

PIANO TECHNICIANS Journal

Official Publication of the Piano Technicians Guild

June 1999

Vol. 42 • #6



Pramberger Signature Series by Young Chang



So Proud...

his signature is on
each and every one



Joseph Pramberger

"The Secrets Are In The Details"

YOUNG CHANG

see your authorized dealer or visit our website at <http://www.youngchang.com>
P.O. Box 99995, Lakewood, WA 98499-0995 telephone (253)589-3200 fax (253)984-0245



SCHAFF

THE HOUSE DEDICATED TO SERVICE

Has expanded their services to
include a full line of

YAMAHA[®]

ACTION PARTS, TOOLS AND SUPPLIES

Culminating many years of discussions with the Yamaha Corporation, an exclusive agreement now exists whereby Schaff can sell and distribute any Yamaha piano part, tool or supply item that is not being replaced under warranty.

Such items as grand and upright piano action parts, felts, hardware, keytops, as well as adjustable chairs, tools and polishes are now in stock. Other items can be specially ordered.

Please call or write requesting our latest brochure with prices.

THE HOUSE DEDICATED TO SERVICE

Schaff

PIANO SUPPLY COMPANY

451 OAKWOOD ROAD,
LAKE ZURICH, IL 60047-1516

Reg. (847) 438-4556

T-Free (800) 747-4266

Fax (847) 438-4615

E-mail: www.schaffpiano.com

PIANO TECHNICIANS Journal

Official Publication of Piano Technicians Guild

Pris Chansky, CAE
Interim Publisher/Executive Director

Steve Brady, RPT
Editor

Jeannie Grassi, RPT
Assistant Editor

Jim Coleman Sr., RPT
Robert Hohf, RPT
Contributing Editors

Susan Kline, RPT
Anita Sullivan
Feature Writers

Joe Zeman
Director of Communications

Sandy Roady
Director of Member Services

Catherine Wilane
Director of Finance and Administration

Midge Sheldon
Assistant to the Executive Director
Advertising/Merchandising Coordinator

Aaron Lasley
Office Assistant

Home Office
Phone: 816-753-7747 / FAX: 816-531-0070
E-Mail: ptg@ptg.org

Editorial

Piano Technicians Journal will accept unsolicited materials, photographs and ideas, however, unsolicited materials will not be acknowledged unless accepted for publication; it is advisable, therefore, to submit copies of original materials, including photographs or transparencies. Without prior arrangements with the publisher, all materials submitted for publication will be retained by the *Journal*.

DEADLINE: No less than 60 days before publication date (i.e., September 1 for November issue)

Send materials and letters to: Steve Brady, *Journal* Editor
205 McGraw Street • Seattle, WA 98109

Fax: 1-206-285-7610 • E-Mail: sbrady@u.washington.edu.

Subscriptions

Annual subscription rates: \$55 (US) for Members; \$95 for Non-Members (US)/1 year; \$165 (US)/2 years;
Single copies: Current year/\$10; 1 year/\$5; back copies/\$2 if available. Piano Technicians Guild members receive the *Journal* for \$55 per year as part of their membership dues.

Address Changes/Subscription Problems

Send or FAX a description of the problem and your current address to: Subscriptions, 3930 Washington, Kansas City, MO 64111-2963, FAX (816) 531-0070, or call (816) 753-7747 between 8:30-5 p.m. CST — Monday-Friday.

General Information

© 1999 The Piano Technicians Guild, Inc. Articles published in the *Piano Technicians Journal* represent only the opinions of the author and not those of the Piano Technicians Guild, Inc. All rights reserved. No part of this publication may be copied or reproduced in any form without permission from the publisher, The Piano Technicians Guild, Inc. The words "Piano Technicians Guild, Inc." and the Registered Piano Technician emblem are registered with the U.S. Patent and Trademark Office — Unauthorized use is strictly prohibited. The *Piano Technicians Journal* (ISSN 0031-9562) is the official publication of The Piano Technicians Guild, Inc., 3930 Washington, Kansas City, MO 64111-2963. The *Journal* is published monthly. Periodicals postage paid at Kansas City, MO and at additional mailing offices. US ISSN 0031-9562 foreign and domestic.

POSTMASTER: please send address changes to:
Piano Technicians Journal, 3930 Washington,
Kansas City, MO 64111-2925

EDITORIAL PERSPECTIVE

Skimming the Cream

(What to Do When Your Business Becomes Too Successful)

For most piano technicians the process of building a business goes something like this: the first years are spent in a desperate search for work. Often, a budding tuner salvages an otherwise fruitless business by doing cut-rate work for a piano dealer. Gradually, skills improve and broaden and the calls begin to come in greater numbers. Someone once told me that if a competent piano technician keeps the same phone number for seven years, there will be more than enough business.

At a certain point in most careers, whether after seven years or three or 20, the business becomes too successful. Calls for tunings and shopwork pour in at an impossible rate. Time becomes a scarce commodity, "If only I could clone myself!" the besieged technician cries. What to do then? It's time to start "skimming the cream" of your business.

Conventional wisdom dictates that when business becomes too busy, it's time to raise your rates. I've always responded to the crunch of too much business by raising my fees. To be truthful, it hasn't been a very effective deterrent (but at least I feel I'm being compensated better for my time), so additional measures are required to reduce the workload.



Steve Brady, RPT
Journal Editor

©1997 Lydia D. Cabasco

One very powerful measure which can help clear the schedule is to limit what type of pianos you'll work on. As a doctor might limit practice to certain types of illness, "specializing" in one thing or another, so the piano technician can choose to specialize in grand pianos, vertical pianos, or even players and pianos with MIDI systems. My own choice has been to limit my practice to fine grand pianos. My reasoning is that the owners of these instruments generally tend to make better long-term clients than those who own cheaper grands or vertical instruments. I know, I know — exceptions to this rule do exist, but

by and large the rule holds true. Similarly, a technician can choose to specialize in rebuilding or high-level regulating and voicing, I find that I spend a good deal of my field-service time doing what I call "half-day service" or "full-day service," where I can do some serious regulating and voicing in addition to tuning. This kind of work not only pays well, but it's extremely gratifying and enjoyable.

Another strategy is to downsize your service area. By turning away work that requires you to drive too far from home, you save time, you economize on gasoline and car expenses and you reduce the frustration of "life in the slow lane." My own normal service area has shrunk to less than half the size it was 20 years ago and I'm planning to reduce it further still.

Finally, work only for people you enjoy working for, doing jobs you enjoy. When a new client calls, if either the job or the client sounds like possible trouble, simply provide a cheerful referral to another technician.

I hear some of you saying, "Oh, sure, easy for him to say. But I've been in the business 10 years and still don't have enough work to keep me busy full-time." My reply is that if you've been in business at the same phone number for over seven years and don't have enough work, you really need to look inward for the reason. Find a colleague who *does* have too much business, and ask this person to help you evaluate your work and the way you've been doing business. It may be threatening and somewhat painful to undertake this study, but you need to have someone with excellent credentials listen to your tuning and voicing, examine your regulation and talk with you about your approach to the business. Then work on the areas that need improvement. It may slow you down for a time, but the long-term results will be well worth the trouble.

Then, someday, when you arrive home to find 10 messages from clients wanting to schedule work on their pianos and you see that your schedule is full for the next two months, you'll moan and look at that stack of old *Journals* by your desk and you'll say to yourself, "Brady warned me about this. Now where was that article...?"

Please submit tuning and technical articles, queries, tips, etc., to:
Steve Brady, Journal Editor
205 McGraw Street • Seattle, WA 98109
Fax: 1-206-285-7610
E-Mail: sbrady@u.washington.edu

North Carolina Regional Conference

"Education Enhances Excellence"

October 29-31, 1999

High Point, NC • Radisson Hotel

For registration information contact
David Feeny (336) 697-2646

Register by September 29, 1999 and save \$\$



DRYBURGH PIANO SERVICE

distributors of
Satellite City Hot Stuff
adhesive products
1-800-GLUE ALL

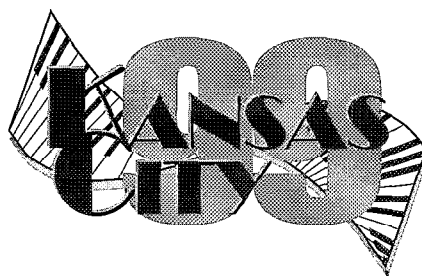
ask for our complete guide of
piano applications

10% discount on first order
when you mention this ad

BY TUNING THE DUPLEX SCALE

"...the purity and fullness of the
tone is improved."

— C.F.T. Steinway U.S. Pat. 126848
May 14, 1872



**www.ptg.org/
1999/conv/**

**Get the latest
information on the
42nd Annual
Convention &
Technical Institute
in Kansas City, MO
www.ptg.org/
1999/conv/**

Randy Potter School Of Piano Technology Complete Correspondence Home Study Course...

...for beginning students &
intermediate piano
tuner-technicians.

We Teach

- Tuning
- Repairing
- Regulating
- Voicing
- Apprentice Training
- Manufacturer & Dealer Relations
- Business Practices

Courses Include

- Printed Course Manuals
 - Video Tapes
 - Written Texts
- Apprentice Manual
- Repair Labor Guide
- Manufacturer's Technical Service Manuals
- Wholesale Supply Catalogs
- \$5000 Resource Loaning Library
AND MUCH MUCH MORE!



**Randy Potter School
Of Piano Technology**

WE ARE:

- The largest supplier of published training materials and videos
- Recommended by Keyboard Magazine
- Licensed by the Department of Education
- Approved for Veterans Training

AND WE OFFER:

- Advanced training seminars in high level grand regulating and tuning.

WRITE OR CALL
Randy Potter, RPT
61592 Orion Drive
Bend, OR 97702
(541) 382-5411
www.pianotuning.com



**PROTECT YOUR
BUSINESS,
YOUR REPUTATION
AND YOUR FUTURE**



SAFECO Insurance Company is providing an exclusive insurance program to Piano Technicians Guild members. Competitive premiums start as low as \$250.

This program provides specific limits to cover tools, your customer's property, property in transit (Cargo) and business liability.

Make sure your business is protected, call Jerry Kiser at:
Potter Leonard/Olympic Insurance for a fast, competitive quote.

PHONE 1-800-548-8857 FAX (425)486-4681

FEATURES

16 — A Guide to Bridge Recapping

"Laying out the new caps" is the topic of this fourth article in a series by Contributing Editor Bob Hohf, RPT.

26 — Tight Action Centers

Kevin Leary, RPT, discusses the question "To Juice or Not to Juice?"

28 — Plastic in Piano Actions

A look at the old and the new in plastic action parts, by Don Mannino, RPT.

32 — Y2K and the Piano Technician

PTG Associate member Kris Anderson reports on the Y2K problem and its possible impact on piano technicians.

36 — An Essay on the History of Tuning

Skip Becker, RPT returns with a new installment in his ongoing saga. Part 11, "The Birth of Our Profession."

40 — The Bartolomeo Chronicles

Pedal noises are the topic in part 8 of RPT David Patterson's 12-part series.

COLUMNS & COMMENTS

2 — Editorial Perspective

Skimming the Cream

By Journal Editor Steve Brady, RPT

6 — President's Message

The Individual Impact on PTG Goals

By PTG President David P. Durben, RPT

DEPARTMENTS

8 — TT&T

A power screwdriver with a flexible shaft; a tip on replacing humidifier pads; how to keep those plate screws from chipping the plate's new finish.

10 — Q&A

What's the best way to repair a stripped screw-hole for a piano leg? How do you replace damper guide-rail bushings? What do you do to silence noisy bridge straps? What's the best solution for an old Steinway damper action with stripped screw holes in the top flanges?

IN ADDITION

42 — PTGReview

Articles and information dedicated to the news, interests and organizational activities of the Piano Technicians Guild. This section highlights information that is especially important to PTG members. This month: Going to Kansas City; Where's the Beef? Some Things You Many Want To Know About Kansas City, Maybe Not; "Keep Talking"; Volunteers Needed for Visually Impaired; Foundation Focus; 1998-99 Secretary-Treasurer's Report; New Members; Reclassifications; and In Memory.

46 — The Auxiliary Exchange

48 — Classified Advertisements

52 — Display Advertising Index Calendar of Events

COVER ART

This month's cover features the art of LA Chapter member Marlene Marston. These mixed-media sculptures utilize hammers and wippens from a Steinway model A; a seashell, metal rods and stained wood bases.

PIANO TECHNICIANS Journal

Volume 42 • Number 6 • June 1999

Piano Technicians Guild Board of Directors

David P. Durben, RPT

President

1233 5th Street, N. Fargo, ND 58102

(701) 241-7066

E-Mail: 75254.2414@compuserve.com

Jim Birch, RPT

Vice-President

56 Nashville Road, Bethel, CT 06801

(203) 744-4842

E-Mail: jimbirch@aol.com

Gracie L. Wagoner, RPT

Secretary-Treasurer

1307 S. Maple St., Sioux City, IA 51106

712-276-3176

E-Mail: GRACIERPT@aol.com

Marshall B. Hawkins, RPT

Immediate Past President

P.O. Box 386, Oxon Hill, MD 20745

(301) 567-2162

E-Mail: DQEV60A@prodigy.com

Ruth B. Phillips, RPT

Northeast Regional Vice-President

3096 Bristol Rd., Warrington, PA 18976

(215) 491-3045

E-Mail: WPRB@AOL.COM

Robert L. Mishkin, RPT

Southeast Regional Vice-President

1240 NE 153rd St., N. Miami Beach, FL 33162

(305) 947-9030

E-Mail: bmishkin@ix.netcom.com

Jack R. Wyatt Sr., RPT

South Central Regional Vice President

2027 15th Street, Garland, TX 75041

(972) 276-2243 (H)

(972) 278-9312 (W)

E-Mail: jwyatt1492@aol.com

Rolf A. von Walthausen, RPT

Central East Regional Vice-President

8788 Pheasant Run, Traverse City, MI 49684

(616) 946-2040

E-Mail: pianos@traverse.net

Kent Swafford, RPT

Central West Regional Vice-President

7811 Westgate Lenexa, KS 66216

(913) 631-8227

E-Mail: k.swafford@genie.com

Jim Coleman, Jr., RPT

Western Regional Vice President

17520 E. Desert Lane Higley, AZ 85236

(602) 966-4055

E-Mail: JCPIANOMAN@aol.com

Taylor Mackinnon, RPT

Pacific NW Regional Vice-President

520 SE 29th Ave., Hillsboro, OR 97123

(503) 693-3679

E-Mail: Mackinnon@Integrityonline.com

Build Your Tuning Business!

*"Now that I'm installing
Dampp-Chaser Systems, I'm
tuning twice the number of pianos."*

—Wally Meissner

Dampp-Chaser Field Expert who has installed over 800 Systems

Technicians who install Dampp-Chaser Piano Climate Control Systems report that their tuning business is thriving. By advocating climate control, they feel they are doing the best thing, the Right Thing, for the piano. In return, their clients reward them with referrals and greater receptivity to other improvements.

Build your referral business with Climate Control!

After you install a Dampp-Chaser Climate Control System in your client's piano, something predictable happens: It Really Works!

How often do we purchase a product that promises improvements but doesn't perform? So, when a product fulfills the promise, we're excited. We tell our friends and family about our smart buying decision. And, piano owners with a new Dampp-Chaser System do the same.

The newly-installed System makes obvious improvements in the piano which your client will notice in two or three days—the tuning holds better, the pitch remains stable, the touch is more consistent, and, because unisons and octaves stay clean, there is more quality in the tone. Now that the piano sounds better, your client is playing more.

The circle of shared information about the System then widens. Your client tells her fellow choir members and symphony volunteers about the positive change in her piano (music lovers associate with *other* music lovers). Her confidence in you is greater than ever. She freely recommends you to others, knowing you will do a great job for them, too. And, as you protect more pianos with climate control, *the referrals multiply!*

DAMPP-CHASER®
PIANO CLIMATE CONTROL SYSTEMS

800-438-1524

Build your regulating and voicing business with Climate Control!

According to experienced Dampp-Chaser installers, your tuning client experiences a change in attitude toward the piano after the installation of a System—she begins to place more value on the piano as a source of enjoyment.

With a System, the piano sounds better which lends the perception that her playing is better. Or, she observes that her child's playing has improved. And, she is pleased that the child is willing to practice for longer periods. (Children also recognize the enhancement of tuning, touch and tone.)

Each time your client notices the System's light panel under the keyboard, she is conscious that the System is working, constantly protecting her piano. When the blinking light calls for more water in the humidifier, she reaches for the watering can immediately. As she pours in fresh water, she is aware the System has used, to good purpose, the water she added two weeks ago. Each time she "waters the piano," the emotional bond with the piano is strengthened.

Meanwhile, her regard for you as a professional has grown. In her eyes, you have taken her average-sounding piano (or highly unstable piano) and converted it to an instrument of which she is proud, an instrument that is dependable and predictable.

More than ever, she trusts and respects your opinion. So, when you suggest ways you can make even more improvements through regulation and voicing, she is more receptive to your proposal. (A written proposal is more effective. For a proposal example, buy the PTG's *Business Resource Manual*, \$20.)

Remember, the Climate Control System you recommended did just what you said it would do. When you explain how voicing or regulation will make a noticeable improvement to the sound and yield greater enjoyment, *she will follow your advice again!*

Call Dampp-Chaser for unbiased print materials to convince your clients of the necessity for climate control. Also, ask for our FREE Business Building Kit.

IF YOU VALUE THE PIANO

The Individual Impact on PTG Goals

Last month I wrote about how PTG's chapters might make an environmental analysis to get a feel for whether they are effective and how they can improve. This month I'd like to look at how individual

members of PTG have an affect on the organization and how the actions of an individual can have consequences far beyond that individual's social and business circles.

Of course, we are all aware of the many wonderful gifts that have been given by many individuals to PTG. The work of our *Journal* writers and editors, the pioneers in our exam program and the people who spearheaded our marketing initiatives is

work that we all benefit from every day as our craft and our businesses take on the look of the true professional. These are very obvious positive effects, and we would do well to thank those whose energy brought these benefits to us.

But there are other effects – both positive and negative – that can be felt by the whole organization when individuals act. For example, when a member is servicing a piano which is under warranty by a retailer, both the consumer and the retailer form an opinion about “piano tuners” and the retailer especially forms an opinion about “Guild piano tuners.”

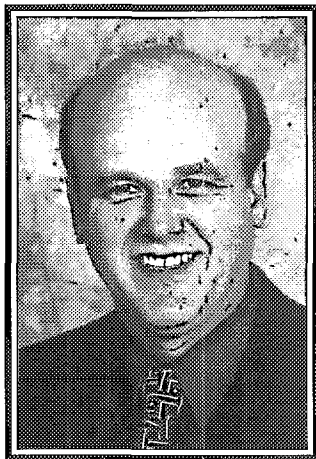
If the member is conscientious, prompt and leaves the customer feeling comfortable about having purchased the instrument, chances are that everyone will be happy. But if the tuner is late, does sloppy work or questions the quality of the instrument and/or the honesty of the retailer or manufacturer, several possibilities arise.

The customer may well place a call to the dealer and just the tone of voice will tell the seller that something has not gone well. If this happens with any degree of frequency, it will inevitably reflect on all “Guild piano tuners.”

