice or help about a personal problem but rather making the observation — as far as she had noted — that men and women from the U.S.A. know little about Canada. She went on to claim that almost all Canadians know the name of our first president, but few of us in the U.S.A. know the name of Canada's first prime minister! Most Canadians know that Ronald Reagan is our president, but do we all know the name of Canada's prime minister? In her "indictment" this writer felt that most U.S. citizens believe it is so bitter cold that the natives live in igloos! This of course was a bit strong. However, since in less than four months, many of us will be traveling to Toronto for the annual convention, it seems like a good idea to get a wee bit of data and general background information on Canada.

Canada, in area the second largest country in the world, is an independent federal state, and a member of the British Commonwealth of nations. Its first premier of the Dominion was Sir John A. MacDonald, a Scottish immigrant and founder of the Conservative Party. At the Quebec Conference of 1864, Canada had its first constitutional convention and at those proceedings, the "fathers of confederation" copied what they felt to be the best elements of the United States Constitution and the British constitution: the British North America Act and its amendments. Thus the Canadian constitution resembles that of the United States in being *federal*, but its legislature is called a Parliament after the British original.

Ottawa is the capitol of Canada, and

Brian Mulroney is the present Prime Minister. Toronto is Canada's largest English- speaking city. Montreal, where more French than English is spoken, has been number one but may be getting edged out of that position with the rapid growth and development of Toronto. Toronto is Canada's financial capital and industrial headquarters. In matters of commerce, Toronto can boast a stock exchange second on the continent only to New York's with over 16 million shares changing hands on a single day.

Located on Lake Ontario, Toronto is also one of North America's great inland ports and is the capital city of the province of Ontario. Toronto is Canada's principal melting pot. Like New York and San Francisco in the United States, Toronto draws gifted youth of the country from every province and the greatest proportion of new Canadians who have immigrated in recent decades, many of whom have special skills and talents.

Toronto has ample surface transportation as well as a subway that allows access to shopping areas where noteworthy purchases may be made. Unique articles in specialty shops are fine Eskimo soapstone carvings, carved ivory, sealskin and ston cut prints, sealskin toys, Indian totem poles, birchbark items, fine ceramics, metalcraft, woodcarvings and woven goods. Of course every metropolitan city has fine shops for sweaters, perfumes, jewelry etc., but the unusual art of the Inuit (the Eskimo) can be found at its best in the museums and galleries of the Canadian cities.

When one thinks of Canada, the Hudson's Bay Co. and the Royal Canadian Mounted Police come to mind. Both are world symbols of Canada. That great department store generally referred to as "the Bay" was founded over three centuries ago. Its general headquarters are in London, England although its Canadian operations are managed out of Winnepeg. It has many stores throughout Canada, trading posts in the Far North and fur auction houses in the northwest regions. The Bay still operates under the Royal Charter given it in 1670, still flies its ensign at every one of its operations, and is still administered by a governor, deputy governor and a "committee."

The Royal Canadian Mounted Police, known earlier as the North-West Mounted Police, was established in 1873 and its function was semi-military. The force broke up liquor traffic among settlers, protected and gained the respect of the Indians, resolved border conflicts, collected custom dues and performed conventional duties of a police force. Today the RCMP acts as the police force for every province except the big two, Ontario and Quebec, which have their own provincial police. The red tunic is no longer worn except for ceremonial occasions and the wide- brimmed hat is frequently replaced by visored caps. Despite these changes the *esprit* of the Mounties is unchanged and it is one of the world's great police forces — and one of the most respected.

Toronto, originally known as York, changed its name in 1834 when it became incorporated with its then population of some ten thousand. The city fathers selected a name, something more indigenous, taking the name *toronto,* an Indian word for "meeting place."

We will be fortunate to have Mike Filey provide supplementary data on the history, cultural development and present day events in Toronto at out Auxiliary Opening Assembly. His address titled "Things Typical, Topical and Trivial about Toronto" promises to be an in-depth account of this city, done with style, humor and panache.

Agnes Huether, Ed.

Via phone it was learned that Miriam and David Snyder of Robesonia, PA became the proud parents of a second child on Tuesday, Jan. 13, 1987. Michael David arrived weighing 7 pounds 5 ounces. He joins his big sister Christine, 2 1/2 years. You know of course that the very pleased grandparents are Kathryn and Willis Snyder.

Word from California is that Marge Evans is doing very well. Her health has not been better since she had treatment for blocked carotid arteries. We're sure her spouse Dan is providing excellent post-surgical care. We look forward to having Marge join us in Toronto to enjoy the planned boat cruise on Lake Ontario.