Both of the above examples are played out every day. The wide-ranging result I referred to comes about when retailers gather at NAMM shows or salesmen go to various sales seminars. Many retailers buy and sell from each other when they encounter the need for an instrument they don't have on the floor and they have created networks that are every bit as extensive as ours. They exchange stories just like we do and form general opinions about us – good and bad – justified and unjustified. But they are formed nonetheless and we need to be aware of it.

I wish it weren't true, but the fact is that bad news travels faster and farther than good news, so that for every negative opinion we produce, we destroy the benefits of 10 positive ones. For this reason we as “Guild piano tuners” must be especially conscientious with our words and deeds.

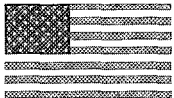
One of the best ways to make that possible is to attend PTG's annual convention. There you can learn about ways to service pianos that bring optimal results with great efficiency, and perhaps more importantly you can rub shoulders with people who have successfully negotiated the endless curves and pitfalls of everyday service; you can learn to avoid the blind alleys. We have a responsibility to ourselves, our fellow members, and our society to always do our best and to remember that when one of us looks good, we all look good!



David P. Durben, RPT
PTG President

World Class craftsmanship... World Class materials and components...

U.S.A.



Soundboard and Ribs - Sitka Spruce
Warranted for a lifetime to the original owner
against cracking or splitting.

Pinblock - Hard Maple

Kiln dried Select Grade High Density Hard Maple provides
superior tuning and tone stability.

Tone and Action Regulation

All World Pianos are given
a final voicing regulation in
our California factory to
satisfy American tastes.

Germany



Hammers - Abel™ • Renner™

Abel™ hammers are exclusive to the
WSG 275, Renner™ hammers are featured
on all other WSG models.

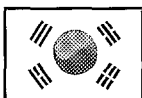
Action - Renner™

Samick World Grand Pianos™ feature an
improved version of the famous Renner™ Concert
type action.

Keys - Kluge™

Samick World Grand Pianos™
feature full concert length grand
piano keys, which are 1/8" longer
than industry standard. Sharps are
crafted of genuine ebony wood.

South Korea



Iron Plate - Vacuum Formed

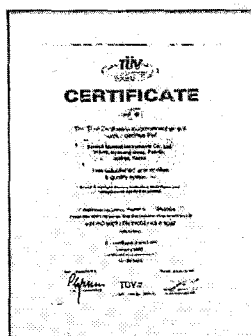
Warranted for a lifetime to the original owner
against cracking or breaking.

Rim, Case, Structural Components

From hand notched bridges to specially built 100 ton rim presses, the best techniques
of age-old artisans mesh with new world technologies to create an instrument your
family will treasure for generations.

ISO 9000

Samick was the world's first music manufacturer
awarded the ISO 9002 Quality System Certification
(from TÜV*). That means Samick can guarantee,
through third party verification, that our manufacturing
process complies with a globally recognized international
quality system standard.



...It all comes
together in the

Samick World Grand Piano™

SAMICK

Samick Music Corp., 18521 Railroad St, City of Industry, CA 91748 • 818-964-4700

Tips, Tools & Techniques

Flexible-shaft Screwdriver™

I recently received a new tool that I have to tell you about. It is called the Snakedriver™ and it is a 3.6 volt electric screwdriver with a flexible shaft. What makes this tool worth owning is that I recently saved at least a half an hour of time on the installation of a 6-part grand Dampp-Chaser humidity control system. On my next Dampp-Chaser installation I will save enough time to make the tool pay for itself.

The Snakedriver is made by Durapro, and I got it for about \$40.00 (plus tax) at Target (a local discount store similar to Wal-Mart or K-Mart or Venture).

The Snakedriver includes:

- a nice carrying case
- a ratcheting screwdriver handle
- the 3.6 volt electric screwdriver
- a battery charger
- a flexible shaft (which fits either the electric screwdriver or the ratcheting screwdriver handle)
- 12 assorted screwdriver tips (flat blade, Phillips & Torx)
- 6 drill bits (1/16", 3/32", 1/8", 5/32", 3/16", 7/32")
- 6 hex head nut driver attachments (1/4", 9/32", 5/16", 11/32", 3/8", 7/16")

All of the drill bits, screwdriver tips and nut-driver attachments have a hex head that fits right into the electric screwdriver, the flexible shaft or the handheld ratcheting screwdriver.

Here are some ways that an electric screwdriver will help you.

1. Removing or installing a whole set of action parts will take much less time and prevent damage to your wrist! (Thanks for the tip, Jim Coleman and Kent Swafford.)
2. Installing a Dampp-Chaser system will take less time. Dampp-Chaser will sell you a handy tool kit with a screw starter, a 1/4" nut driver and other tools to help in installing the system. You should own this tool kit from Dampp-Chaser because it is compact and useful. However, I believe that the Snakedriver can help you get the job done much faster.

Dampp-Chaser uses 1/4" hex-head screws to install all of the hardware and to hold the brackets and secure the cords under the piano. Normally, you would find the place to install the screw, use the screw starter to start the screw threads, then get the nut driver to finish installing the screw. Works fine. But with the Snakedriver™, you can insert a drill bit to drill a pilot hole, quickly remove the drill bit and install the 1/4" nut driver and have the screw completely tight before you have time to put down the screw starter and pick up the nut driver. The big savings in time comes when you need to install a cord clamp or a humidistat in a location where there is very little space between the beams. There are some places where you just can't get the screw starter or nut-driver in the proper place to turn the screw because of lack of space. But with the Snakedriver™, you can use the flexible shaft to turn the

screw even when there is very little space for a conventional tool.

3. If I am lying on my back under a grand piano and installing a lot of screws using only hand tools, by the end of a Dampp-Chaser system installation my body feels like I just had a beating. Okay, okay, I know ... I need to exercise, eat right, get lots of sleep, drink carrot juice and take herbs and vitamins, etc. But all I can say is that using the Snakedriver™ to install a bunch of screws into the beams underneath a grand piano doesn't make my body ache.
4. Most importantly, you can buy another tool and actually justify the expense to your wife, husband or significant other!

Have fun with tools!

—David A. Vanderhoofven, RPT
Kansas City, MO Chapter

Humidifier Pad Replacement

Carry each pair of Dampp-Chaser humidifier replacement pads in a gallon-size Zip-Loc bag with a disposable latex glove.

Pull the old pads off the humidifier bar directly into the plastic bag, put on the new pads, peel the glove off into the bag and zip the bag tightly closed. There will be absolutely no mess or water near the piano and you never have to touch the old slimy, moldy pads.

—Michael Slavin, RPT

Reprinted from News LINC, newsletter of the Long Island-Nassau Chapter

Better-Looking Plate Screws

Admittedly overly concerned with the cosmetics of my restored pianos, I was never quite happy with the installation of the plate-to-pinblock screws in the tuning pin fields. The plate

finish always chipped and curled away when these screws were snugged down. The resulting touch-up work always looked like, well, touch-up work. Common sense, however, told me that a pristine appearance should be possible, evidenced by the vintage instruments we all encounter in addition to first-rate current production pianos. The method I've developed (finally!) is simple, foolproof and consistent.

The plate is sprayed gold in the normal manner; we use bronze powder mixed into clear gloss lacquer. When dry to the touch, dummy plate screws, either #18 or #20, are dropped into the countersink recesses. The plate is then clear-coated. The screws keep the recesses from overfilling with lacquer.

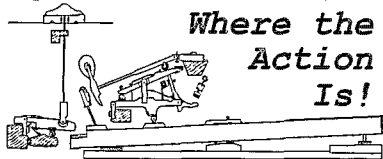
The dummy screws are then twisted out vertically from beneath while the final clear-coat is still a little soft. Finally, before the lacquer has set up fully, an actual plate screw for that instrument is spun into each countersunk hole with a drill at high speed and with heavy downward pressure. This curls out any material which infiltrated the countersink recesses while the lacquer still is flexible. Watch it — the screw gets hot! The debris either can be blown away or wiped off without damage after the top coat has hardened fully. The advantage to using a plate screw rather than a machinist's countersink is that the screw scrapes away the pliable finish exactly and only where the final contact will be made.

Continued on Page 14



PIANO TECHNICIANS GUILD

NORTH CAROLINA REGIONAL CONFERENCE
High Point, NC • October 29-31, 1999



Register by September 29, 1999 for \$\$Savings!

PTG BUSINESS AIDS

Brochures:

- How Should I Take Care of My Piano?
- How Often Should My Piano Be Serviced?
- Special Care & Maintenance Of The Teaching Piano members:
50/\$20, 100/\$35, 500/\$150
- non-members:
50/\$25, 100/\$47, 500/\$199

Technical Bulletins:

- Pitch Raising
- Regulation
- Humidity Control
- Voicing
- Finish Care
- Rebuilding members:
50/\$12, 100/\$20, 500/\$90
- non-members:
50/\$16, 100/\$26, 500/\$120

Journal Article Reprints:

- Dampers, Trapworks & Action Centers
- General Repair
- Rebuilding Skills
- Hammers & Touchweights
- Pinblocks & Plates
- Soundboard Installation
- Bridges & Soundboard Repairs
- Stringing, Crown & Down-bearing
- Keys members:
\$15 each / all 9 for \$100
- non-members:
\$20 each / all 9 for \$135

ALL 9 REPRINTS ALSO AVAILABLE
ON CD ROM

— same prices apply

**CALL OR FAX
THE HOME OFFICE
TO ORDER
816-753-7747
FAX: 816-531-0070**



A Full-Time Office Manager for Just \$149⁹⁵!

PTBiz 2000 - the office solution for piano technicians

- Lets you spend more time earning,
- and less time organizing.
- Now only \$149.95

Call (317) 251-7930 for **FREE** trial software.

Written for Windows 95, Windows 98, and Windows NT. Visit us at www.ptbiz.com



LOWEST PRICES!

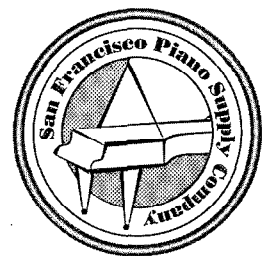
piano benches
piano covers
piano lamps
tuner/technician
parts & supplies



Call now for our brand new
FULL COLOR Piano Lovers
Catalogue!

Same Day Shipping
Fast, Convenient Service
Knowledgeable, Friendly staff

Piano Tuners/Technicians are invited to call for a Technical
Catalogue and/or our new Piano Lovers Catalogue.



**San Francisco Piano
Supply Company Inc.**

800-247-0702

e-mail: info@sfpiano.com
sales@sfpiano.com

www.sfpiano.com

Leg Screw-Hole Repairs

Recently I've done more than my share of leg screw-hole repairs. I have been drilling out the old very badly damaged screw holes and replacing the material with dowel stock. Is there a better method? I prefer putting in new material for the screw to "bite," but I seem to have some difficulty in accurately locating the drill bit as I begin. The bit seems to want to wander quite a bit and make the new hole less than an optimum gluing surface for the dowel stock. Is there a specific kind of bit that you would use for this? Is there a better way to do the repair? This always seems to happen on the less expensive grands. Thanks, as always, for your helpful insights.

— Greg Newell
Lakewood, Ohio



Tom Seay, RPT: You might consider the use of threaded inserts. A threaded insert for those of you who might not know is a fastener with knife threads on the outside and machine threads on the inside. These are the same fasteners used in the manufacture of knockdown furniture and they are available in various sizes.

To install one you simply drill an appropriate-sized hole (determined by the size of the insert) and screw the insert into the hole. You then are ready to use a bolt to fasten the parts together. Also, remember dowels are not plugs. You always should use a hardwood plug for best results.

Ed Foote: I find it best to first drill the hole just large enough to accommodate a lightly-glued dowel, which then is drilled out with a 1/2" Forstner bit. The dowel serves only to make the drill go in straight. This leaves a very accurate hole in which to place 1/2" plugs cut from pinblock stock. The use of dowels presents the screw with end grain, which the screw thread immediately chops into short fibers that have very little holding power. The plugs, cut with a tenon maker, provide a permanent repair. This technique is my standard repair on torn-out lid hinges, though for those, a 3/8" plug of Falconwood is more than sufficient.

Jim Bryant, RPT: I have had excellent results using Webb Phillips "Wood Rebuilder." It is a polyester/wood granules formulation that is quick, dependable and permanent as well as easy to use. I just mix up a small amount and insert it, along with a hammer shank, into the old hole, immediately run a screw in and the fix is done. Try it, you won't worry about drill bits any longer.

Newton Hunt, RPT: First, do not use dowel stock. Make or get plugs, which can be made from the sides of a board, not the end. Really good plug cutters that can make a long plug are expensive but well worth the investment over the long haul.

Alternatively, you can use the wood replacement material available from Webb Philips. This is like epoxy molding clay. You can plug the hole entirely or put in a little and turn the screw in so new threads are formed. Lubricate the screw so you can get it out.

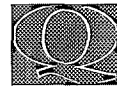
Thick CA glue also can be used to re-form threads with a lubricated screw. Of the three, I prefer to plug and re-drill

because I will use hardwood plugs even if the original hole was in softwood. I use CA glue for smaller screw holes.

Damper Guide-Rail Bushings

I was called by a client to take the "rattle" out of a grand piano. It turns out that the damper guide-rail bushings are hard as rocks, many of them worn out, all need replacing. What's a good way to size the new felt bushings? The damper wires measure to an average of .0725". Is it best to be at that size when the bushings are new or slightly larger? I've replaced bushings in the past, but it was always to match existing sizes. This piano needs a whole set, and I have nothing to go by. Your guidance will be appreciated.

— Paul Chick, RPT
Plainview, MN



Ron Nossaman: I've had pretty good luck bushing the holes as usual (tight) and inserting a #6 bridge pin. After the glue dries, pull a pin and try a damper wire in the hole. This often is adequate. If it's too tight, re-insert the bridge pin and wet the bushings with an alcohol/water mix. Heat the whole mess with a hair drier, heat gun or bake it in the oven (conventional) at about 250 degrees for an hour or until dry. The wires should be a pretty close fit after this.

If they still are too tight, you can iron them out with a hot damper wire. Put the cool wire through a bushing, heat the end and pull it back out relatively slowly. The results will depend on how tight the bushing was, how hot the wire is and how long the hot section was in the bushing. Be patient, be careful and pay attention. Check sizing with a cold wire from time to time to make sure it's working. There are about a billion ways to do this – all of which work under certain circumstances.

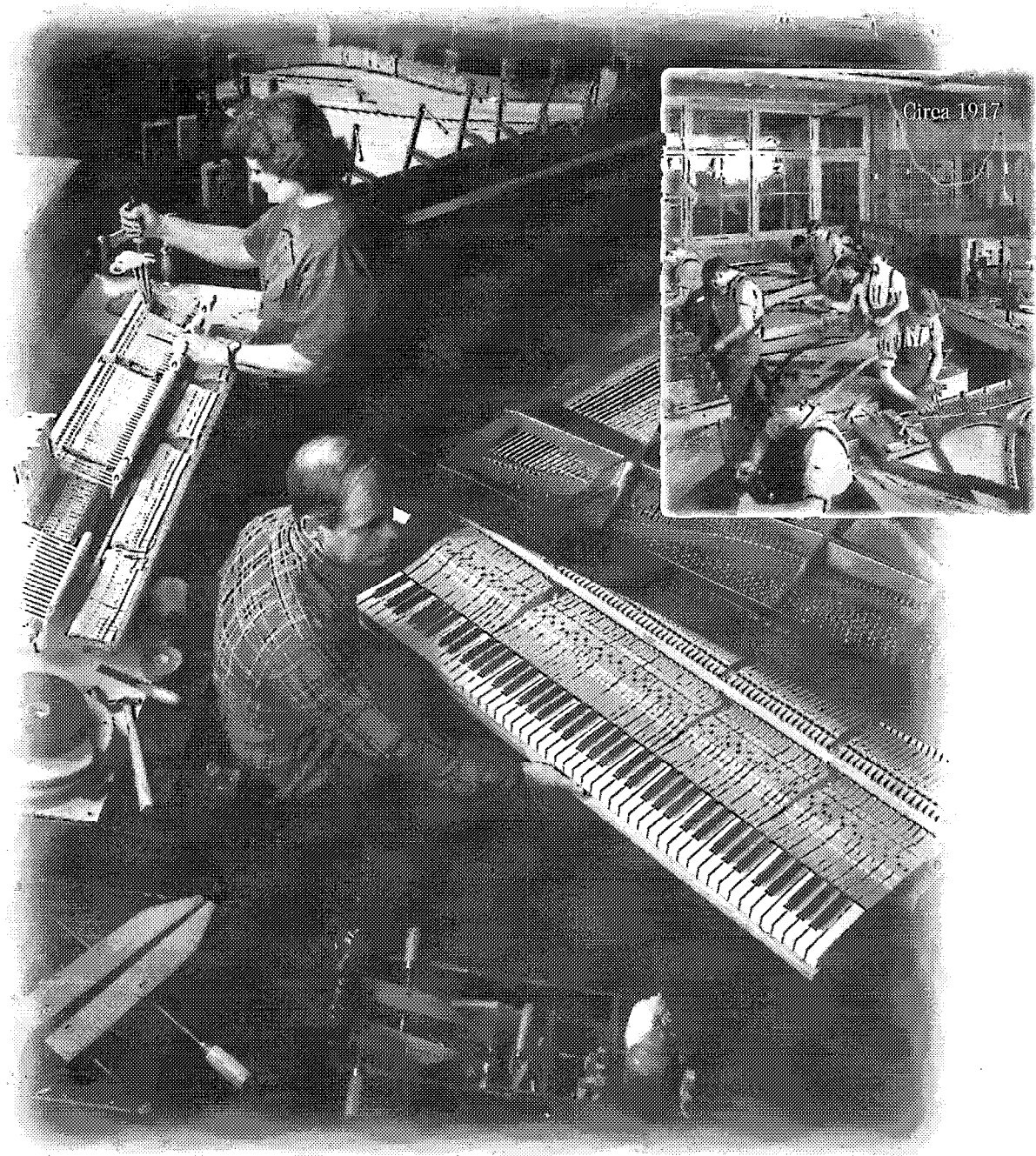
Susan Kline, RPT: I do it about the way Ron does, except I use a #7 bridge pin. Seems to end up just the right size most of the time. Try a sample with each size and see which ends up the closest. I wet them with alcohol (ever-helpful vodka) and let them sit overnight with the bridge pins in. Seems to work. I started doing them this way after reading a Bill Spurlock article in the *Journal* a while back.

Tom Cole, RPR: I believe Susan was referring to the article, "Wool Cloth Bushings," in the June, '89 *PTJ*.

Newton Hunt, RPT: Remove all the old bushings with small tools. Do not try to drill them out or you will enlarge the hole. Find a drill bit that will drill the same size hole and then cut a piece of medium or thin key bushing cloth to three times the diameter of the drill. Cut a point at one end and pull the cloth to its far end and trim both sides with a very sharp razor blade. Continue on until finished. No need to use glue; the wood fibers will hold the bushings in place if you are careful when replacing the dampers.