According to publicity received from the committee of the 1987 Pennsylvania State Conference (April 2-5) an excellent bus tour and spouse program has been developed. On Friday, April 3rd there will be a bus trip to the Anthracite Museum and Coal Mine. Virtually no anthracite is mined today because of the availability of oil, gas and electricity for home heating, locomotives, engines, etc. These anthracite mines were deep into the earth and always guaranteed considerable peril to the miner. Anthracite, or hard coal, a class of coal, contains the highest percentage of fixed carbon. It is distinguished by its hardness as contrasted with the bituminous grades called soft coal. It is a brilliant lustrous black, somewhat metallic in appearance. The anthracite vein found in northern Pennsylvania was the *only hard coal* mine in the United States. In burning anthracite there is little flame and no caking; combustion is comparatively slow.

In the 20s and 30s the Erie-Lackawanna Railroad burned anthracite and had a special passenger line from Hoboken, NJ to Buffalo, NY. Proud of its clean-line service, they widely displayed this promotional ditty:

Phoebe Snow, about to go
Upon the road to Buffalo,
Her dress stayed white —
From morn til nite,
Along the road of anthracite.

On Saturday, April 4th Ron Berry will entertain with songs at our luncheon. He will be accompanied by Ginny Russell at the Steinway. Following our full gourmet luncheon we will hear a talk by a nutritionist Josephine Kotch, a Luzerne County Home Economist. The art of proper and multi-styled napkin folding will also be demonstrated.

For all those who arrive early on Thursday, April 2nd, there will be a special Early Bird Event. Come and see.

Exchange Editor:

AGNES HUETHER
34 Jacklin Court
Clifton, New Jersey 07012

Calendar Of Coming Events

Date	Event
Mar. 6-8, 1987	**1987 South Central Regional Seminar** Hilton Inn Northwest, Oklahoma City, OK Keith McGavern; P.O. Box 2547; Shawnee, OK 74802-2547; (405) 275-8600
Mar. 19-21, 1987	**1987 Memphis Mid-South Seminar** Memphis, TN Jere Morris; 4991 Robindale Lane; Memphis, TN 38117; (901) 767-0680
Mar. 20-22, 1987	**1987 Central West Regional Seminar** University of Minnesota Paul Olsen; 3501 Adair Ave. N.; Crystal, MN 55422 (612) 533-5253.
April 2-4, 1987	**Pacific Northwest Conference** Thunderbird Motor Inn, Yakima, WA Kathleen Hodge; 4401 Henning; Yakima, WA 98901; (502) 453-4314
April 2-5, 1987	**1987 Pennsylvania State Conference** Scranton, PA Howard A. Yepson; 94 Brook Street; Carbondale, PA 18407; (717) 282-5151
April 10-12, 1987	**Michigan State Conference** Holiday Inn, Kalamazoo, MI Dave Postma; 3430 Oak St.; Hudsonville, MI 49426; (616) 669-0407
April 24-26, 1987	**New England Regional Seminar** Merrimack Hilton, Merrimack, NH Douglas Kirkwood; 9 Woodbine Lane; Amherst, NH 03031; (603) 424-7996
April 25, 1987	**Los Angeles Chapter One-Day Seminar** La Cañada Presbyterian Church 626 Foothill Blvd. La Cañada — Flintridge, CA Kathy Teetsell; 5621 E. 23rd St. Apt. 1; Longbeach, CA 90815
* July 20-24, 1987	**30th Annual Piano Technicians Guild Convention & Institute** Constellation Hotel, Toronto, Ontario, Canada Home Office; 9140 Ward Parkway; Kansas City, MO 64114; (816) 444-3500
July 24-26, 1987	**International Association of Piano Builders and Technicians Biannual Conference** Constellation Hotel, Toronto, Ontario, Canada Home Office; 9140 Ward Parkway, Kansas City, MO 64114; (816) 444-3500

Classified Advertising

Classified advertising rates are 25 cents per word with a $7.50 minimum. Full payment must accompany each insertion request. Closing date for ads is six weeks prior to the first of the month of publication.

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

Send check or money order (U.S. funds, please) made payable to Piano Technicians Journal, 9140 Ward Parkway, Kansas City, MO 64114.

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

For Sale

GRAHAM ANDERSON, Piano Rebuilding and Repair, **3632 Fernway Drive, Montgomery, AL 36111.** 20 years' experience with Steinway - London. Specializing in replacement of action rails. Also available GENUINE IVORY KEY TOPS replaced. Call or write for free estimates. **(205) 284-0197.**

COMPLETE HOME STUDY COURSE in Piano Tuning, Regulating, and Repairing. Write or call for free brochure. **Aubrey Willis School of Piano Tuning, PO Box 25339, Phoenix, AZ 85002. Phone: (305) 299-3690 or (602) 266-1640.**

NEW SOUNDBOARDS MADE FOR YOU. Ship old board. New board comes to you ready for installation. Send for instruction on: **Victor Video Tape, $94.75. Victor A. Benvenuto, 6825 Germantown Avenue, Philadelphia, PA 19119. (215) 438-7038.**

KORG AT-12 AUTOCHROMATIC TUNER, Play instrument; tuner shows note, octave, cents sharp or flat for seven octaves: C = 32.70 Hz to B = 3951.07 Hz. Plays four octaves: C = 65.41 Hz to B = 987.77 Hz. Calibrate A = 430-450 Hz. Batteries, AC adaptor, earphone, case, year warranty, 1 lb. Introductory offer: $135 postpaid ($190 list). **Song of the Sea, 47 West Street, Bar Harbor, Maine 04609, (207) 288-5653.**

KEY RECOVERING MACHINES. Send stamped S.A.E. for current prices and description. **SOLENBERGER PIANO SERVICE, 1551 LYNN CT., SANTA ROSA, CA 95405. (707) 542-1756.**

VICTOR A. BENVENUTO VIDEOTAPES. Stimulating Chapter Technicals. PIANO TUNING AURAL/ELECTRONIC...$175. The most accurate approach in fine tuning. KEY MAKING...$124.75. GRAND REBUILDING (2 tapes)...$225.75. Preparation, pinblock replacement, damper installation, restringing. GRAND REGULATING...$175.75. SOUNDBOARD REPLACEMENT...$94.75. Ship old board - new board comes to you ready for installation. Please specify VHS or Beta. All prices include shipping. **THE PIANO SHOPPE, INC. 6825 GERMANTOWN AVE., PHILADELPHIA, PA 19119. (215) 438-7038.**

THE GUIDE. $10. The Piano Technicians Guide. A job time study and work guide. Revised and printed to fit a pocket. **Newton J. Hunt, 3253 Lockmoor, Dallas, TX 75220. (214) 352-6846.** TX residents add appropriate sales tax.

HARPSICHORD AND FORTEPIANO PARTS and kits, original factory materials from the finest early keyboard suppliers in the world. Also Troubleshooting and assistance to fellow RTT's on harpsichord problems. Authorized Zuckermann Agent. Lowest Factory Direct Prices - buy from the source. Catalogs, price lists free. **Yves A. Feder RTT, Harpsichord Workshops, 2 North Chestnut Hill, Killingworth, CT 06417 (203) 663-1811.**

SIGHT-O-TUNER, Excellent condition, includes instructions, includes all the modifications and improvements, by Rick Baldassin, recently recalibrated. $500. **E. Overboe, 9421 Drake Ave., Evanston, IL, 60203. (312) 679-0530.**

CONN STROBOTUNER, Model ST-11 with case. Has extended 2+ Range. New and complete. $275.00. Write or call: **L W Childs, RTT, 7867 Lark Ridge, San Antonio, TX 78250, (512) 647-3648.**

THE PIANO OWNER'S GUIDE. Several hundred copies are still available to the trade at the SALE price of $2.00 each, plus .10 per copy for shipping. Minimum order: 10 copies. Prepayment required. Send orders to: **Carl D. Schmeckel, P.O. Box 10672, Green Bay, Wisconsin 54307.**

A CAREER in Band Instrument Repair or Piano Tuning and Repair can be yours! Enroll in Western Iowa Tech Community College's programs and develop skills from tuning to rebuilding pianos, or overhauling and repairing brass and woodwind instruments. Specially designed facilties include individual work stations and up to date equipment. In state tuition is $270.00 per quarter; out of state tuition is $540.00 per quarter. Most students qualify for in state tuition by the second quater. Employers: contact our placement office about availability of graduates. For more information, contact **Admissions Office, PO Box 265, Sioux City, IA 51102 or call (712) 276-0380 collect.**

CUSTOM REBUILDING of fine grands. Soundboards, pinblocks, action restoration or replacement, refinishing, etc. **J. Krefting Pianos, PO Box 16066, Ludlow, KY 41016. (606) 261-1643.**

NILES BRYANT OFFERS TWO HOME STUDY COURSES: Electronic Organ Servicing: Newly revised. Covers all makes and models - digital, analogue, LCI's, synthesizers, etc. Piano Technology: Tuning, regulating, repairing. Our 87th year! Free booklet: Write or call **NILES BRYANT SCHOOL, Dept. G, Box 20153, Sacramento, CA 95820 - (916) 454-4748 (24 hrs.)**

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Henry F. Miller Piano for sale. Boston-Patented July 9, 1878. Fair to good condition. Phone **(317) 397-8112** or write to **Mrs. Carol Howard, R.R. 2, Box 223, Kingman, IN 47952.**

KNIGHT PIANOS from $3950.00 (NEW). THE ORIGINAL. HAND-CRAFTED IN LONDON. Respected internationally as one of the finest pianos made. These pianos RETAIL in the $6,000.00 range. Special prices for quantity purchases quoted upon request. **WARFIELD PIANO SALES & SERVICE. 821 KENT AVE. BALTO., MD 21228, (301) 377-8880. Call collect.**