Continued on Page 12

In Touch With Technicians for More Than a Century



Baldwin has been committed to building exceptional instruments for more than a century. All along, expert craftsmen in our factories have played a key role in Baldwin quality. Technicians in the field have been essential for maintaining this standard. Today, Baldwin is as strongly dedicated to providing support to technicians as we were a century ago. This commitment now extends

to ConcertMaster, Baldwin's innovative computerized player system. We also offer a wide variety of quality parts for many grand and vertical piano applications. Call us at (800) 876-2976, ext. 8585 (8:30 a.m. to 5:00 p.m. EST) and ask for a free copy of the Baldwin Service Manual. We look forward to promptly and professionally serving your needs as a technician.

Baldwin

Piano Technical Services • (800) 876-2976, ext. 8585 • Fax: (513) 754-4631 • e-mail: tech.service@bpao.com

Q&A/ROUNDTABLE

Continued from Page 10

Paul Chick Responds

Thanks to all with your suggestions on rebushing damper guide rails. I read all the posts and went at it. A 5/32" drill bit cleaned the hole without touching the wood and left a little glue residue. I "kissed" the bottom side of the holes with a rosebud (counter sink) to remove the glue collar. Standard strips of key bushing cloth filled the holes perfectly. I chose the #7 bridge pin to get a little more clearance and allow for rebound of the felt. After inserting the felt (without glue) and the pins, I soaked the bushings with an alcohol/water solution, heated the bushings until dry, left the pins in for a couple of hours, installed, regulated dampers to touch the side of the hole and came out with a beautiful, quiet set of dampers. Slight rebound from the bushing cloth has not affected the work. Thanks, everyone.

Noisy Bridle Straps

I am asking this question for another tech that I work with. He wants to know if anybody has a way to silence noisy bridle straps in Baldwins. They make noise at the bridle wire. He has tried Protek grease and filling the hole in the bridle tab. The former solution didn't last, and the latter took too long. Any other suggestions? Thanks in advance.



— Cia DiTommaso



Richard Moody: The best I have found is fabric glue from the sewing section. The bottle with its applicator tip is perfect to apply it. I think it is PVC-E, but it doesn't say, and it smells a little different from the "real stuff." Rubber cement is good, but it takes much longer to apply. I haven't encountered problems removing straps that had been treated with rubber cement or PVC-E.

What really is irksome is dealing with bridle wires that have been squeezed to prevent rattling. I do not think that applying the right glue in the right manner to bridle straps will cause that much extra work 10 or 20 years down the line. The object isn't to glue the straps to the wires, rather to coat (size) the tip so it won't rattle on the wire.

Dave Anderson (Michigan), RPT: My co-worker, Ken Miller, RPT, came up with a different variation of this method. We thin the PVC-E with some water. It seems to soak in better and is very easy to do a whole set.

Clyde Hollinger, RPT: How old are these pianos? How about replacing the bridle straps? Several persons suggest using glue. I strongly dislike having to replace bridle straps down the road that have been glued to the wires by a former technician, so I would not go that route.

Eliau Degen: I have been using clear silicone RTV sealant, the same used for Aquariums, it adheres to the hole, it stays soft, easy to scrape off later and it is transparent. I normally use a drop on the back of the bridle strap, avoiding the bridle leather part going around the wire. I try to avoid white glue or any water-based glue; they tend to rust the wire in that point after some time.

Bob Anderson, RPT: The strap holes can be glue-sized without irreversibly gluing the straps to the wires. A problem I find more than noisy straps is straps on the Baldwins which only had a bump in the wire instead of a loop. When the hole enlarges the strap tends to slide down the wire and hold the wippen up enough that the jack can't get under the hammer butt. A small amount of thin CA glue works for me. The trick is not getting so much on that it makes it hard to remove the strap.

Jim Kinnear: Since the old ones often are made of leather on the ends, I use a drop Vaseline™ to soften the leather and it works quite well. Glue is a bugger to get off later. I once repaired a piano on which someone had soldered that metal web strap. That was a pain to remove!

Steinway Underlever Replacement

I have an old Steinway D (serial number: 150050) under my care that has its original underlevers. They are the ones with the fixed sostenuto tabs and the damper wire retaining screws "threaded" into the wood. Of course, after a hundred years, many have stripped, with all the resultant problems and I'd like to deal with those problems by forestalling them.

My preference would be to replace all the underlevers, so as to have hinged sostenuto tabs and reliable new wood, etc. The other option is to drill and install metal inserts. How troublesome is it to replace a set of underlevers?

These underlevers have the flanges horizontally attached to the damper tray (don't know if glued or screwed at this point, but I can handle that problem all right). Never having done this replacement, I assume that these are non-standard parts and that something would have to be patched together. I see "flanges for old Steinway" listed in a catalogue, which I presume are intended to be attached to other underlevers, but is there an underlever with the right dimensions?

Does anyone have some good advice (or even marginally good advice) for me? This is for a prep school I service and they'll need a bid, so I can't just tear in and then decide.

— Fred Sturm, RPT
University of New Mexico



Del Fandrich, RPT: Well, it's not like replacing a hammer shank or two, but it's also not rocket science. We used to make our own trays and fit new levers to them. Nowadays, however, we just buy the Renner kit and assemble it (modified to include capstan lift screws, of course). The kit comes with a reasonably complete instruction manual. If you have access to a drill press and a saw of some sort, it's not all that difficult. By the way, you won't find this kit listed in the supplier catalogs. Go directly to Renner USA.

Jim Coleman, Sr., RPT: This looks to me like an ideal situation for replacing the entire damper tray assembly. Rick Baldassin and Chris Robinson have done a class several times on installing the Renner damper assembly. Many people have done the halfway job of installing the bullets, but the horizontal flanges still will be a problem from time to time. When one of those glued horizontal flanges breaks loose (and with

Continued on Page 14

**Smoke damaged piano?
Guaranteed Odor Removal
Majestic Piano Company!**

(612) 939-0997

5 - 7th Ave. North
Hopkins, Minnesota, 55343



• We work with Insurance
Companies

U.S. & Canada

• Dealers
• Technicians
• Piano Owners
• Manufacturers

Dave Swartz, RPT

Visit our web site:

<http://www.majesticpiano.com>

- Diagnostics & written estimates
- Moving services nationwide
- Fully Insured
- Full rebuilding & refinishing services
- Complete written appraisals

**"YOU NEED SPACE
WE NEED PIANOS"**

Let's Make A Deal !!

JAY-MART PIANO WHOLESALERS

Call Irv Jacoby

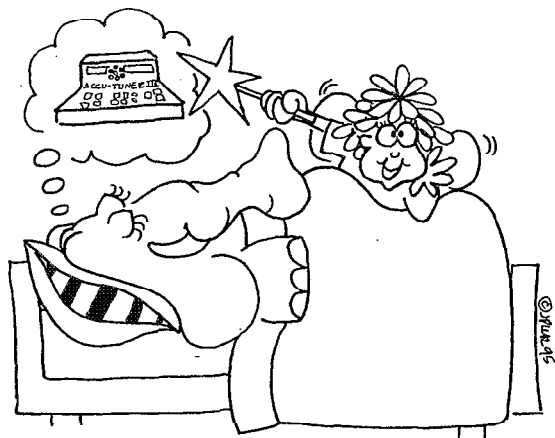
800-411-2363

216-382-3249 Fax

"The Piano Store for Piano Stores"

**Now the Sanderson Accu-Tuner III™ Is
Not Just a Dream . . . It's Reality!**

That's right . . . the first new Accu-Tuner™ in ten years has been invented and will soon be available for you to purchase. Much lighter and half the size of the first two versions, the SAT III will actually do more for you. Note the following features, and give us a toll-free call for details . . .



- automatic note stepper
- tunes in any sequence • battery charge indicator
- tunes in different temperaments • adjustable octave widths

***I*ntellectronics
Incorporated**

1-800-FAST-440

9 Acton Road • Chelmsford, MA 01824
In MA: 978-256-7374 • Fax: 978-250-9293

Email: inventronics@aol.com

Web: <http://www.cris.com/~fast440>

BUSHMASTER

*Professional Key Bushing Tool.
Get factory results!*

- ☐ Fast & accurate.
- ☐ Easy to use.
- ☐ Manufactured in solid brass & aluminum.
- ☐ Lifetime warranty.
- ☐ Accu-Cauls available in 9 sizes.
- ☐ Wide range of bushing cloths available.
- ☐ Catalog \$5.⁰⁰



Pianotek SUPPLY COMPANY
401 W. Marshall . Ferndale, MI 48220

1-800-347-3854

Tel.: 248-545-1599

Fax: 248-545-0408

Q&A/ROUNDTABLE

Continued from Page 12

a piano this old, it is likely) it will be difficult to explain to the client why they still have damper problems.

The piano is not old enough yet to have historical value, so I wouldn't worry about preserving original equipment. The sostenuto action definitely will be improved as well as general dependability. Check with Rick Baldassin in Salt Lake City about prices and installation instructions.

Ken Sloane, RPT: Another problem associated with the old underlevers in your piano is that they are thinner than the current production units. By being thinner, there is less surface area contact between the underlever and key cushion which accelerates wear at the key cushion. If the piano is used a lot, large grooves can appear at the key cushion in the heavy use area of the piano making shifting of the keyboard a problem and damper regulation a nightmare. Replace the entire damper rack!

Tom McNeil, RPT: It's not necessary to remove all the dampers and the tray to fix the occasional flange in the older Steinways. Try this: just remove the individual damper that's in trouble. Then reach under the underlever and under the protruding portion of the 'bottom flange' with a screwdriver. Use the screwdriver as a lever to pry the flange from the tray. In my experience they always pop off easily and without damage. Then do whatever repair is necessary and replace the flange on the tray. If you don't "clean up" the glued surfaces, they will align perfectly because of the remnants of old glue and an occasional splinter. I like to make the new glue joint with cold hide glue. I have some old stuff that's been around here forever. It seems to be strong enough to hold well, yet the joint can be broken easily enough if needed in the future.

You'll have to figure a way to clamp the flange to the tray. I have used two or three rubber mutes to wedge it in place. The cold glue takes over night to dry, which could be a problem in some emergency situations. In that case, you could use faster-setting glue, perhaps even CA. If you make the joint "wicked strong" (as they say in Vermont), you may have to remove the tray next time around!

None of this is to dissuade you from replacing the system using the Renner kit. That's the proper way to do it and the sostenuto will work more smoothly and last longer.

Newton Hunt, RPT: I removed, repaired, replaced the tray and timed the dampers of a Steinway D in about 75 minutes. It had to be done quickly so I did it. Also, since it was my screw-up originally I had no other choice. (Yeah, I have done that occasionally.) This is not a mystery job, just tedious and only requires some common sense. The only problem with reinstalling the tray under discussion is the top flanges without metal screw inserts. They split too often because of age, the lever flanges come off, the pinning is old, the wood is old and the design is old. If durability and service is a requirement of this piano then replacement is the only viable option.

Fred Sturm Responds

It seems like it's pretty unanimous that replacing tray and all is the way to go. I guess I'll submit a bid for that and see how

many years it takes for the budget to allow. I had thought of bidding the insert route as well as an alternative just in case there was no possibility of getting enough money to do the whole replacement, but on consideration, it occurs to me that they would just jump at the alternative. Politics and managing money – it's a great game.

By the way, I figured if I did the insert job, I'd install screws in the flanges, assuming they're glued and that hasn't been done already. It's not that much work and worth avoiding removal of the entire tray just to fix one flange, even once! Thanks to all for the feedback.

Tips, Tools & Techniques

Continued from Page 8

I realize I'm jumping through perhaps a few too many hoops here, but the results are lovely. By the way, we are now nickel-plating all these screws (even though the originals were painted the plate color) as I still have found no way to consistently keep the paint from chipping off the very perimeter and/or slot during final torquing. That old Steinway plate bronzing material was very hard and stayed put!

We also are nickel-plating the plate perimeter lag screws for the same reason. In addition, a .020" thick nickel plated washer with an outer diameter just slightly larger than the "diameter" of the hex head goes between the screw head and the plate. These allow the lag heads to torque down firmly without chipping or curling the plate finish – understated and effective.

I'd be delighted to hear anyone else's solutions to these problems.

— David G. Hughes, RPT
Baltimore Chapter

Errata

In my article, "Tuning to a Pipe Organ," in the October 1998 *Journal*, on page 22 under **Calculated Results**, the coefficient of linear expansion of soft organ pipe metals, depending upon the alloy, is about 16 parts per million per degree Fahrenheit, not 50 as I stated in my article. As a result, the error between my experimental results and theoretical prediction rounds off to about two percent instead of seven, as stated in the article. My conclusion remains the same: pipe expansion is negligible when it comes to the organ's change in pitch with change of temperature. The pitch of a pipe organ will go sharp by about 1.6 cents per degree Fahrenheit of rise in temperature due to reduction of air density. I apologize for the error.

— Jim Ellis, RPT
Knoxville, TN Chapter

Get the latest information on the
42nd Annual Convention & Technical Institute
in Kansas City, MO
www.ptg.org/1999/conv/

The Finishing Touches

Dry Transfer Decals



- Fast, easy, no cleanup
- Immediately ready to finish
- Over 700 Fallboard & Soundboard
- Custom Decals - send tracing for

Music Racks



- Authentic Steinway Designs
- Two styles

Decals Unlimited

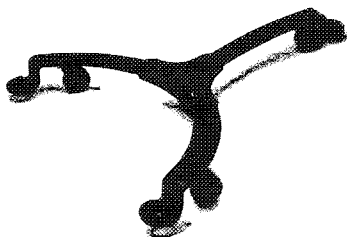
9333 96th St. No.

Mahtomedi, MN 55115 • 651-429-4465

Catalog available upon request

Grand Piano Carriage

- Made of the finest steel: coated
- Superior engineering and looks
- Two brakes included for added stability

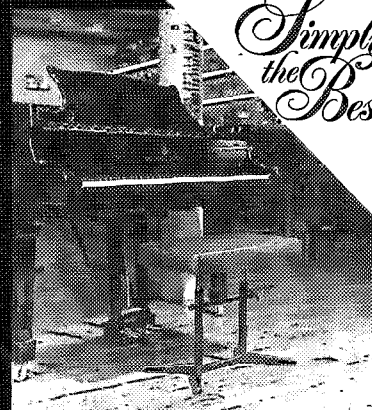


- Smooth and effortless movement
- No finish damage to piano legs
- Shipped UPS

Schroeder's Classic Carriage

Hostra piano bench

*Simply
the Best*



for more informations ask:

Ollag AG • P. O. Box 445
CH-8703 Erlenbach/Switzerland
fax: ++41 1 910 83 58

"YOU NEED PIANOS WE NEED SPACE"

Let's Make A Deal !!

JAY-MART PIANO WHOLESALERS

Call Irv Jacoby

800-411-2363

216-382-3249 Fax

"The Piano Store for Piano Stores"

Spent countless man hours on the Fluffendoofel to have
form and function...touch and tone???

So you're in Goober, Mississippi? So what...?

**Let the World Wide Web
be your marketplace!**

**Vintage Instrument Listing Service
For Vintage Pianoforte Instruments**

**Reduced rates and Brokerage Services
for the professional RPT.**

Visit our Website at <http://www.pgigercat.com>

Gale Bullock of P & G Investments
P. O. Box 30139, Columbia, MO 65205-3139 USA
573-445-8918 office, 573-445-0871 fax
Email: mutigercat@sockets.net

Promoting Vintage Pianofortes on the World Wide Web

P&G Investments



form and function...
touch and tone...

Reyburn CyberTuner®

Complete Software Package • 30-Day Money Back Guarantee

**For Windows & Macintosh
only \$795**

The Future of Piano Tuning is Here!

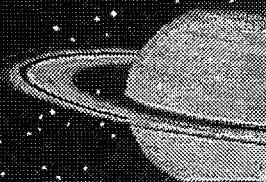
RCT transforms your Windows or Macintosh laptop computer into a professional stand-alone tuning device.

- Easy to use, fast, accurate and micro-adjustable
- Pitch raise amazingly close with just one pass
- Self-corrects for scaling problems (spinets, short grands, etc.)
- Sell voicing jobs with Pianalyzer's color display of any note's full tonal spectrum
- With RCT on a laptop computer, your office always travels with you!

Dean L. Reyburn, RPT
1-888-SOFT-440
dean@reyburn.com
2695 Indian Lakes Road
Cedar Springs, MI 49319

Mitch Kiel, RPT
1-888-I-LUV-RCT
mitch@reyburn.com
11326 Patsy Dr. SE
Olympia, WA 98501

Reyburn CyberTuner
*The most advanced visual tuner
on the inner planets!*



Reyburn Piano Service, Inc. • www.reyburn.com

Attention Delegates to 1999 Council !

Don't forget to bring your Agenda Book to Kansas City!
Extra copies may not be available.

A Guide to Bridge Recapping — Part IV

By Bob Hohf, RPT
Contributing Editor

Laying Out the New Caps

This step in the recapping process is critical to the success of the overall repair. The goal is to replace the old caps that have been removed with new quartersawn hard maple caps. Generally, a bridge may be recapped section-by-section with butt joints where the sections of cap meet. The new caps must follow the contour of the bridges, the glue joints between the caps and the bridge body must be solid and the butt joints must be tight. The dry-fit caps are positively anchored in position by two 1/8" registration pins per section. The pins keep the caps from sliding out of position during gluing and they must be located in such a way that, when the registration holes eventually are plugged with dowels, the plugs do not interfere with the notching or the new bridge pins. Sometimes the tenor section of the treble bridge has too much of a curve for three-inch-wide capping material, or it has a hook on the bass end so that it must be recapped in two pieces. In these cases the butt joint between those two pieces also must not interfere with bridge pins.

The logistics of meeting all of these requirements are complex and the prospect of explaining the methods in writing is daunting. For those who are new to the recapping process, it will be difficult to visualize the overall procedure without actually doing it and it will be difficult to do without visualizing. Therefore, for those who intend to follow the procedures outlined here, I strongly recommend reading the entire process carefully and trying to form a clear mental image of the overall repair.

Then, when it is time to actually perform the operations, work slowly, keeping in mind the steps already taken and how completed steps relate to the next ones.

In Photo 1 the selected capping material is laid on top of the bridges to be capped. The material is three-inch-wide quartersawn hard maple resawn from 12/4 planks as described in a previous article.¹ The rough thicknesses of the new capping material were determined with the plate in the piano and fishing line stretched to represent the string heights, as described in an earlier article.² Using a plane adjusted for a shallow depth of

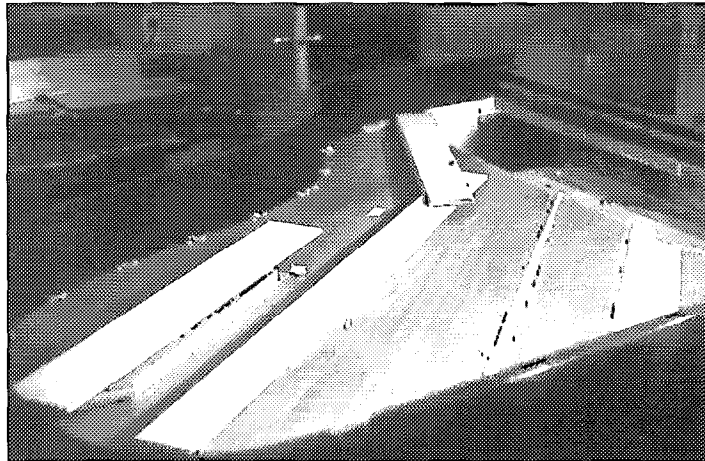


Photo 1

cut, plane the boards to determine which direction the capping material can be planed and orient the boards so that the caps will plane best from bass to treble. I find it easier to plane in this direction when setting the final thickness of the new caps. Also, orienting the boards in this manner will facilitate notching on the *speaking length side* of the bridges. If there is any problem with notching caused by grain runout on either side of the bridges, it is better to have it on the *back side* of the bridges. In order to

facilitate discussion I will refer to the bass as Section 1, the tenor as Section 2, and the treble as sections 3 and 4. Even though sections 3 and 4 usually could be capped in one piece, it is better to cap them in two pieces. The reason for this is that the grain direction of the capping material should be as nearly *parallel* to the length of the bridge as possible. If sections 3 and 4 were capped in one piece, the optimum grain direction would have to be compromised. When selecting the capping material, pay close attention to any *curvature* in the grain along the lengths of the boards. Boards often can be chosen in which the curvature of the grain will follow the shape of the bridge body quite closely. In pianos with five sections, the top two sections are usually very similar to sections 3 and 4 in pianos with four sections. The fifth section is created by dividing the tenor into two sections with an additional plate bar. Since most five-section pianos are over seven feet long, the tenor bridge tends to be quite straight, usually making recapping in one piece straightforward.