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About 75 — 65 note classical Piano Rolls for sale. Seems to be in good shape. $2.00 a roll. **Jack W. Sprinkle, 6033 N. 19th Rd., Arlington, VA 22205.**

Tools & Supplies for Sale. Available customer list. Reasonable, fastest growing community in the West. **H.E. Fischer, 4160 Jade St. #110, Capitola, CA 95010, phone (408) 479-1033.**

KEY BUSHING SUPPLY COMPANY — take the guesswork out of rebushing keys. "BRASS-CAULS" are accurately machined in six standard sizes to handle most instruments. "BRASS-CAULS" are $52.50 plus $2.50 shipping. Call or write for complete price and application list. Also available — 4-page instructions "A Factory Method For Rebushing Keys". Lifetime investment. **PETER W. GREY RTT, PO BOX 56 KINGSTON, NH 03848. Tel. (603) 642-3633.**

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Steinway repetitions (from Model D). Complete set. Good condition. $200 or offers. Sample on request. **Roland Grittani, 578 William St. LONDON, Ont. N6B 3E9.**

SIGHT-O-TUNER SERVICE. Improve the accuracy of your tunings with a correctly calibrated SOT. Also do repairs and modifications. **Richard Weinberger, 18818 — 142nd Drive, Sun City West, AZ 85375. (602) 583-0083.**

Wanted

PIANO TUNER TECHNICIAN seeks professional position. Good tuning skills. Tuner for concerts and recording sessions. Please contact **Ronald D. Gordon, P.O. Box 328 New Knoxvill, OH 45871. Home (419) 394-7227, work (419) 753-2523.**

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Help! Need scale (bass string sizes) for 4' 5" Stark grand. Original strings lost. Travis gives sizes only for unwound strings. **Springer/Blumenthal, 1429 S. Vandeventer, St. Louis, Missouri 63110.**

Up To $1000.00 Finder's Fee will be paid for successful purchase of a Mason and Hamlin Ex-Player. I have mechanism to install. Pls call collect **(317) 259-4307 or evenings (317) 849-1469. Jim Brady 4609 Cranbrook Dr., Indpls., IN 46250.**

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WANTED Past Issues of PTG Journal from Oct. 85. **Roland Grittani, 578 William St., LONDON, Ont. N6B 3E9.**

Miscellaneous

THE RANDY POTTER SCHOOL OF PIANO TECHNOLOGY — a complete course for beginning and intermediate students, in piano tuning, repairing, regulating, voicing and business practices. Top instructors and materials. Call or write for information: **RANDY POTTER, RTT; 61592 ORION DRIVE; BEND, OR 97702; (503) 382-5411.** See our ad on page 3.

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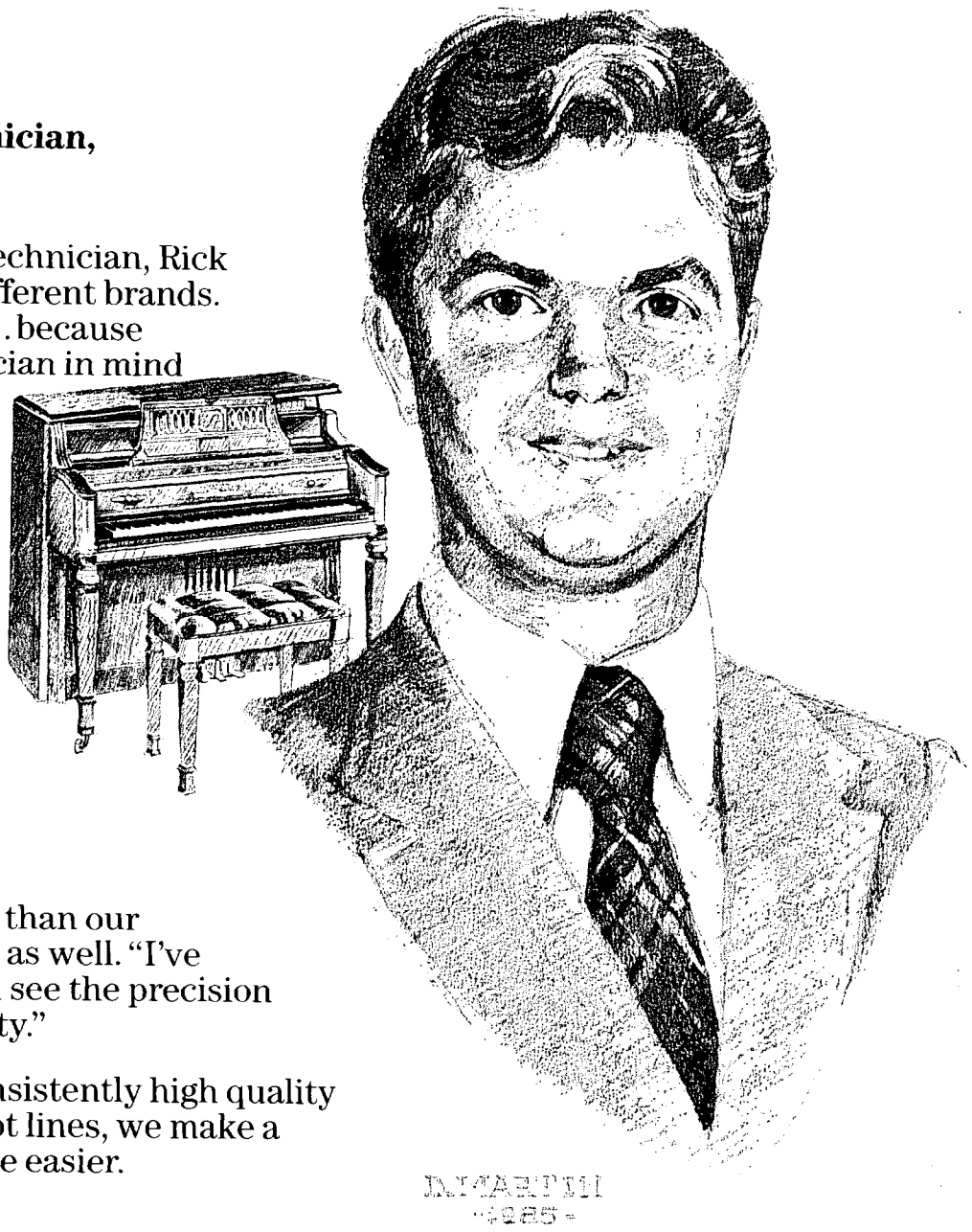
Rick Sletten—piano technician, performing musician.



As an independent piano technician, Rick Sletten works on a lot of different brands. He prefers to service ours... because Wurlitzer keeps the technician in mind when establishing service programs and policies.

"Wurlitzer has gone the whole nine yards. I never have any problems... with technical information or parts. If you're working in a customer's home, you can call Wurlitzer toll free and get technical help. With a lot of pianos, you're on your own."

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By building pianos with consistently high quality and by providing service hot lines, we make a piano technician's life a little easier.

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DeKalb, Illinois 60115

March **UPDATE** 1987

Published Monthly For Members Of The Piano Technicians Guild, Inc.

Sharing Our Experiences Through Our Newsletters

M.B. Hawkins
President

The month of March is upon us. I trust that when it is complete and the data is in relative to the "Music in Our Schools Month" outreach project that we as an organization will feel good about ourselves and our personal contribution to its success.

There are a number of ways in which we can share the various stories of our activities that will have occurred during the month. It is hoped you will choose to relate your story to your chapter and further via your chapter newsletter in order that these stories can be communicated throughout our organization. I fully believe this year is only the beginning of a project which will be ongoing with increased participation in the future. Some will no doubt feel that what you have done along these lines to not have been important enough to share with others. Allow me to say once again to you..."*Relate your particular experiences to your chapter and make the effort to get your thoughts into a newsletter for further circulation.*" Do you realize that our membership away from our immediate area has no way of knowing what is happening in other parts of the country unless we as individuals take the initiative which will cause that to happen?

New Officers

Wichita, KS, Chapter
Marty Hess, President
Kent Swafford, Vice President
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Ron Nossaman, Treasurer/ Editor

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Ralph S. Hedrick, Secretary-Treasurer

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Brian Steward, President
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Bill Johnson, Secretary-Treasurer

Syracuse, NY
Daniel Fusco, Secretary

Chapter News And Notes

Dale Heikkinen
Chairman, Chapter Management And Achievement Committee

Syracuse

During the course of a year in the U.S., there are relatively few programs on bridge repair or recapping. When done, they are usually excellent, like the class Dan Fusco taught on materials, methods, requirements and importance of bridge replacement. The class watched as Dan removed bridge pins and proceeded to document initial specification measurements: downbearing angle, bridge height and template etchings of bridge pin locations. The old cracked bridge was removed with a router attached to various jigs as needed. From the samples, the class had to choose a high-quality, high-density quarter-sawn hard-rock maple and dimension it to size with a bandsaw. The class was then shown a method of clamping and gluing which uniquely applied no pressure to the soundboard and yet achieved excellent joining of cap to base. The cap was then trimmed flush and the bridge pin holes relocated with the template. Holes were then drilled to match the different-size pins. Next was the craft of notching using razor-sharp chisels, an even eye and a steady hand. After a top coat of graphite was burnished, pinning and first coat of varnish, the class stood back, pizza and pretzels in hand, and realized "the art of bridge building."

Erie

The chapter is presently rebuilding a gutted Chickering reproducing grand. Due to the gouging of the case, the holes are filled, and a black lacquer finish applied. The work includes new strings, pinblock, dampers and hammers. A new finish is being applied to the soundboard, bridges, plate and case. No plans are being made to fit the piano with an Ampico action.

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News And Notes...