Notice that, on the piano in Photo 1, the cantilevered bass bridge is being capped instead of replacing the entire solid body of the bridge. The reason for this is that the space between the bottom of the apron and the soundboard on this particular piano was not sufficient for the special C-clamps that I use to glue bridge bodies onto aprons. There was, however, enough height to the body of the bass bridge to allow the same clamping procedure as I used on the treble bridge. The existing glue joint between the bridge body and the apron

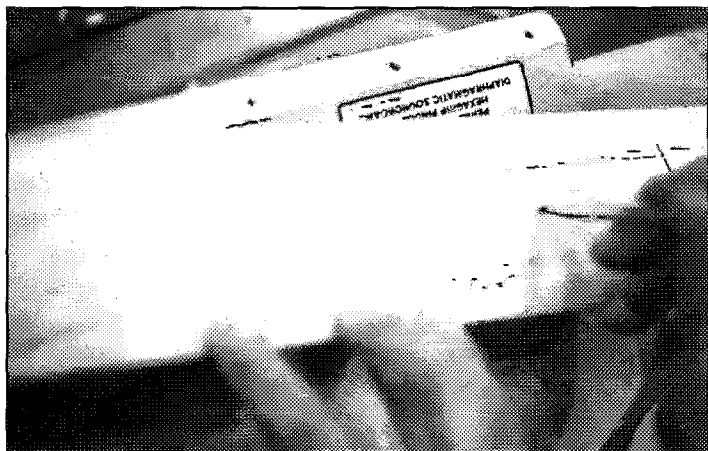


Photo 2

must, of course, be intact if the body is to be preserved. The use of the special C-clamps to replace the bridge body will be described below.

The procedure for laying out the caps uses the bridge templates described in an earlier article.³ On the templates we have recorded the outline of the bridge shapes and the original locations of the bridge pins. The locations of the registration pins and the locations and angles of the butt joints between the sections of caps are first marked on the template. The marks are then transferred to the capping material, registration holes drilled and ends cut. Then the blank capping material is fit to the top of the bridge. It is the fitting of the blank material to the tops of the bridges that introduces the largest possibility for error. The reason for this is that, with the three-inch-wide board laid on top of the bridge, the bridge body is obscured, making positive location of the registration holes difficult. This problem is overcome by a careful system of marking and use of the templates.

Laying Out Section 4

I like to start on the top of the treble bridge, which is Section 4 in most pianos. This is a short section, but, since it is first, is the most difficult to lay out. Once the new blank cap for one section is in place, it provides a valuable reference point for laying out the other sections. Start by laying the bridge template on top of the blank

each end of the section. The marks should be at the center of the bridge and as far from the bridge pin holes as possible. The impressions made by the awl must be clearly visible on both the

piece of capping material, orienting the outline of the bridge as parallel to the direction of the wood grain as possible. Then, using a sharp, pointed awl, mark the locations of the registration holes as in Photo 2.

Mark two registration holes about three inches from

positions shift in the bridge body relative to the top of the cap. Next, relocate the template on top of the Section 4 bridge capping material using the impressions for the registration holes and transfer the joint location and reference line as shown in Photos 5 and 6. Photo 7 shows a registration hole location, the joint location and the reference line marked on the top of the blank cap.

Using a bevel gauge as shown in Photo 8, measure the angle between the joint location line and the edge of the capping material. Transfer the angle on the bevel gauge to the miter gauge of a table saw as shown in Photo 9 and cut the capping material to the joint location line. Notice the wooden extension fastened to the miter gauge. The saw kerf cut into this wooden extension makes it very easy to cut

capping material exactly on the line. Since the table saw will not leave a smooth enough surface for a tight butt joint, the cut end of the capping material must be made smooth with a pass from a sharp block plane set for a very light cut (Photo 10). The process of cutting the capping material on the table saw and trimming the end with the block plane probably will not match the joint lines marked on the template and the bridge body exactly, so do not attempt to use this new

edge for aligning the capping material on the bridge. Now drill the 1/8" registration holes in the blank cap on the drill press as shown in Photo 11. Slightly countersink the underside of

Continued on Next Page

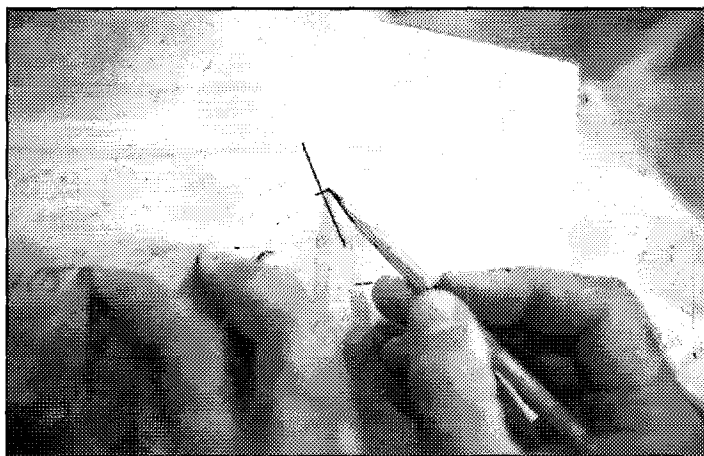


Photo 3

template and the capping material.

Photo 3 shows marking the intended location of the butt joint between sections 3 and 4 on the template. Draw a short reference line across the joint as shown. Transfer both the joint location and the reference line to the body of the bridge as shown in Photo 4. Do not be concerned that the filled bridge pin holes in the bridge body do not align with the holes marked in the template. Since the bridge pin holes are drilled at an angle, their

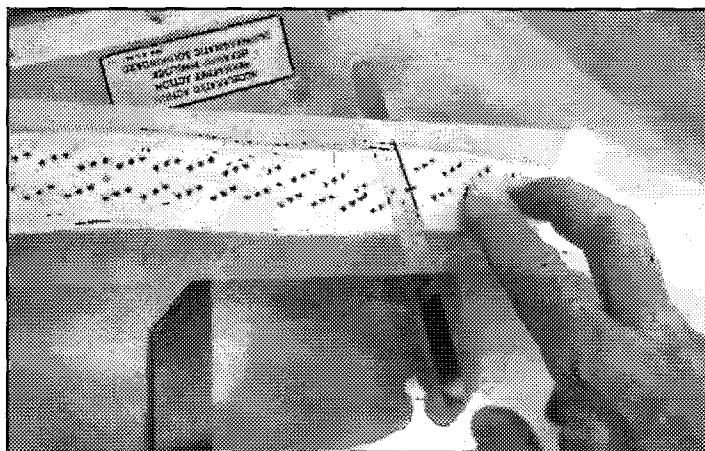


Photo 4

A Guide to Bridge Recapping

Continued from Previous Page

the registration holes in order to remove any bulges left by the drilling.

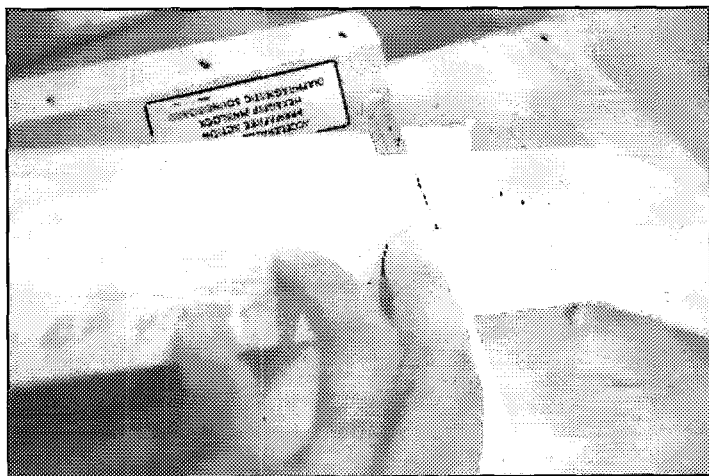


Photo 5

The next steps must be performed with great care in order to assure that the registration holes are transferred to the bridge body in the desired locations, and do not drift into the area of the bridge where the new bridge pins will be located. Place the template back on the bridge, aligning the joint location and reference line on the template with those marked on the bridge body. Take care that the template is in *exactly* the same location as it was when the lines were drawn. Using the joint location lines and the outline of the bridge drawn on the template, it should be possible to relocate the template very accurately. Holding the template in position firmly somewhere near the break between sections 2 and 3, slide the blank cap for Section 4 underneath the template, and align the registration holes drilled in the blank cap with the impressions for the registration

holes that remain in the template. Once you are satisfied that everything is aligned properly, hold the blank cap firmly in place, and remove the template. Using the registration holes as drill guides, drill the 1/8" holes down into the bridge body as in Photo 12. Naturally, you have anticipated this step by placing the drill where you can reach it while still holding the cap. I like to drill one hole, pound in the registration pin, then drill the

other hole. This assures that all the holes are properly aligned and both registration pins can be in place at the same time. Again, slightly countersink the registration holes in the bridge body to remove any bulges that might keep the cap and the bridge body apart. These countersinks also help guide the pins into the holes on subsequent steps.

With the blank cap held in place by the registration pins, mark the outline of the bridge body on the bottom of the capping material

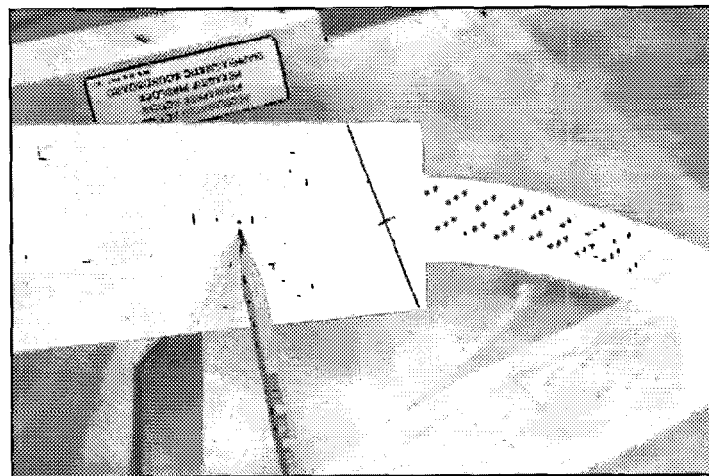


Photo 7

with a shop-made pencil as shown in Photo 13. Photo 14 shows the bottom of capping material with the registration holes and the outline of the bridge. Using a bandsaw, cut out the blank cap as in Photo 15. The cap may be sawn right to the line: once the blank cap is glued in

place the less material that must be removed to make the new cap flush to the bridge body, the better.

At this point, erase the joint location and registration lines from the template and the bridge body since they may not differ from the actual location on the blank cap. With the new blank cap pinned in place draw the *actual* joint location on the bridge body and add a new registration line as before. Then remove the blank cap and place the template back in position on the bridge, aligning the registration holes and the bridge outline. Transfer the actual joint location and registration line from the bridge body back onto the template as shown in Photo 16. Using the registration holes, locate the template on the blank cap and transfer the joint registration line onto the blank cap. Photo 17 shows how the marked cap should align with the bridge body; the joint edge and registration line of the capping material are aligned with the

lines marked on the bridge body. Please ignore the fact that the capping material in Photo 17 has not yet been cut to shape; I don't always do the steps in exactly the order described above. The reasons for taking such care to draw the exact joint location and registration line on the bridge body, the template and the cap will become apparent when laying out the caps for the other sections of the bridge.

Laying Out Sections 2 and 3

The new cap for Section 4, pinned in place as in Photo 18, provides a very valuable reference in making the cap for Section 3; the marked butt joint

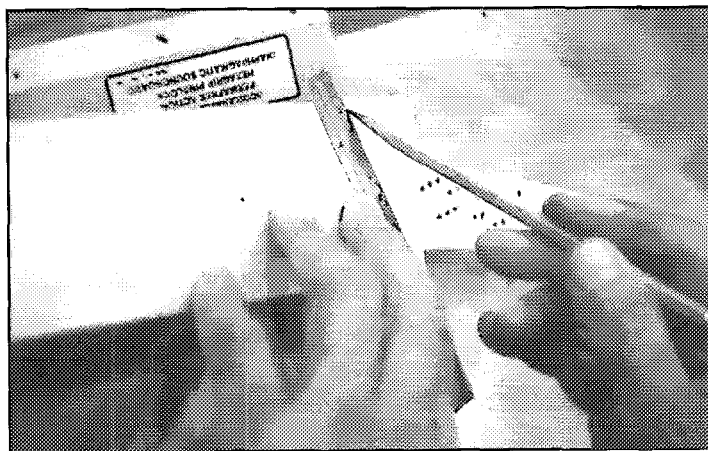


Photo 6

edge of the Section 4 cap facilitates positively locating the registration pin holes for Section 3. Similarly, Section 3 helps lay out Section 2. So, once Section 4 is successfully in place, the most difficult step in laying out the new bridge caps is done.

Lay the template on top of the capping material selected for Section 3 and transfer the butt joint location from the template to the capping material as shown in Photo 19. Take care again to orient the grain as near to the length of the capping material as possible. Do not transfer the registration line at this point. Measure the angle of the joint line, cut it on the table saw, and plane it smooth with a block plane as in Photos 8, 9, and 10. Hold the Section 3 butt joint edge up

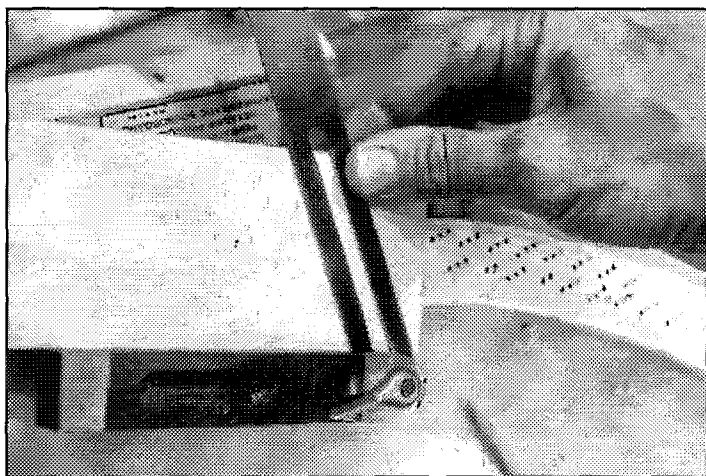


Photo 8

to Section 4 and make fine adjustments with the block plane until the joint is a *very tight* fit. Then slide the Section 3 capping material along the Section 4 blank cap, checking the placement of the bottom of the Section 3 capping material on the bridge body. When the best location of the capping material on the bridge has been found, transfer the registration line from Section 4 to Section 3 as in Photo 20. Lay the template back on the capping material, carefully orient the template using the joint location and registration line, and mark the registration pin holes as shown in Photo 21. Make the Section 3 side of the butt joint between Sections 3 and 2 as described above and shown in Photos 4 - 10.

Drill the registration holes in the Section 3 capping material on the drill press (Photo 11). Hold the capping

material firmly in place, making sure that the joint is tight and the registration lines between Sections 3 and 4 match. Then, using the registration pin hole in the capping material as a drill guide, extend the hole into the bridge body as in Photo 22. Pound a registration pin into the hole, check the tightness of the joint and drill the lower Section 3 registration hole. Mark the outline of the bridge body on the bottom of the capping material and cut to shape (Photos 13 - 15). The blank caps for Sections 3 and 4 are shown pinned in position in Photo 23.

Laying out the cap for Section 2 is accomplished in the same way as Section 3. Bear in mind, however, that because of the length of the

cap for Section 2, a small error made when fitting the butt joint between Sections 2 and 3 can translate into a large error at the bass end of Section 2. The curvature of the bridge in

Section 2 often makes capping it with three-inch wide material an exercise in precision. If it is not possible to cap Section 2 in one piece, it will have to be capped in two pieces, and another butt joint location must be chosen that will not interfere with the new bridge pins.

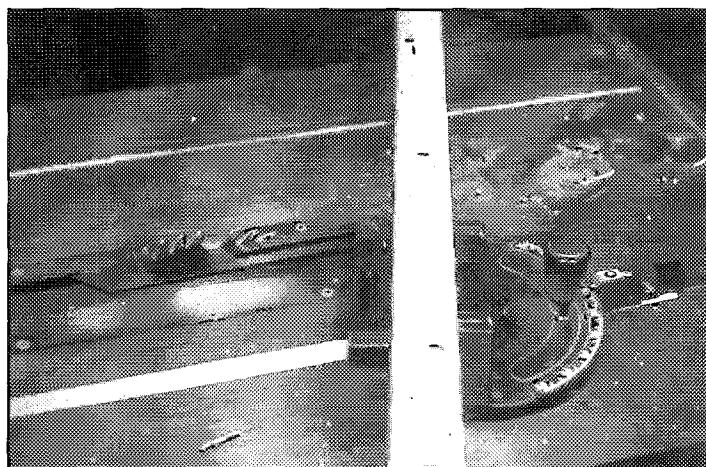


Photo 9

Laying Out the Bass

Since the bass bridge has no adjacent bridge sections, either capped or uncapped, positive location of the registration pin holes is somewhat more difficult than even Section 4. Proceed with locating and the registration pin holes on the bass bridge capping material as above. Then, with the capping material *upside down*, position the *upside down* (the glossy side should be up) bass template using the registration pin holes in the capping material and their impressions in the template. Transfer some of the outline from the template to the capping material. This outline on the bottom of the capping material can be used for positioning on the bridge body so that the registration pin holes may be extended into the body. I am not going into this step in great detail because once you have gone through the steps of preparing the caps for the

Continued on Next Page

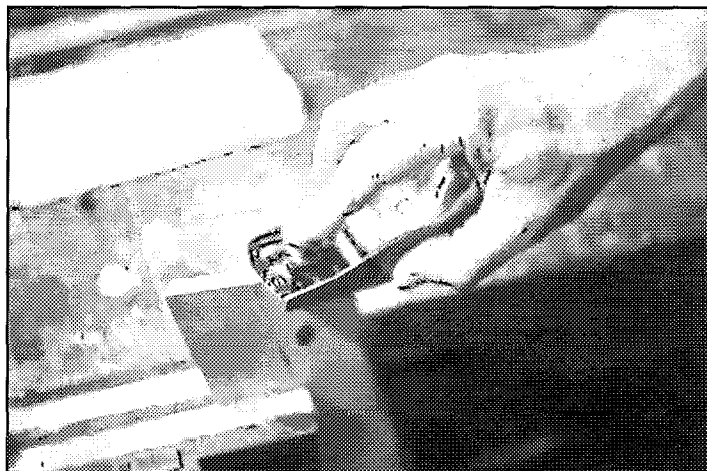


Photo 10

A Guide to Bridge Recapping

Continued from Previous Page

treble bridge it will be clear how locating the bass cap works.