Lehigh Valley

In November, Pauline Fox attended the Pennsylvania Music Teachers Convention in Philadelphia representing the Philadelphia Teacher Relations Committee with an exhibit and two class sessions on piano care. Also in November, she assisted in teaching a workshop at Penn State University for the Teacher Relations Committee.

Richmond

Randy Potter, Portland, OR, Chapter, gave a well-received three-hour seminar on business and taxes. Besides local members, people attended from as far away as Roanoke and Newport News.

Central Florida

The profession of organ grinder is a very venerable and ancient occupation dating back to the Middle Ages and originating in North Africa, spreading to Europe and then to Central Florida! Don and Beth Natt are professional organ grinders and estimate that there are probably a dozen or so families working in the U.S. To make a long tail short, the Natts called upon Allen Wright to tune their miniature piano, which in its main configuration and structure really is similar to a piano. The grinder has regular-size tuning pins and small leather-covered plastic hammers. It plays several different tunes by turning a crank which operates a drum similar to a music box. The strings are tuned diatonically rather than chromatically. The biggest difficulty is the necessity of picking the strings, and thus the difficulty of hearing beats. Says Allen, "my Sight-O-Tuner saved the day!"

The real star of the show is the monkey. The Natts said that the real pleasure in what they do comes from watching the smiles light up peoples' faces when they see the monkeys. For a slight fee, they will take your picture with the monkey, photos enclosed in the *Ivory Tower* with Allen explaining the perils of pitch-raising to a very attentive cinnamon capuchin monkey.

Houston

"True confessions," by Bob Lee:

A short time ago, I was at a customer's home giving an estimate on a console piano. The customer was a nice lady who was genuinely interested in maintaining her instrument. She informed me that a few years ago the inside of the piano was completely redone (a deceiving statement since it usually gives the technician absolutely no idea of what was done) and she thought it was time to have it serviced to keep it in good shape.

I looked inside the piano and immediately, to myself, began to smugly assess my predecessor's work. Of course I found numerous examples of poor workmanship and seeming ignorance of the proper way to service a piano. I made mental notes of what needed to be done, as well as written ones, quoted a price and dashed back to the shop with the action to begin the task. It had been a temptation, but I resisted the urge to criticize the work that had already been done.

Back at the shop, I began to sort through the mess, completely amazed at the way some technicians work. I had been working a short time when a strange feeling took hold of me. I had just unscrewed a part and was looking at a very shoddy repair when it suddenly hit me. I was looking at my own work, in a wave of memories which came rushing back. The technician I felt so superior to was myself!

I stood spellbound and as I slowly started to recover, my memory became crystal clear. Five years ago, while in someone's employ, I had worked on this action. The aforementioned shoddy repairs were horrible, yet I remember struggling methodically for a great period of time to make them. I had never seen the customer so I had no idea I might encounter this piano again at a later date.

The lesson is an obvious one. It is a fairly standard Guild practice not to criticize others' work, but we need to go a little deeper than that. The work of others we encounter is in many ways a reflection of ourselves. Every one of us, including the biggest and most respected names in our industry, has a skeleton from the past waiting to resurface in someone else's shop. Even today, much of what we do now after years of experience, may someday prove to be someone else's ulcer. Can any of us swear that this will never be the case anymore? Therefore, we should always try to look with some humility and understanding on most of the work we encounter.

As a final note, I fixed the action and it played well. I brought the job back under cost, explaining that new techniques had helped to cut the customer's cost. She was happy and has since referred two other customers to me. As for me, I am grateful I had the chance to atone for one of my earlier sins. Some skeletons will come back to us at times and give us the opportunity to lay them to rest; others will lay in wait until...

Cleveland

"Protecting your hearing," by Janet Leary.

Whether you primarily tune pianos or spend your working hours in the shop, you are subjected to sounds and noises that may be damaging your hearing. The intensity of the sound, we call loudness. This loudness is measured logrithmically, and the unit of measure is the decibel (db).

Comparative db levels:

60-70	normal conversation 3 feet away
87	1/2 hp. drill press
90	a pneumatic drill at 10 feet
92	a 2 hp. tablesaw
95	3/4 hp. bandsaw
96	2 hp upright belt sander
98	Sears 1/2 hp. router
100	88-104 db, average readings on two grand pianos, lid closed and standing in an upright tuning position as monitored by Kevin and Janet Leary
102	3/4 hp. radial arm saw
103	1 hp. Milwaukee router
108	2 hp. Skilsaw
120-140	a jet plane taking off

OSHA recommends that hearing protection be worn when a person's exposure to noise equals or exceeds an eight-hour average of 85 db.

90 db	8 hours
92 db	6 hours
95 db	4 hours
100 db	2 hours
102 db	1 1/2 hours
105 db	1 hour
110 db	1/2 hour
115 db	1/4 hour

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News And Notes...

Hearing protection devices are rated by the amount of noise they block out (the noise reduction rating, or NRR) If you are wearing protection rated at NRR 25 db, the noise that reaches your ear is reduced by 25 db. 29-35 db off all devices, muffs or foam ear plugs provide the best protection.

As reported in Butts and Flanges, the Learys borrowed a db meter from a friend. It seems to be that piano tuning is hazardous to our hearing just as the noise from power tools. The pianos monitored were a 4'11" Kimball and a 6'4" Steinway A. The hammers on both pianos were rather soft in contrast to Japanese hammers. They found that tuning and inharmonicity affected the db levels. The more "dirty" the note was, the higher the db reading. It also seems that the db level builds from the low end through the midrange and then tapers off a bit through the treble and high end. they moved the meter from chest level, standing erect over the grands, to a point inches from their ear and found the db level decreased only two db.

In their two charts they show that the maximum time of day one should spend with a "brand X" piano, wild beats, rock hammers, etc. (probably peaking out at 110 db plus) is 1/2 hr. The pianos shown in this example indicate an overall average of 100 db which equates out to two hours a day. How many piano tuners can make a living tuning two hours a day? asks Janet.

What can we do to save our hearing? A couple of members in the Cleveland Chapter have been using earplugs while tuning. They are both fine tuners and claim that the plugs do help and they are still able to give the piano a good tuning. The tuner who wants to be out there capable of tuning 20 to 40 years into his carer may want to use hearing protection.

Indianapolis

From the notebooks of Phil Sloffer:

This temperament is not for everybody. It is not a good temperament to learn on, but if you are already an experienced tuner and you want to try something new, this may be of interest to you.

Step 1 Tune A49 to A-440
Step 2 Tune D42 to A49
Step 3 Tune G35 to D42
Step 4 Tune A37 to D42(A49)
Step 5 Tune $B^{b}38$ to D 42
Step 6 Tune B 39 to G 35
Step 7 Tune C40 to G 35
Step 8 Tune $C^{\#}41$ to A 37
Step 9 Tune $G^{\#}36$ to $C^{\#}41$

Western Michigan

Members were treated to a very interesting and provocative session featuring Dr. Lucien Hut, Kawai's piano educational and sales training consultant. He dealt largely with the acoustics of the piano. Items he covered included the length of decay after the string is struck by the hammer, wet-cast plates vs. vacuum-cast plates, as well as reasons for using hardwood rim material in grands. The session was sponsored by Associate member Bill Stannard and Kawai Pianos.

Madison

"Coming Attractions," by Norman Sheppard:

Would you like to make a patch or bend pitch? Set your velocity threshold or split points, turn your dynamic voice allocations on or off? Maybe you need a few more bytes or envelopes? Do you have problems with our sequencer or compressor? Do you need a bit more buzz and flutter? Are you sure your parameters are optimized for maximum expression? Maybe you would just like to build your own maps from scratch?

This is just another way of introducing you to what's available in electric keyboards and synthesizers. Then the next time a customer asks you "hey, what about those new keyboards?" you will have tickled those electronics yourself.

Kansas City

What do you do to remedy noisy dampers ("whooshing" trichord felt)? asks Wayne Yockey in "Technical Tidbits" in the *Kansas City Beat*.

Bob Conrad: Trim the felt shorter so that it does not pass as far between the strings.

Dean Garten: If the felt has horizontal grain, replace it with felt that has vertical grain. If the felt has vertical grain, trim off the fuzz with very sharp scissors. The trimming may not help, however.

Greg Hulme: If the felt has vertical grain, it can be compressed or "ironed" with heated damper felt pliers. The felt can also be trimmed so that it doesn't hang as far beneath the strings (about 1/16th inch) but not on wound trichords. The cuts must be made with very sharp scissors and must be straight and even. Trim both wedges at the same time.

If the felt has horizontal grain, it cannot be compressed as that will destroy the felt. Horizontal grain felt must be trimmed. It can be trimmed shorter and also on the sides. Trim the felt on a vertical diagonal so that the wedges are not as thick, but not to a sharp point. Horizontal damper felt has better damping qualities and responds soon after being installed, but is much noisier and doesn't last as long.

Vertical grain felt takes a while to "settle in" and damping improves with time after installation. Theoretically, its damping qualities are probably not as good as horizontal grain felt, but it lasts much longer, is not as noisy and is not as vulnerable to being damaged by tuners who do not depress the damper pedal to raise the dampers from the strings when inserting mutes and temperament strips.

Nebraska

"Dealer's Choice," by John Minor:

Gamble: an act having an element of risk.

Seven-card-no-peek is a hideous game someone invariable calls late in the evening when mental states are waning with the beer and chips consumed. The game involves seven cards dealt face down to each player with the instructions not to look or "peek" at the cards in front of him. Players then turn cards over one at a time until they beat the previously exposed hand, without actually seeing his entire hand. In other words, it is a gamble — a very big gamble and one that experienced poker players hate to take.