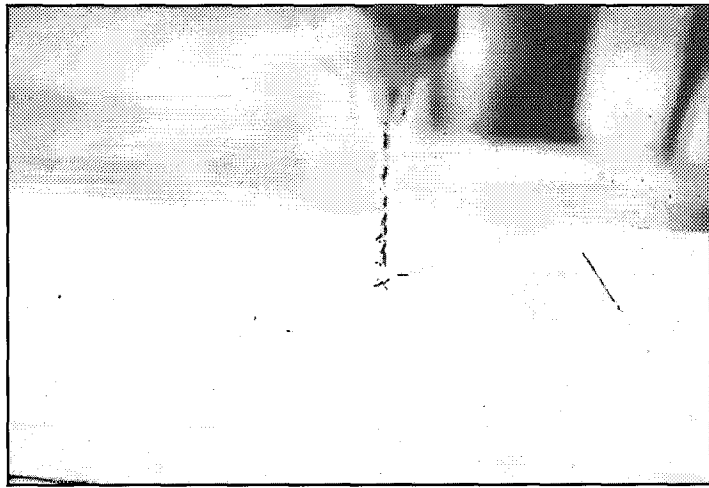


Photo 11

Making the Pressure Cauls

The pressure cauls are wooden strips about one-inch thick cut roughly to the shape of the new blank caps. The cauls are placed between the clamps and the blank caps in order to distribute the clamping pressure evenly across the entire surface of the caps and thus assure a solid and uniform glue joint. There must be holes in the cauls for the registration pins to pass through. The wood used for the cauls should be soft and flexible in order to force the caps to conform to the complex contour of the surface of the bridge body. I usually use scrap 2-by-6 pine lumber run through the thickness planer on both sides (nails removed) to a finished thickness of about one inch. There is nothing to be gained by using higher grade material. When done with the cauls, save them, since they often can be reused on another piano.

Photo 24 shows laying the blank cap for Section 4 on top of the caul material with the registration pins in place and tapping the pins to mark their positions on the caul. With the cap anchored in position by the pins, trace the outline of the cap onto the caul. Next, drill the holes for the registration pins. These holes in the caul should be at least 1/4" to allow

room for adjusting the position of the caul during assembly, and so that the registration pins can be inserted easily through the blank cap and into the bridge body during assembly. Cut out the caul on the bandsaw about 1/8" on the waste side of the cap outline except on the edge of the caul that corresponds to the butt joint between the sections of the caps. At the butt joint end make the caul about 1/8" shorter than the blank cap so that there is

clearance between the cauls for Sections 3 and 4 during assembly. Follow this procedure to make one caul for each section.

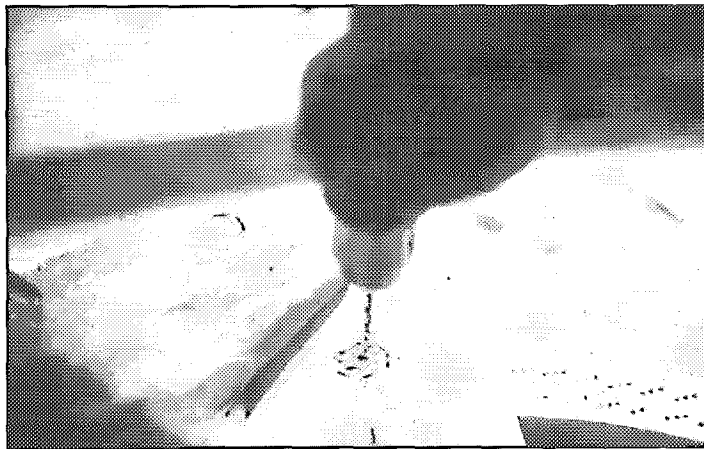


Photo 12

The Clamping System

Making good glue joints between the new blank caps and the bridge body requires the application of positive clamping pressure to the caps. Since we are recapping bridges on the original

soundboard, and there is no access to the bottom of the bridge, conventional use of C-clamps or some other system is not possible. There are several methods of applying this clamping pressure that have been described in previous *Journal* articles and Institute classes, but I believe the system outlined here has distinct advantages over any of the others.

Photo 25 shows a stock Pony three-way edging clamp on the left. This clamp looks beautiful and convincing, but, in reality, is almost totally ineffective in its unmodified state. The reason is that, with the clamp held in position with the two opposing screws, only light pressure can be applied by the unopposed screw before the clamp slips. The clamp on the right shows the modifications that transform this clamp from a piece of art into an effective tool. The pads have been removed from the opposing screws by simply turning the screws out until the pads fall off. The remaining peened

stubs that held the pads onto the screws are then ground down so that they protrude slightly less than 1/8" from the end of the screws. The steel pins for applying leverage to the screws must be removed because, with the clamps in position on the bridge, there is usually not enough room for the pins between the screw ends and the soundboard. However, save the removed pins and use them to tighten and loosen the clamp screws in the same manner that capstan screws are adjusted on keys.

The bars shown below the clamps in Photo 25 are made from

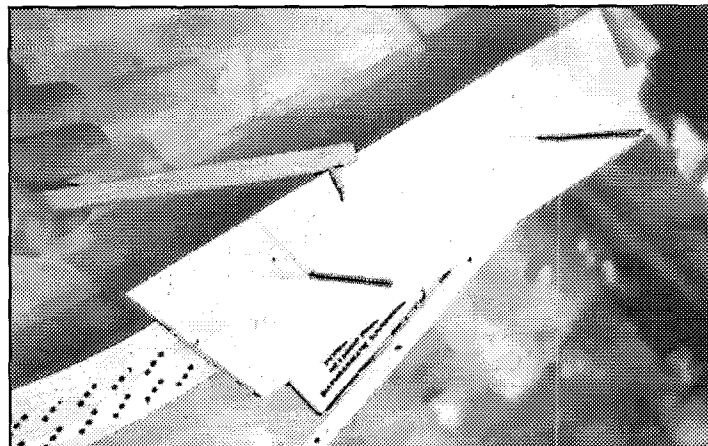


Photo 13

1/8" x 3/4" aluminum bar stock available in hardware stores. The bar on the right shows a line of 1/8" holes drilled through the bar at 1" intervals and a little offset from the center of the bar. These holes receive the 1/8" stubs on the ends of the clamp screws. The reason the stubs were ground to slightly less than 1/8" is to prevent them from protruding through the bars and damaging the bridge. The bar on the left shows 120 grit sandpaper glued to one side of the bar. The sandpaper prevents the bars from slipping when downward pressure is applied with the unopposed screw. The glue used to fasten the sandpaper to the bar must be able to adhere to both aluminum and paper and bond firmly enough to prevent the sandpaper from sliding off when shearing pressure is applied. The only glue I have found that will do this is Pliobond™. Pliobond™ is nasty stuff with noxious fumes, but it gets the job done. I make these bars in the full six-foot lengths as the blank aluminum bars come from the hardware store and cut them to length as needed. Making the bars takes some time, but, with care, the bars can be used over and over on many jobs.

Photo 26 shows the bars and clamps in position on Section 4. Also shown are the pressure caul and the blank cap ready for gluing. Photo 26 demonstrates why the final height of the planed bridge body should be over 3/4" as mentioned in the previous article on planing the bridges.⁴ If the

bridge body is planed down to less than 3/4", the clamping bars will prevent the blank caps from snugging down to the top of the bridge body. Special clamping bars can be made for special cases, but this can add a whole new level of complexity to the job. Notice that the treble strip that anchors the soundboard in Section 4 to the belly rail has been removed to make room for the clamps. Also notice how

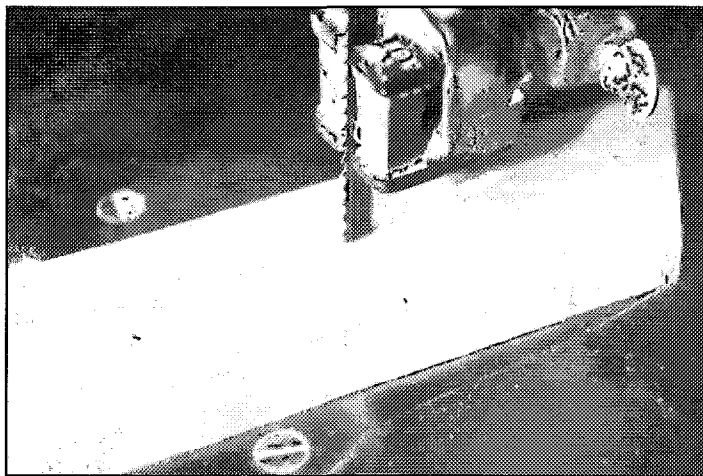


Photo 15

the registration pin locations must be chosen to anticipate the positions of the clamps. I like to have a clamp *very close* to the end of each section and then spaced at intervals of three inches or less. This spacing allows the application of plenty of clamping pressure as well as enough room to manipulate the clamps.

Gluing On the Blank Caps

Before gluing, I give the bottom surface of the blank caps a final very light pass on

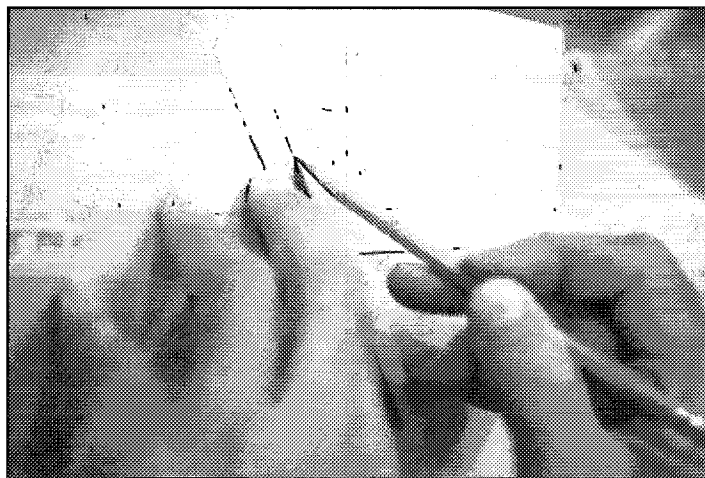


Photo 16

the jointer, followed by a single light pass from a flat and very sharp cabinet scraper to remove any machining irregularities. I feel that the final scraping is a very important step in making good wood joints with hard maple. Hard maple has such low compressibility that even the very shallow ribbed texture left by a light pass on the jointer creates undesirable gaps between the blank cap and the bridge body. In order to remove this texture, the scraper must be held at an angle that is *shew* to scoop made by the individual jointer knives. If the scraper is held *parallel* to the knife scoops, the scraper edge will simply follow the texture, and the resulting surface will not be flat.

If this is your first, or even second, attempt at recapping, I would highly recommend doing a dry run of the assembly and clamping procedure *without glue*. It takes some time, but might save you a big mess. Once the glue is applied, there is plenty of time for assembly if everything is properly in place. But there is not enough time for much in the way of refiguring or relocating. If you have made a mistake, find out first, and correct it and *then* apply the glue.

Once you are confident that the bugs have all been removed, apply a healthy coat of glue to the top surface of the bridge body, as in Photo 27 and to the bottom of the blank cap. Apply enough glue that the surfaces are uniformly glossy and there will be

Continued on Next Page

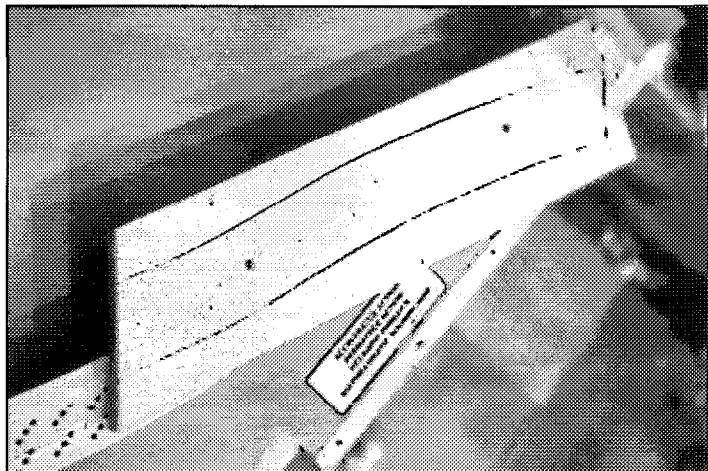


Photo 14

A Guide to Bridge Recapping

Continued from Previous Page

ample squeeze-out when clamping pressure is applied. Photo 28 shows the blank cap after it has been inserted under the arches of the clamps from the bass side and placed in position. In Photo 29 the pressure caul has been placed in position and the registration pins pounded into place. The countersink put on the top of the registration pin holes in the bridge body facilitates finding the holes "blind" during assembly. In Photo 30 the clamps are being tightened and the glue is squeezing out. It is a good idea to wipe off as much of the excess glue as possible from the sides of the bridge with a wet cloth. This will keep the clamping bars from becoming caked with dried glue and will extend their working life. Also, carefully remove all the excess glue from the butt joint end of the blank cap and bridge body with a scraper while the glue is still wet to prevent spoiling the tight fit between the Section 3 and 4 caps later.

Using this procedure, the blanks can be glued into place section by section. I usually glue and clamp Sections 3 and 4, then work on something else until the glue is dry and the clamps can be removed. Then I glue on the Section 2 and bass caps. There are two reasons for this. First, because of the length and curvature of the Section 2 cap and pressure caul, and the proximity of the rim, the cap and caul cannot be put in position from the bass end with all the clamps in place. But the cap and caul can be installed on Section 2 from the bass end with several of the clamps removed. This procedure requires applying glue, inserting the cap, caul, and pins, and then repositioning the removed clamps before applying pressure. It can be done, but I would not recommend this for beginners. With the clamps removed from Sections 3 and 4, the Section 2 cap and caul can (usually) be inserted easily from the treble end. The second reason for clamping on the clamps in two runs is that the clamps are expensive and I don't have enough of them to clamp an entire treble bridge at once. Photo 31 shows Section 2 clamped into place.

Special Bass Bridge Clamps

In pianos with cantilevered bass bridges with ample space between the

bottom of the apron and the soundboard (about 3/8"), my preference is to replace the entire bridge body instead of recapping the original. Not only does this eliminate the original bridge pin holes entirely, but it also assures that the critical glue joint between the bridge body and the apron is solid. The procedure for replacing the bridge body differs only slightly from that for recapping. Photo 32 shows a three-inch C-clamp that has been ground thinner on the end to fit underneath a bridge apron. Of course, grinding a clamp this way weakens the clamp, so that each clamp can handle less clamping pressure. This weakness can be overcome by simply using more clamps. Photo 33 shows the new bass bridge body clamped into position.

A Word About

Glues

Perhaps the issue of selecting the ideal glue for recapping bridges would be simpler if there were not so many different types of glue on the market today. In my shop I use at least 10 different glues in various applications. With so many products on the market, it is not surprising that discussions of the properties and most appropriate applications of glues are often very heated, and rarely, if ever, result in any consensus of

opinion. I believe that most of the high quality water-based wood glues can be used to produce effective results in bridge recapping. I, therefore, recommend that you use whatever wood glue you are most familiar and secure with. It is the *dry fit* of the wood surfaces to be glued which determines the effectiveness of the glue joint, much more than the particular glue used to make the joint. I use Titebond™. That being said, I

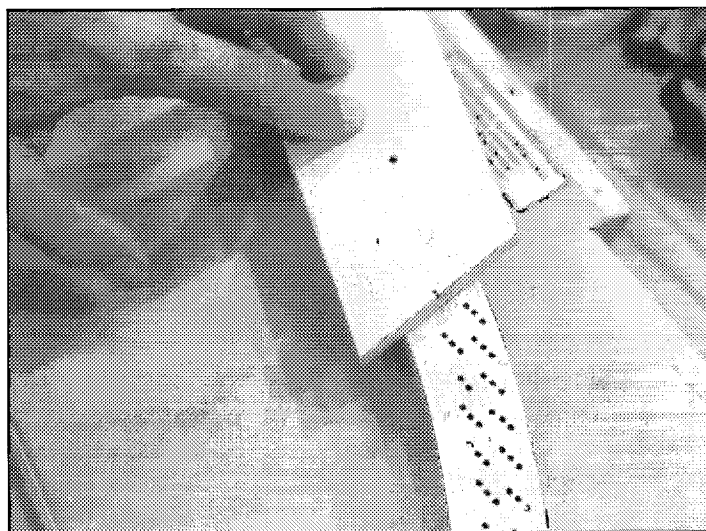


Photo 17

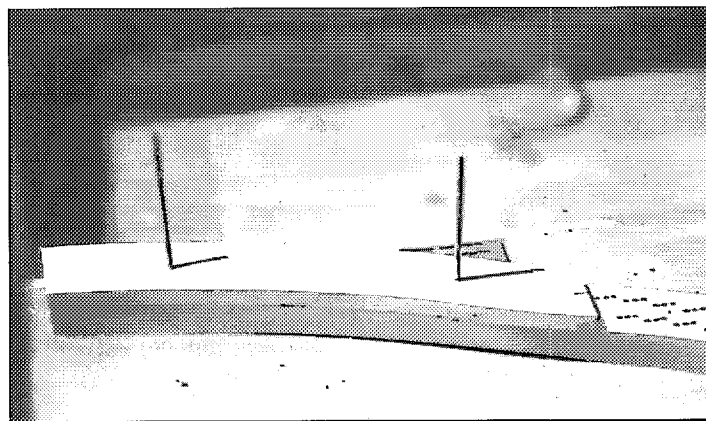


Photo 18



Photo 19

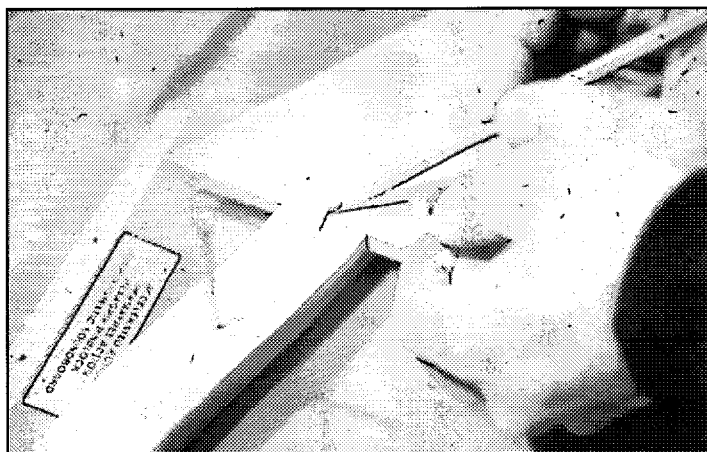


Photo 20



Photo 21

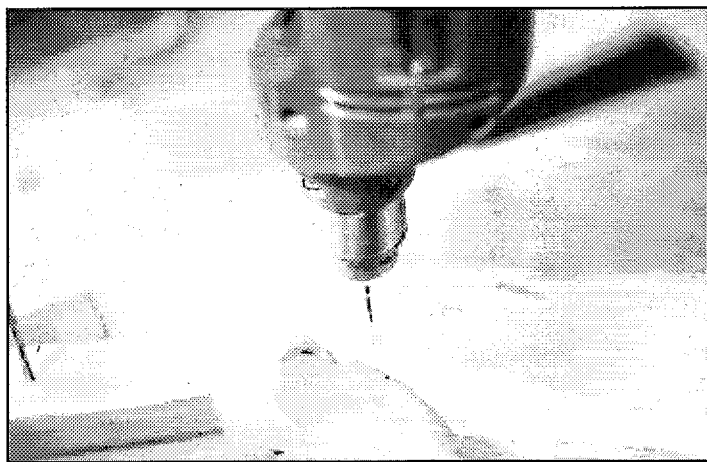


Photo 22

can already hear the loud protests over the well-known “cold creep” associated with Titebond™.

A characteristic that all glues have in common is that they are composed of very long molecules that are held together by strong chemical bonds. These long molecules must have the proper polarities on their ends to

would change enough to alter the “perfect” fit. However, the point is that there is *very, very little* glue in a well made joint. “Gap filling” is not necessary in a well-fit joint because there is no gap to fill. A joint where Titebond™ is used to fill gaps between the surfaces can creep, especially where shearing stress is applied. This is

adhere to themselves and to other substances.⁵ The theoretical ideal for a strong glue joint is one where the surfaces to be glued mate so closely that *one molecule* of glue can span the gap between the two surfaces. In this ideal joint, one end of the glue molecules would adhere to one side of the joint, and the other end to the other side; most of the glue molecules would adhere to the substrate and not to other glue molecules. In joints where the dry fit is greater than the length of one glue molecule, it takes *several or many* molecules to span the gap. In poorly fit joints most of the glue molecules are adhering to each other, rather than the substrate. These joints tend to be weaker. Of course, even if one could create the ideal, one molecule-wide fit between two surfaces, by the time the parts were handled, glue applied and clamped, the shape of the parts

because there are many lengths of molecules required to span the gaps, and the bonds *between the glue molecules* are flexible. But tightly fitting, “invisible” joints made with Titebond™ (or many other glues) *do not creep*. There is simply not enough glue in the joint to be flexible. I have done several low-tech experiments testing joints made with Titebond™ and have never been able to observe creep in a well made joint. There may be others who disagree with me on this point, but, unless they can convince me otherwise, I will continue to use Titebond™ with confidence. Titebond™ also has the advantages of being easily available, inexpensive and non-toxic.

Another important issue affecting the choice of glues in bridge capping is the transduction of energy from the vibrating strings, through the bridge and into the soundboard. On a number of occasions over the years, I have heard the belief expressed that the glue joint between the bridge cap and the bridge body has an effect on the transmission of tone in a piano. I believe this is an erroneous concept. This idea seems to imply that the vibrating energy of the string is somehow *conducted* through the bridge in some way similar to the way that electrical energy is conducted through wire. Therefore, supposedly, the “tonal conductivity” of the glue in the joint affects the tone of the piano. Electrical conductivity, of course, is an event that occurs at the atomic level. On the other hand, I believe the *transduction* of energy from the string to the soundboard is the result of the *motion* of the string *moving* the bridge, which, in turn *moves* the soundboard. This is a *macroscopic* event. Any movement that can occur between the bridge cap and the body, or any other components of the bridge, can certainly absorb energy and result in loss of tone. But any glue that makes joints solid enough to allow the bridge to move as a unit can be used effectively. As far as I know the actual mechanism of the string, bridge and soundboard movements are not well understood. This is an area of piano technology where further investigation might produce some very dramatic results that could affect our overall understanding of the instrument.

Continued on Next Page

A Guide to Bridge Recapping

Continued from Previous Page

Notes

1. Hohf, "Recapping Bridges – Part I," *Piano Technicians Journal*, April 1999
2. Hohf, "Recapping Bridges – Part II," *Piano Technicians Journal*, May 1999
3. This information is based on my

recollection of a class on glues presented by a scientist from the Forest Products Laboratory in Madison, WI. Unfortunately, I do not remember his name. However, references on glue are included below.

4. Selbo, M.L., *Adhesive Bonding of Wood*, U.S. Department of

Agriculture, Technical Bulletin No. 1512, 1975

5. Young, William Tandy, "A Working Guide to Glues," *Fine Woodworking*, February, 1999, No. 134, p. 60. ☐

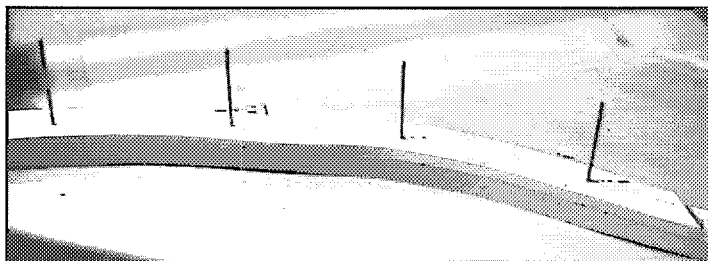


Photo 23



Photo 24

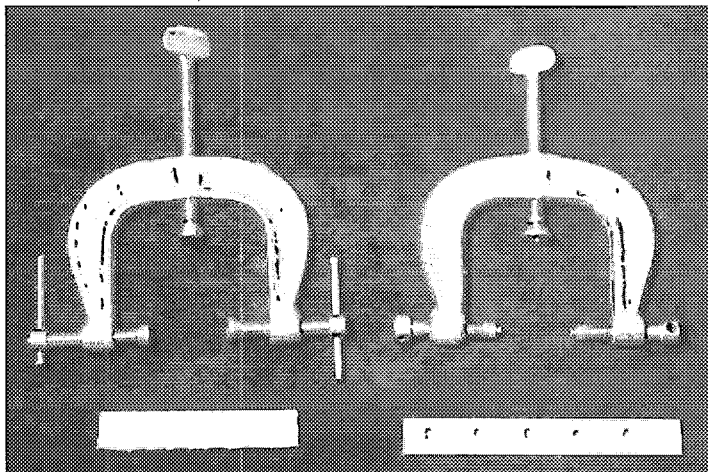


Photo 25

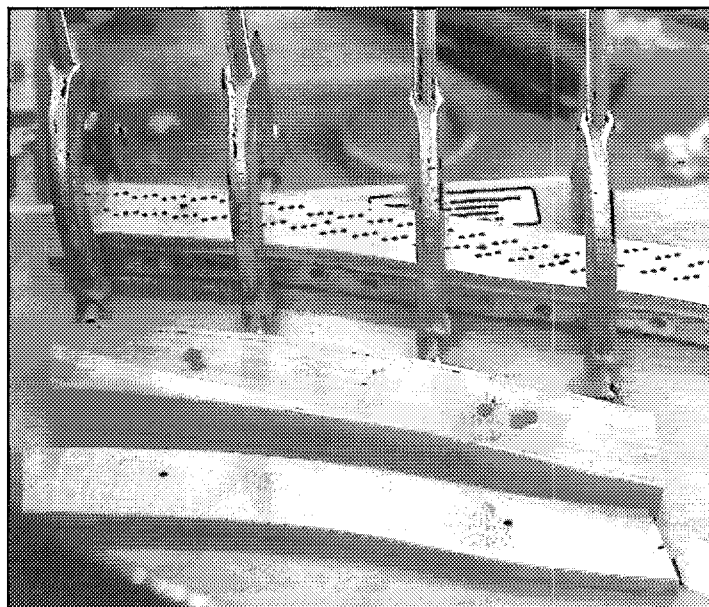


Photo 26

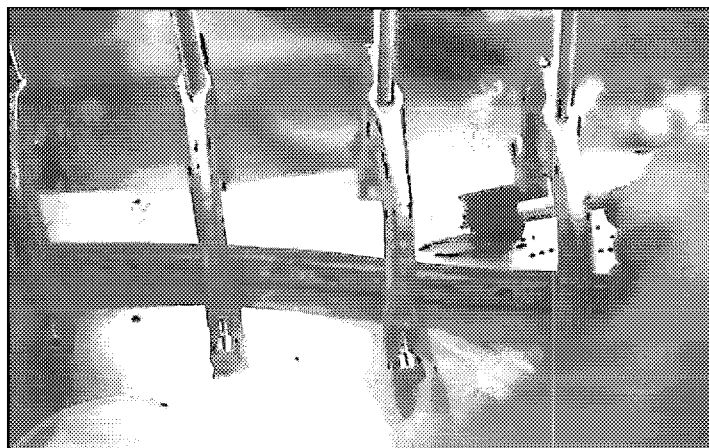


Photo 27

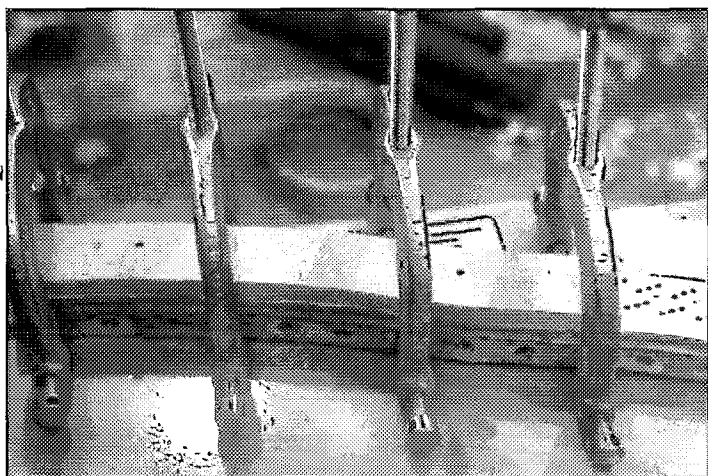


Photo 28

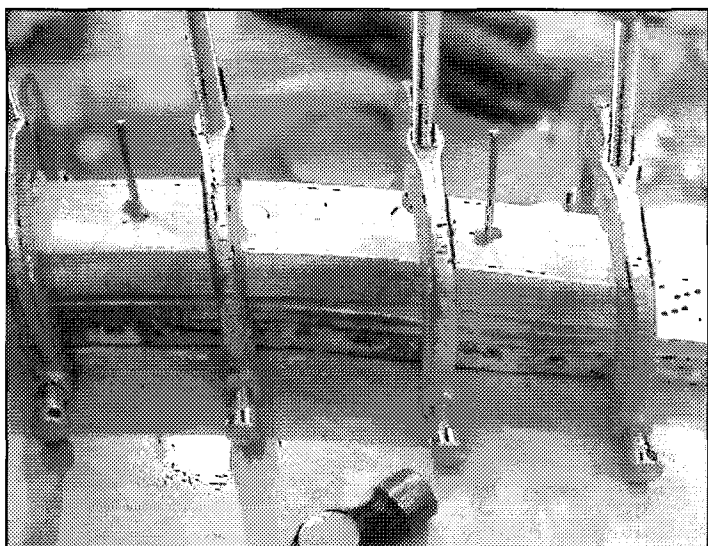


Photo 29

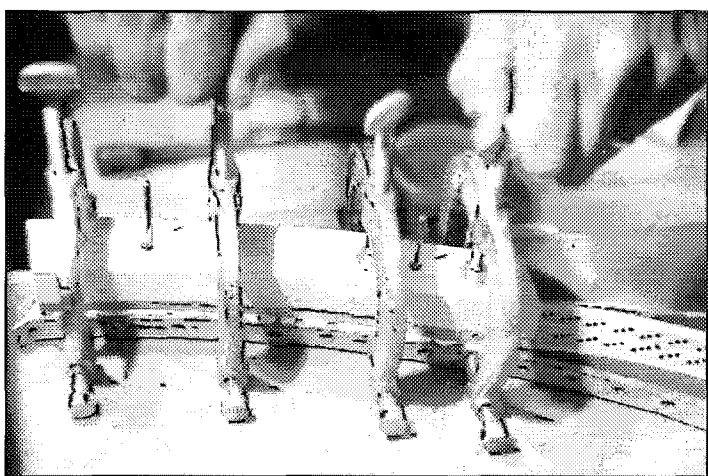


Photo 30

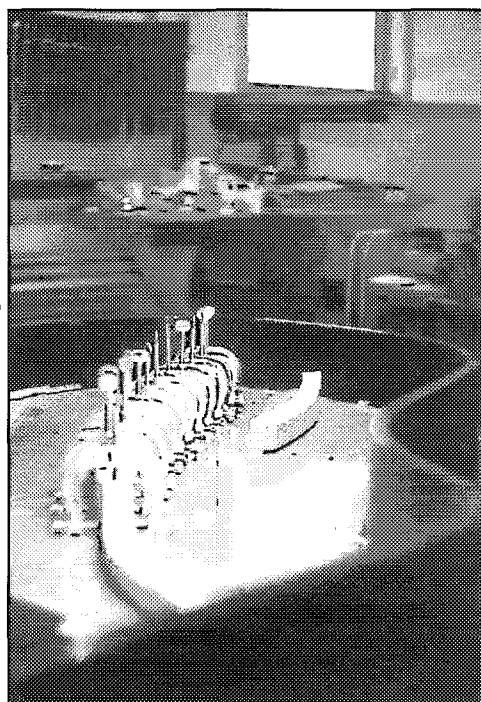


Photo 31

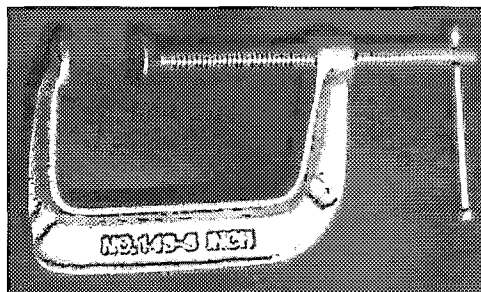


Photo 32

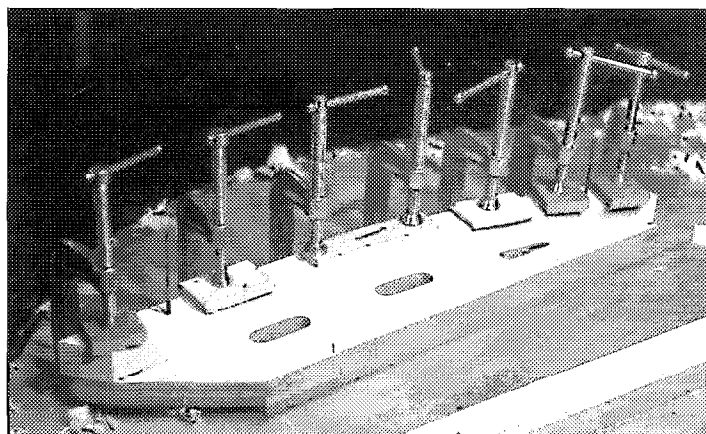


Photo 33

“To juice or not to juice?”

By Kevin Leary, RPT
Cleveland, OH Chapter

Centerpinning problems seem to be the bogeyman of piano technicians. The never-ending search for a way to avoid disassembling the action and pushing pins out (along with bushings) has yielded electric zap-pers, alcohol and water, naphtha and mineral oil and Protek™, to say nothing about the many other solutions piano service people have inflicted upon the piano population.

The only guaranteeable and universally accepted solution to centerpinning problems is careful and accurate reaming and repinning. It can be done and it probably won't be on your first try. Skill needs to be patiently built.

To better understand the solution let's take a closer look at wool — the material in woven felt action centers. Wool is an amazing material with unique properties. It is composed of keratin, an animal protein also found in hair, nails, feathers and horns. Besides being an excellent food for moth larvae, keratin makes wool very absorbent and flame resistant. The natural elasticity gives wool durability.

The following paragraphs are quotes are from an article in May 1999 issue of *National Geographic* called “Wool — Fabric of History,” by Nina Hyde:

The secret of wool lies in the structure of its fibers, which absorb moisture, insulate against heat and cold, resist flame and *maintain their resilience*.

Although its scaly surface tends to repel liquids, the wool fiber's core is highly absorbent, taking in as much as 30 percent of its weight in moisture. Synthetics, by contrast, hold as little as 2 percent (cotton 8 percent).

Weather changes not only affect the wood in pianos but also wool (action centers, hammers and action cloth). It's remarkable how the wood enlarges its bushing hole as it expands with increased moisture and

the wool compensates by picking up its own moisture and filling that hole. The reason for the failure of Teflon™ bushings is their inability to execute this self-compensating move.

Wool has excellent elastic recovery, giving it a springiness that makes clothes wrinkle resistant when dry. This resilience is why 150 yards of wool yarn are used in an official baseball, and why wool felt covers piano hammers.

Wool can be bent to 20,000 times without breaking (silk breaks after 1,800 bends, rayon after 75).

Unlike cotton, linen, silk or polyester, wool fibers are covered with tiny scales, making them look like pinecones. When one fiber's scales rub against those of others, they pull the fibers together in irreversible tangles. When compacted under heat and moisture the wool shrinks into felt.

Action cloth is “woven felt” as described by Chas. W. House & Sons — a U.S. manufacturer of material for the piano industry. The wool is spun into yarn and woven into a fabric. The felting then takes place in several steps creating a very dense fabric. The tangle of the wool in woven felt becomes tighter and more dense with repeated treatments of heat and moisture.

Resilience of the wool should be considered when deciding how to treat action centers. Action manufacturers have already treated their parts with shrinking solutions more than once before we ever see them, usually using shrinking solution along with sizing pins that are discarded before the parts are assembled. After many treatments the effectiveness diminishes. What we perceive as results from *our* subsequent treatments may not last.

Action center problems not solved by shrinking the wool must still be corrected. Some of these

problems are the friction of wood to wood when the parts fit too tightly, bent pins, corrosion, contaminants or too much cloth in the hole. Wood friction can be due to wood shrinkage after assembly, dull cutting tools used by manufacturers during fabrication and stray wood fibers trapped between parts that can't be seen. Some slight bending of centerpins can be from aligning jacks and repetition levers — a legitimate process. Otherwise, bent pins can be from a manufacturer's mechanized pin pushing process. Bent pin problems can't be repaired without repinning.

One manufacturer paid for its automated bushing machine from the cloth savings by feeding just the right amount of cloth to each side of their flanges. This required using two separate pieces of cloth to supply each side. A feeder bowl then supplied the pins for mechanical assembly. This eliminated any testing for uniformity between sides of the flange. I don't know about you, but I haven't found a way to tear two strips of cloth the exact same size. These actions always have serious problems with unbalanced friction from one side to another in a single flange.

On the subject of “lubricants” (i.e., Protek™, naphtha and mineral oil) my experience is that Protek™ has produced the best results I have seen on verdigris, but it is not a permanent repair. My first use of Protek™ in the shop was on the sluggish jacks with only a hint of verdigris in a Steinway action that was in my shop for regulation. I applied a light soaking using a syringe directly on the centerpins. The friction returned to the jacks I had treated within 24 hours, requiring repinning to complete the job.