A good gambler learns to bet after having studied the situation thoroughly. He examines the opponents' cards along with his own, and calculates possibilities from experience and good judgement,

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News And Notes...

thereby greatly reducing the element of risk.

An estimate/contract should cover all aspects of liability and limits in one form or another, both legal and ethical.

The main points are the name and serial number of the piano, an explanation of the work, the cost, the time, the warranty, the insurance, the terms and the signatures. Happy estimating!

Boulder

Jim Boratgis, Richard Capp, Tevis Morrow, Ralph Oswald, Charley Pope, David Traoff and Dan Westermeyer all contributed time helping to tune the pianos for the Multiple Piano Festival sponsored by the Boulder Area Music Teachers Association. The technicians were particularly grateful to the dealers who sent pianos that did not need pitch raises: Chris Finger Pianos, Music Showcase and Swalleys.

Portland

"Tool losses and thefts" by Don Person:

Here is an easy method of adding some security to your vehicle when transporting your tools. One can install a u-bolt or an eyebolt at each side of your trunk, inside. Then run a chain through the handles on your tool kits and lock it, making sure you do so each time you leave your car. Most thefts are casual. A thief is not prepared to carry away armloads of unboxed tools, nor break open your lock or chains with the boltcutters he cannot carry in broad daylight. If you leave your tools unattended while tuning, you have no safety, and insurance, such as Sunset Tools and Bailees, does not cover unlocked equipment.

Film Library Usage

Recent chapter usage of materials from the Guild film and tape rental library include: "Action Centers," Indianapolis Chapter (Brian Spears); "Bridge Repair," Northwest Arkansas (Denele Campbell) and Roanoke, VA (Ernie Bremner); "Casualties of Stress," Indianapolis Chapter (Brian Spears); "Classroom Keyboard," NW Texas Music Teachers Seminar, NW Texas Chapter (R.D. Jones); "Grand Action Regulation From A to Z," Redwood, CA (Gay Ornellas) and New Hampshire (Charlie Farinella); "Invitation to Grand Piano," Cleveland, OH (Ken Sloane); and "Upright Action Restoration," Indianapolis (Brian Spears.)

Chapter Programs

Toronto -- "Computers in the tuning business," Steve Jackson.
Syracuse -- "Metal polishing," Joe Karwacki.
Philadelphia -- "Big paybacks from a small-budget piano service," Don Harris.
Baltimore -- "Touch-up finishing," Lou Gordon.
Roanoke -- "Pythagorean temperament," Fred Donahue.
South Florida -- "Key bushing -- a new method," Larry Wicksell and Ken Aston.
Oklahoma -- "Regulation: how to make it work for the concert in minimum time," Keith McGavern.
Dallas -- "Power point tuning," Newton Hunt.
Heart of Texas -- "Hammer installation," Don Bennett.
Cleveland -- "Flange bushing and repinning," Kevin and Janet Leary.
Waukegan -- "Tuning the piano with the magic of the Accu-Tuner," Bruce Dornfeld.
Central Illinois -- "Tuning," Guy McKay.
Minnesota-North Iowa -- "What the future possibly holds for the piano industry," Gracie Wagoner.
Hutchinson -- "Muting the piano from top to bottom," Jim Freeman.
Denver -- "How to cut felt in a straight, clean line."
Boulder -- Even-tempered tuning," David Trasoff.
Los Angeles -- "Downbearing," Tom Lowell.
Pomona -- "Bass strings," Randy Morton.
Orange County -- "Hammers," Steve Pearson.
Santa Barbara -- "Centered on center pins," Mike Sloan.
Santa Clara -- "Upright dampers and Dampp-Chaser installations," Joe D'Angelo, Tom Gorley and Roland Kaplan.
Redwood -- "Drop Action," PTG film.
Sacramento -- "Piano preparation and voicing," Mark Mestman.
Seattle -- "Efficiency and artistry," Chris Trivelas

In Last Month's Chapter Mailing...

Forms for use by chapters in designating their **Council delegates** were sent to chapter presidents in the February mailing. Deadline for returning the forms was March 31. Otherwise, delegates will not be listed in the Council Agenda Book, which will be mailed to chapter presidents in advance of this summer's convention.

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Associate members who were formerly students are now being billed for annual dues of $114 as their memberships expire. These are members who formerly paid $60 per year and whose memberships came up for renewal on their anniversary date, not the first of the year. Their 1987 dues billing will be prorated to put them on the same schedule as other Associates.

Getting Action...

Here are a few tips to speed up processing of your requests in the Home Office.

1. Be sure your name and address are listed on your correspondence. If your letterhead (or that of your chapter) does not include your name and address, please be sure to type or print it legibly on your letter.

2. Include your member and chapter number. Both of these are listed on your membership card. This will speed routine address changes and other modifications to your computer record.

3. When you move, be sure to include your new phone number, including area code.