I then decided to test Protek™ on some parts left over from previous action rebuilding. I applied a heavier double soaking on all the centers on both sides of three old Steinway wippens contaminated with verdigris

from three different pianos. I was able to restore function where there was none. Immediately after treatment the results were dramatic. All the centers were within tolerance (1 - 2 grams for jacks, 3 - 6 grams for repetition levers, 3 - 8 grams for support flanges). Six months later the wippens still function better than before treatment, but were tighter than tolerance. Several years later they are once again non-functionally tight. The tightest centers were the support flanges and they remained the tightest.


Willis Snyder's action rebuilding class included microphotography verifying the return of friction due to corrosion from verdigris even after thorough cleaning. Without the same evidence in my experiment I am still likely to conclude that the only permanent solution to verdigris problems is replacement with new parts. While it's possible to extend the useful life of a piano with Protek™ in order to postpone expensive part replacement, it's essential to make the proper disclaimers to the customer.

On the subject of part replacement, new parts are no guarantee of correct pinning tolerances, regardless of manufacturer. When rebuilding an action with new parts or repairing a new piano to a performance standard (as opposed to an "it will work" standard), I have found it necessary to repin a minimum of 25 to a maximum of 200 action centers in a grand top action (typically 60 to 90). With 352 centers in a Steinway top action, even the minimum number of centers out of tolerance is unacceptable. The process of checking every center is tedious, but rewarding during regulating and weigh-off. Don't overlook the relationship between the repetition lever friction (1 - 3 grams at the tender - spring disengaged) and the jack friction. The rep lever needs to have approximately twice the friction of the jack for a good regulation.

I am firmly against the use of any solution containing water on actions already assembled, since there is no way to control where the solution goes without removing all the parts first and using a syringe at each bushing. Water is necessary to trees to grow and to control the drying process of raw lumber. After the

wood has been processed water damages the wood, to say nothing about rusting flange screws. I once saw a piano manufacturer's representative douse a damper action with a water/alcohol/soap solution and then use an electric dryer on it to alleviate tight centerpins. Years later I had the dubious pleasure of repairing a grand damper action from the same company whose pins were wandering out. This action had misshapen flanges, deep screw head

impression and discoloration along with tight bushings.

In the thousands of pianos I have serviced over the years, the old pianos (some over 80 years) that continue to perform have clean, dry action centers, and are free of gunk or anything gummy. It all adds up to the reality that too much cloth or wood in an action center requires the removal of enough material to overcome that condition, and no liquid is up to the complete job. 

Introducing the

peterson AutoStrobe 490-ST

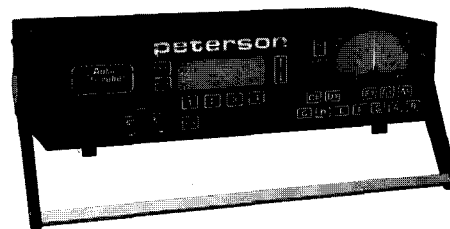
Peterson tuners offer better precision and easier operation at a price that is much less expensive than our competition.



- Preset & Programmable Stretch Tables
- Preset & Programmable Temperaments
- Adjustable Concert A Reference (350-550 Hz)

- Precision to within 1/10 of a Cent
- Automatic or Manual Note Selection
- 11 Octave Visual Range (8 simultaneously)
- +2/-1 Shifted Octave Display - this feature shifts the extreme bass and treble range strobe patterns into more visible middle ranges.
- Pitch Offset Control - adjustable in 1, 0.5, or 0.1 cent increments.

*also available is the **AutoStrobe 490** without stretch tuning capabilities.



For more information contact **peterson** or your music dealer.



peterson

ELECTRO-MUSICAL PRODUCTS, INC.

11601 South Mayfield Avenue, Alsip, Illinois 60803-2476

708-388-3311 Fax 708-388-3341

E-Mail: email@petersonemp.com

Visit us on the internet: www.petersontuners.com

Plastic in Piano Actions

By Don Mannino, RPT
Manager, Kawai Piano Technical Support

In the late 1960s, Kawai piano company took a daring step by pioneering the use of a new material for making piano action parts. At the time, plastic in piano actions had an extremely poor reputation, causing most people to dismiss the actions as unreliable and unacceptable, yet Kawai

this end, and I would like to present the results of the tests here in the *Journal* along with an examination of other plastics used in piano actions in the past.

Plastic parts from the 50s

Plastic in piano actions acquired a very bad reputation in the 1950s and most piano technicians have first-hand knowledge of the plastic flanges and spinet elbows which became weak and brittle over time. Unfortunately this poor reputation has caused technicians, dealers and sometimes the general public to condemn all plastic materials as unsuitable for piano actions. The plastic industry in general suffers from some of its early failures, with many people classifying all plastic materials into a general category, unaware of the differences in performance that are possible.¹ A comment such as "It broke because it is just plastic," is typical and at Kawai we often hear comments like, "those plastic parts are causing clicks in the action," when actually something completely unrelated is causing the noise.

The original idea of making action flanges from plastic was an extremely good one because the parts would not react to humidity changes and flange screws would stay tight with resulting improvements in action part alignment and regulation stability. In addition, creating a molded part is much more precise and much less wasteful of the raw material than is cutting it out of wood. Unfortunately the type of plastic chosen early on, a variety of poly-vinyl

Figure 1. Strength Comparison of New ABS Flanges Versus Wood Flanges

Sample #	Fracture Load (lbs)	
	New ABS Plastic Flange	New Wood Flange
1	101.2	60.7
2	103.4	60.7
3	101.2	58.5
4	101.2	65.2
5	103.4	67.4
6	101.2	58.5
7	103.4	60.7
8	103.4	62.9
9	103.4	58.5
10	103.4	58.5
Average	102.5	61.2

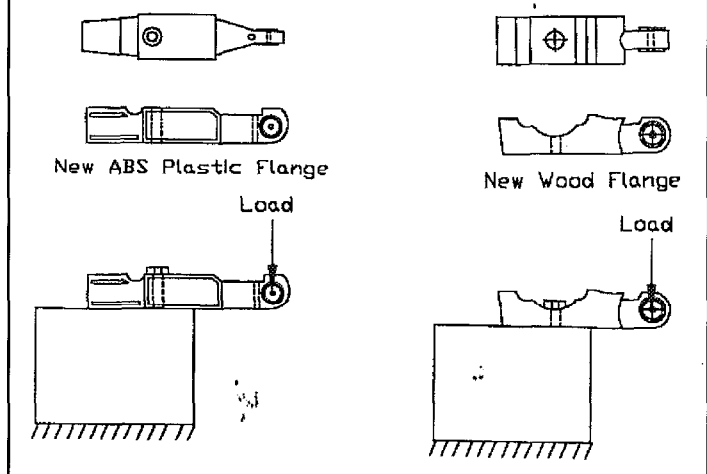


Figure 1: Fracture load —

It is easy to see from this chart that the ABS part is substantially stronger than the wood part. The load was applied on the flange upward at the action center location, the same load which the part carries in the piano when the key is played.

forged ahead by using this new type of plastic, at first limited only to low-stress parts such as wippen flanges and damper lever flanges, then later expanding into most of the action.

In light of this 30 years of use, Kawai America felt it was an appropriate time to re-examine the use of this material, and to find out if claims of superiority over wood were really valid. Last year a series of tests was carried out toward

Figure 2. Variation of Thickness (t) of the New ABS Plastic Flange

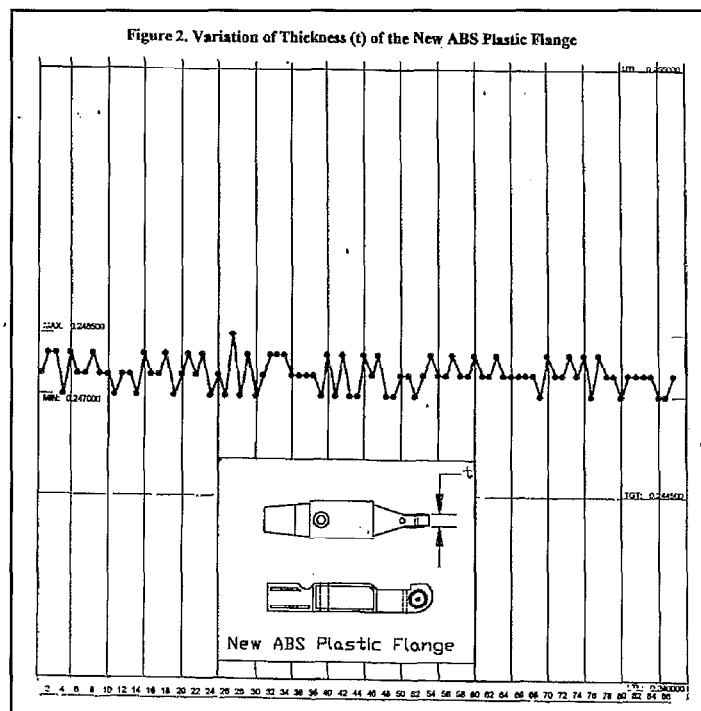


Figure 2: Variation of Thickness of new ABS plastic flange —

This chart shows the extremely small variations in thickness of an ABS flange within a set of parts. A maximum variation of 15 ten-thousandths of an inch (.0015") within the set is a negligible variation and is one reason that these parts result in such a consistent action.

chloride, did not have the longevity needed for application in a piano action.

Two Problems With PVC Plastics

PVC resin without any additives is a hard, brittle material and chemically is very unstable compared to other plastics.² Most commercial uses of this plastic require the addition of materials called plasticizers to improve their resilience and flexibility. Unfortunately the plasticizers also are not stable, so the plasticizers "migrate" out of the action parts. What this means is that the plasticizers at the surface of the action part evaporate into the air, and the materials within the part then migrate toward the surface as they try to maintain an even distribution within the plastic. As a result the properties of resilience and flexibility in the action part slowly degrade until eventually the part becomes weak and brittle.

New car interiors are a good illustration of this weakness. When the car is new, an oily film appears on the inside of the windows - this film is evaporated plasticizers from the car's interior trim. As we all know, eventually the interior parts of the car can become dry and brittle and may crack.

Another form of degradation which is evident in old action parts is oxidation. If I may get technical for a moment: Oxidation in resins occurs when the electrons in a polymeric bond are attracted so strongly to another atom or molecule outside of the bond (such as oxygen in the air) that the bond within the polymer breaks. The electrons leave the resin, chemically degrading the material. The result is that the plastic material loses its strength and resilience and can become brittle and yellowed. Some plastics are more susceptible to oxidation than others, and those that have a greater tendency for oxidation do so because (1) the bonds in the plastic material have relatively

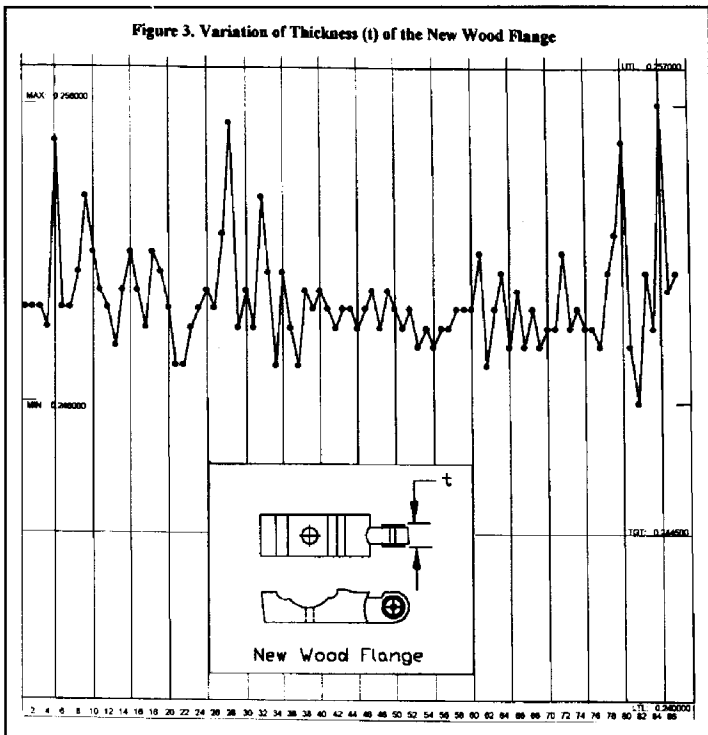


Figure 3: Variations in Thickness of New Wood Flange —
Here you can see that the wood parts, although among the finest available wood parts in the piano industry, show a much greater variation within the set of .0009".

Figure 4. Measured Values of Parallelism of Pin Hole Axis with Respect to the Bottom Surface

Parallelism of Pin Hole Axis with Respect to the Bottom Mounting Surface (in)		
Sample #	New ABS Plastic Flange	New Wood Flange
1	.0010	.0015
2	.0020	.0013
3	.0015	.0015
4	.0000	.0008
5	.0013	.0013
6	.0010	.0013
7	.0020	.0015
8	.0005	.0015
9	.0005	.0005
10	.0010	.0015
11	.0005	.0008
12	.0013	.0020
Average	.0011	.0013

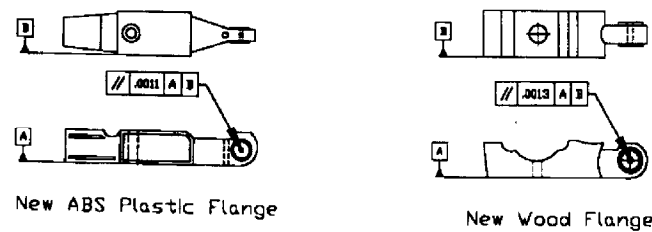


Figure 4: Measured Values of Parallelism of Pin Hole Axis with respect to the Bottom Surface —

This shows the center pin holes' deviation from being perfectly parallel in relation to the surface of the flange of 12 randomly chosen parts from the sets. Although small in both types of parts, the accuracy of the ABS is still measurably higher than the wood parts.

low energy, (2) there is greater attraction of the electrons to the foreign molecule (oxygen) and (3) the polymeric structure has a more open nature.³

This combination of plasticizer migration and oxidation caused most plastic action parts from the late 40s and early 50s to fail, sometimes within five years of manufacture. Although some pianos from this time are still found with working plastic parts in the actions, nearly all became substantially degraded by the time 15 years had passed.

The New Plastic: ABS

Fortunately, in the 1960s another type of plastic became widely available which was much more suitable for use in a piano action. This is Acrylonitrile-Butadiene-Styrene, or ABS for short. ABS is a blend of polystyrene type plastic with two rubber modifiers added, polybutadiene and polyacryloube.⁴ This material has excellent chemical resistance, is tough and hard, and has very good impact strength.⁵ It can be molded with extreme accuracy, is extremely resistant to oxidation and does not require plasticizers. Although the cost of ABS is higher than PVC and many other types of plastics,⁶ it is ideal for piano action

Continued on Next Page

Plastic in Piano Actions

Continued from Previous Page

parts. In light of Kawai's 30 years of use of ABS without any sign of brittleness or other failures, it is easy to see that there is no need for concern that these parts will become brittle like the old PVC type parts.

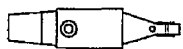
Okay, so you understand why the ABS material is better than earlier PVC-based action parts, but the larger question is, is it better than wood? Let's look first at the main disadvantages of wood as a material for action parts.

- It must be cut and milled to shape, which is somewhat wasteful of the raw material and requires extremely accurate machinery to ensure accuracy of the action parts.
- Its strength varies with the orientation of the annular growth rings.
- It reacts severely to temperature and (especially) humidity changes.
- When wood is glued together to form complex action parts, the alignment of the annular growth rings (grain) in the wood parts is often at contrary angles. As the wood swells and shrinks with humidity changes, these glue joints can be compromised because the wood is moving in different directions. A couple of examples are upright jack flanges which come loose from the wippen body, and grand jack tenders which become loose from the jack stem.

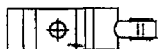
Even noted wood technologist R. Bruce Hoadley, speaking at the 1997 PTG annual convention in Orlando, said, "The one area where I can see a real benefit to using composite materials instead of wood would be in the actions. I can see no reason for using wood there." Of

Figure 5. Effect of Humidity on ABS Plastic and Wood Flanges

Samples dried at 100° F for 3 hrs. and then exposed to 90-100% at 75°-80° F for 24 hrs.						
Sample #	New ABS Plastic Flange			New Wood Flange		
	Dry wt. (gm)	Wet wt. (gm)	% Increase	Dry wt. (gm)	Wet wt. (gm)	% Increase
1	4.1187	4.1223	.09	1.8684	2.2153	18.6
2	4.1672	—	—	1.9717	2.2365	13.4
3	4.1435	4.1541	.30	—	—	—
4	4.0953	4.0979	.06	1.8866	2.2262	18.0
5	4.1158	4.1220	.15	1.9242	2.2693	17.9
6	4.1444	4.1592	.40	1.8191	2.1735	19.5
7	4.1196	4.1216	.05	1.7577	2.1462	22.1
8	4.1429	4.1508	.19	1.7332	2.0869	20.4
9	4.1436	4.1502	.16	1.9081	2.2644	18.7
10	4.1244	4.1310	.16	1.8528	2.1743	17.4
Average			.17			18.4



New ABS Plastic Flange



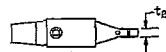
New Wood Flange

Figure 5: Effect of Humidity on ABS Plastic and Wood Flanges —

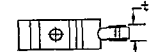
Here we can see the weight change of the different action parts when the parts went from nearly total dry up to the humidity levels common in humid climates. The actual weight of the wood parts increased an average of 18%, with a negligible change in the ABS parts.

Figure 6. Effect of Humidity on Dimensional Change of ABS Plastic and Wood Flanges

Dimensional Measurement: Samples dried at 100° F for 3 hrs. and then exposed to 90-100% at 75°-80° F for 24 hrs.												
Sample #	New ABS Plastic Flange						New Wood Flange					
	Dry		Wet	% incrs.	Dry		Wet	% incrs.	Dry		Wet	% incrs.
	t ₁	t ₂	t ₁		t ₂	t ₁	t ₂		t ₁	t ₂	t ₁	
1	.3500	.3495	.14	.2470	.2465	.20	.4645	.4850	4.41	.2320	.2445	5.39
2	.3500	.3495	.14	.2480	.2475	.20	.4655	.4950	6.33	.2300	.2475	7.61
3	.3500	.3505	.14	.2475	.2470	.20						
4	.3495	.3490	.14	.2475	.2475	.00	.4640	.4920	6.03	.2305	.2390	3.69
5	.3505	.3500	.14	.2475	.2470	.20	.4646	.4915	5.79	.2305	.2390	3.69
6	.3505	.3505	.00	.2475	.2475	.00	.4650	.4910	5.59	.2295	.2445	6.54
7	.3505	.3495	.28	.2475	.2470	.20	.4665	.5025	7.72	.2305	.2440	5.86
8	.3510	.3505	.14	.2470	.2470	.00	.4630	.4880	5.40	.2305	.2475	7.37
9	.3525	.3520	.14	.2480	.2470	.40	.4645	.4890	5.27	.2320	.2440	6.09
10	.3495	.3495	.00	.2470	.2465	.20	.4650	.4950	6.45	.2310	.2405	4.11
Avg.			.13			.16			5.30			5.04



New ABS Plastic Flange



New Wood Flange

Figure 6: Effect of Humidity on Dimensional Change of ABS and Wood Flanges —

This chart shows perhaps the most important advantage of using ABS parts in piano actions. Since the ABS parts do not swell and shrink with weather changes, the action screws stay tight and the parts stay in regulation better. A 5% increase in the thickness of the flange at the screw hole (t_1) is sufficient to cause the wood fibers to gradually be crushed, causing the screw to become loose and the flange to become weakened.

course we know that wood is best for some parts, such as the keys and shanks, but it is clear even to a wood technology expert that there are some places where modern materials work better.

The Tests

In order to quantify the advantages of ABS in our actions, Kawai decided to sponsor independent scientific testing in 1998. The tests were carried out by Dr. Abdul Sadat, who is the Chair of the Industrial Manufacturing and Engineering Department at the California State Polytechnic University in Pomona, California. Dr. Sadat carried out three different tests comparing wood and plastic parts, as follows:

1. ABS hammer flanges were compared with wood (Maple) hammer flanges for:
 - a. Strength and durability under stress
 - b. Dimensional consistency at manufacture (especially accuracy of center pin hole, which should be parallel to the bottom mounting surface)
 - c. Dimensional consistency after application of moisture.
2. Comparison of Carbon Polyacetal jack with wood (Maple) jack for strength and durability under stress
3. Comparison of old ABS flanges and new wood (Maple) flanges for strength.

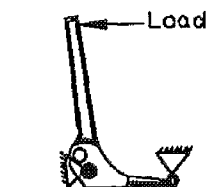
The charts containing the data from Dr. Sadat's report are reproduced here.

Why do people continue to object?

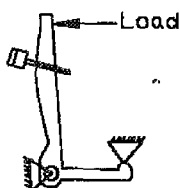
The piano industry is an extremely tradition-oriented business, with some of the leading manufacturers staying with designs that are more than 100 years old. Although the idea of "not fixing it if it isn't broke" is commendable, and such a conservative approach to change is less risky, this can bring about stagnation from lack of innovation. New ideas

Figure 7. Strength Comparison of Kawai "Black Jack" Versus Wood Jack

Fracture Load (lbs.)		
Sample #	Kawai's Black Jack	Wood Jack
1	88	36
2	90	44
3	88	38
4	90	32
5	88	46
6	90	21
7	90	34
8	90	38
9	88	37
10	90	37
Average	89.2	36.3



Kawai "Black Jack"



Wood Jack

Figure 7: Strength Comparison of Kawai "Black Jack" Versus Wood Jack —

Once again, the strength of the composite part is substantially higher than the wood part.

are not automatically bad just because they are new, and although mistakes were made early on with plastic action parts in pianos, this should not lead to a fear of ever using man-made materials in instruments. If it is better, then tradition alone should not be an argument against using it!

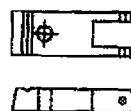
Kawai made the commitment early on to improve piano actions, both in terms of consistency of feel and reliability, and the early conservative application of ABS in upright action flanges has spread to upright hammer butts, wippens and damper levers. In grands, the hammer flanges, wippen assemblies and entire damper underlever assembly is made from ABS.

This wider use of ABS has lead some in competitor's sales departments to criticize Kawai and tout that their actions are better than Kawai because they are "all wood." Unknowledgeable buyers sometimes will fall for this tactic, but worse yet, the myth that plastic is automatically bad for pianos is perpetuated.

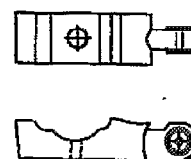
It is the author's hope that this article will serve to encourage piano technicians to consider the benefits of modern materials in piano making, and that educated technicians will not allow sales tactics and simple tradition to stand in the way of continued development in the instruments we have given our lives over to servicing.

Figure 8. Strength Comparison of Old ABS Flanges versus New Wood Flanges

Fracture Load (lbs.)		
Sample #	Old ABS Plastic Flange	New Wood Flange
1	67.4	60.7
2	85.4	60.7
3	80.9	58.5
4	76.4	65.2
5	71.9	67.4
6	76.4	58.5
7	89.9	60.7
8	80.9	62.9
9	80.9	58.5
10	94.4	58.5
Average	80.5	61.2



Old ABS Plastic Flange



New Wood Flange

Figure 8: Strength Comparison of Old ABS Part Versus New Wood Flanges —

The ABS flanges were 27 years old at the time of this test. Although no old grand hammer flanges were available for testing (Kawai did not begin to use ABS hammer flanges in grand pianos until 1992) this test shows that the flanges are still more than sufficiently strong after many years and there is no trace of brittleness in the ABS.

Notes:

1. Strong, Brent A., *Plastics Materials and Processing* (New Jersey: Prentice Hall, 1996), p. 7.
2. Kelen, Tibor: *Polymer Degradation* (New York: Van Nostrand Reinhold Company, 1983), p. 77.
3. Strong, pp. 129-130.
4. Strong, p. 114.
5. Briston, J.H. & Gossen, C.C., *Introduction to Plastics* (New York: Philosophical Library Inc., 1968), p. 42.
6. Arends, Charles B., editor, *Polymer Toughening* (New York: Marcel Dekker, Inc., 1996), p. 241.

Other References:

Simonds, Herbert R. & Church, James M., *A Concise Guide to Plastics*, New York: Reinhold Publishing Corporation, 1965. [P]

Y2K & the Piano Tech

By Kris Anderson
Twin Cities, MN Chapter

I asked for an article on how Y2K-related disruptions may impact our profession and was invited to write one. Omigosh!

Very well, here goes.

Books have been written on the topic of the cause and possible effects of the "Millennium Bug;" here I'll confine my speculation to that which may affect us in our jobs. And speculation it is; the Year 2000 problem is unique and it is impossible to accurately predict its effects until it arrives.

Your guess is as good as mine, friend. These are my opinions, based on the research I have done, and I cheerfully admit to the possibility of my being quite mistaken. Frankly, I sincerely hope that it does all turn out to be just a "burp" and not a "coronary." Burps I can live with - coronaries are nasty. I'd rather be called "Chicken Little" Anderson for a few years than to see all the misery some people are predicting (including some of those quoted in this article).

What is Y2K?

Briefly, the "Y2K problem" is caused by computers that think all years begin with the digits "19." When asked to use data involving dates after 1999 they get all flustered. They may give corrupt data or cease functioning ... or they may be just fine. You can't be certain until you test them. Use caution, though; if the item being tested fails, it may take more than just resetting the date to get it working again. Reprogramming, repair and replacement come to mind.¹ There's an enormous amount of speculation afoot as to what may be the widespread effects of the bug. Unfortunately, until into the year 2000 we largely will be able only to speculate - there just isn't enough time to check, let alone test, all of the millions of embedded chips on the planet and billions of lines of code written in over 500 different computer languages. It is estimated that only two to three percent of them will fail. Two percent of several billion is, uhh, lemme see ... it's a lot.

As if this weren't enough to have on our minds, the date of Jan. 1, 2000 is not the only date that may cause difficulties. Some computers may have difficulty with the date of April 9, 1999. That day is the 99th day of the year. Many older programs used a series of nines to indicate the command "end program." For the same reason, the date of September 9, 1999 (9/9/99) may cause a similar snafu. Also, on August 21 of this year our Global Positioning System rolls over to begin a new cycle. The GPS satellites follow a cycle of 1,024 weeks. On that day they will have been in position that long. Since we have not experienced yet what happens when they "roll over" to their new cycle we will be curious to see the results. It may cause confusion for computers Earthside that interact with the GPS or it may not.

Many of the "just in case" measures being suggested are good advice to consider even without a global Y2K scenario to serve as motivation. We've all experienced the results of computer glitches, for example, and power outages of varying lengths.

There are various ways of analyzing and predicting the possibilities. For this article I'll break it down to the areas of telecommunications, banking, infrastructure, government, water & food and (of course) piano suppliers. I recommend that you use this article as a starting point for your own research and preparations. It is an involved undertaking. As stated in a recent commentary at www.Y2Knewswire.com, "The web of dependence is the least talked about, but most important, Y2K factor. We've created a society with enormous, complex and unexplored interdependencies. So many, in fact, that nobody has ever counted them ... the year 2000 problem doesn't threaten you or me directly. It threatens the chain. That is the big point very few people understand and that the press has largely ignored. It's not about isolated compliance, it's about the whole system." And since no two of our businesses will be quite the same, each of us will need to custom-make our own Y2K-readiness plan. My needs are very different from those of a university technician, for example, or a tuner in a large southern city. So although there are some preparations I can recommend across

"So, despite the reassurances of the very nice folks at the supply houses, I am setting aside just a little extra of the absolute basics I'd hate to be without, like hide glue crystals and sandpaper. I can't make those, they have an indefinite shelf life, and I'm sure to use them sooner or later."

the board, almost all of their applications will need tailoring. Since piano tuners are by and large an independent, creative lot, I am very optimistic about our future.

Telecommunications

I list this first because so much depends upon it, like bank transactions and railroad track switching orders. Some phone companies are saying they'll be fine, while privately admitting concern; others are quiet while working hard to be Y2K-ready. Much relies on the satellites, which do contain chips and cannot be checked. It may be a good idea to have a back-up plan in case your business relies significantly on such things as banking by phone or computer, faxes, cell phones, pagers, credit cards, e-mail or Internet access. Don't hesitate to ask your phone supplier for an update on its Y2K plan and readiness.

I hope the phone lines stay operational, but "just in case" I had my mailing address printed on my latest batch of business cards. My yellow pages ads this year may also carry my mailing address. Mrs. Svenson's piano will still need tuning even in a bad-case scenario. After all, we've had pianos about 300 years and phones barely one-third of that. (Actually our job security is pretty good. Have *you* ever heard of a phone tuner?) For more, see such web sites as www.Y2Knewswire.com, www.year2000.com, www.cfcministry.org, and www.ronblue.com.

Banking

The U.S. banking industry is one of the most Y2K-ready in the world. They are tightly regulated and have been working very hard on the problem for years. However, we must remember that they are dependent on telecommunications and the infrastructure being up. They are also very vulnerable to crises in other nations.² Asia, and Japan in particular, is having great difficulties these days; at the time of this writing the Japanese banks are so busy grappling with their troubles that Y2K gets just a passing nod there.³ We have a global economy – "What's the price of tea in China?" really does have an effect on us. Alan Greenspan emphasized the uncertainty of the situation in testimony before the Senate Banking Committee.⁴ There is an excellent, very practical article prepared by the Northern Virginia Year 2000 Community Action Group, entitled "Y2K: Can You Bank On It?" I highly recommend it, whether you have one bank account or an investment portfolio. Contact www.Y2Ktoday.com.

Mike Jones, president of Jones, Herblin & Co. DC, an accounting firm with offices in Houston and Dallas, said, "We're telling our customers to start stockpiling cash. Not money in the bank. Not available credit ... cash. You should

have enough on hand to keep your business up and running for at least a couple of months."⁵ Dick Goodman, Small Business Development Center Director, recommends getting out of debt – "credit cards first."⁶

With regard to worst-case scenario Y2K-caused bank difficulties, the prevailing wisdom is to have on hand hard copies of every transaction, complete records of credit card transactions, credit reports, tax records, loan status statements, *anything* necessary to prove your financial status as of Dec. 31, 1999. Shaunti Christine Feldhahn, a former Federal Reserve Bank financial analyst, recommends, "Save

copies of the dated letters in which you request credit reports as well as the postmarked envelopes in which they arrive." That may sound odd, but it is commonly used as proof of the report's authenticity and "as of" date.

Likewise, you should always correct a report in writing (via return-receipt certified mail) and, of course, save copies of every piece of correspondence."⁷ If possible it may be a good idea to pay some 2000 bills before Dec. 31, 1999, mailing the payments by certified return-receipt mail. Don't forget your PTG dues! It is wise to keep hard copies on hand of all records relating to employees, subcontractors and even occasional hired help.

A few weeks into 2000 we may know better how hard-nosed to be in such things as insisting on payment at the time of service, or payment in cash only. I have had a bartering arrangement worked out with two of my customers and will consider extending that method of payment to others if it seems warranted. (Check with your tax advisor or accountant on

how to keep records of such arrangements. Some barter is taxable under current U.S. tax laws.)

In a full-fledged truly worst-case scenario only cash and barter items/services would be viable articles of exchange.⁸

Nasty thought. Next topic – and quickly, please!

Infrastructure

There is concern about the power grid. At the time of this writing, 20 out of 66 nuclear power plants were expected to miss their June 30 remediation deadline.⁹ Those that do, and hence cannot be certified as Y2K-safe, will have to be shut down, a process that takes four months. Coal-powered plants must be stockpiling coal now. Many of the trains that deliver coal are computer-controlled, the track switches are operated by electricity and controlled by computer and the manual switches have been removed.

As for oil, the oil rigs in the North Sea and Gulf coast contain thousands of chips, most of which are located below water level. Failure there would be very hard to fix. Venezuela supplies about 17 percent of our oil and is

Continued on Next Page

Y2K & the Piano Tech

Continued from Previous Page

planning to shut down at least three of its five oil refineries at the end of this year. That would affect about 10 percent of our oil supply. The Alaskan pipeline cannot meet that increased need. The pipeline may not be available – if heat cannot be maintained at points along the pipeline the oil inside will freeze within hours.¹⁰ On January 20 Lawrence Gershwin testified before a House of Representatives subcommittee about the oil industry and supply chain, "... some of our most important trading partners have been documented by, among others, the Gartner Group, as behind the U.S. in fixing their Y2K problems (China and Japan for example). Significant oil exporters to the United States and the global market worldwide include a number of countries: Venezuela, Saudi Arabia, Mexico, Nigeria, Angola and Gabon – that are lagging in their Y2K remediation efforts. Oil production ... is highly intensive in the use of information technology and complex systems using embedded processes and is highly dependent on ports, ocean shipping and domestic infrastructure. The industry is fraught with potential Y2K problems.

While the industry has been actively involved in remediation, planning for remediation of a single offshore platform reportedly can involve up to 60 different vendors. We are concerned about the shipping of oil products, because ocean shipping and foreign ports both have been flagged as among the least prepared sectors." (Story at www.amcity.com/sanantonio/stories/1990/61/25/focus4.html?h=Y2K)

The bottom line – at some point, power loss appears inevitable at this time.¹¹

We cannot know at this point where, or when or for how long, but it is wise to prepare to do without.

I live in northern Minnesota where winter temperatures commonly dip to 30- to 40-below zero, having a back-up heat source is something we probably ought to have done a long time ago anyway. We are looking at a back-up heat source of either wood or liquid propane. While I get great satisfaction from working with my hands, I'm not real happy at the thought of having to do every bit of my drilling and sanding by hand. I've talked to a local machinist about the possibility of rigging up a couple of my shop tools to be run by pedal power (as in "exercise bike"!) and he says it's doable but will take some time and he's not sure when he'll get to it. So my name is on a list. I also ponder how to heat my shop, or whether to heat it at all; maybe I'll just move the glues and other stuff that shouldn't freeze into the house for the winter. My shop currently is heated by electricity, but my house has natural gas heat.

According to the Nov. 13, 1998 Year 2000 Public Utilities Report from the Minnesota Department of Public Service, "There is relatively less risk in the natural gas industry and utilities are progressing well" in Minnesota. "In general, natural-gas service is not highly susceptible to Y2K failures." For more, see www.Y2Ktoday.com, www.Y2Ktimebomb.com, and www.redcross.org.

For a rather technical but very well-written article on

the feasibility of testing programs, see Johnson Hart's article at www.itpolicy.gsa.gov/mks/yr2000/Y2Kconf/papers/paper59fp.htm.

Government

Rep. Horn issues a "report card" updated quarterly on the Y2K-readiness of 24 major Federal agencies. It is available at www.house.gov/reform/gmit/Y2K.

Thankfully for us, the Small Business Administration is one of the very few agencies to receive a grade of "A."¹² In my state they are offering free seminars in various locations in which they share what you can do to assess and reduce your risks, learn about specific hardware and software issues and learn what resources are available to identify and correct problems. They've been working on Y2K readiness for years – call your local SBA or SBDC person and ask what they have for you. They want your business to survive and flourish.

Again, as with banking concerns, keep a hard copy of everything. Absolutely everything. State licensing fees receipts, verification of compliance with hazardous waste disposal regulations, proof of certification, contracts, school transcripts, rental/lease agreements, titles, deeds and other proofs of ownership, insurance policies ... basically if you need it at all you need it on paper. Keep it in an accessible but safe place. Maybe the family attorney can safeguard all or some – just a thought.

A very uncomfortable aspect of this topic is the real possibility of difficulties in the Internal Revenue Service.

The government's own General Accounting Office has said that the IRS is one of the agencies least prepared to deal with the year 2000 problem.¹³ Arthur Gross, former IRS chief information officer, in congressional testimony said Y2K-caused glitches "could result in the generation of millions of erroneous tax notices, refunds, bills, interest and calculations, taxpayer account adjustments, accounting transactions and financial reporting errors ... failure to achieve compliance with year 2000 will jeopardize our way of life ... for some time." Mr. Gross later resigned out of

frustration.¹⁴ Yikes. I think if it involves any numbers I'll do some double-checking.

The state of Minnesota has a Year 2000 Project Office, working with the Minnesota Office of Technology (as ordered by the past Gov. Arne Carlson) to coordinate the state's Y2K preparation efforts and facilitate getting information out to the public. Among other things they have surveyed many of the state's major utilities regarding Y2K-readiness plans. See the Minnesota Y2K Information and Referral Center at www.Y2K.state.mn.us. Your state may have such an office – it's worth checking into. I found ours to be very helpful.

Food & Water

Granted, pianos don't need much of these, but piano tuners do and at regular intervals, please. With so many aspects of our lives and our customers' lives up

**"We cannot know
at this point
where, or when
or for how long,
but it is wise
to prepare to do
without."**

in the air, it is only prudent to stock up on food and drinking water.¹⁵ "All of these preparations [in the Red Cross checklist] make good sense, regardless of the potential problem."¹⁶ FEMA is currently recommending that people keep on hand a 30-day's supply of food. (see www.fema.gov for info about their upcoming series of regional Y2K workshops.)

Again, with our northern Minnesota winters, I'm beginning to think I should just always have on hand at the very least a two-week's supply of everything we use, anyway. I'm aiming for a balance between long-term storage basics, such as sugar, salt, flour, rice, pasta, etc. — the basics of a meal — and items that don't have to be cooked to be consumed, like canned soups. (I am not stocking up on dried tofu for the simple reason that my family doesn't like it.) I am also keeping in mind my goal of being able to help out others (gee, I hope they like oatmeal). If the year 2000 turns out to be just a "burp," as we all hope, I just won't have to go grocery shopping for a while. Being "in town" folks, we'll store up some water because our water treatment plant relies on electricity. Even if there is water pressure I will need some reassurances from our city authorities as to the water's potability. I know, I sound paranoid, but I have fire insurance on my property, even though I don't plan to have a house fire; I carry medical insurance, even though I plan on staying healthy. I figure this is "just in case." At the very least I'll have some neat stories to tell the grandkiddies someday. If the laugh is on me, that's okay.

Piano Suppliers

Such nice folks! I spoke with Roger Wheelock, vice-president of Dampp-Chaser, who said they had just spent upwards of \$26,000 to upgrade all their systems and it should be all switched over by April 1, June 1 at the latest. They are currently checking on the Y2K-availability of their imported parts and are "in a very good position." Fern Henry of Spurlock Specialty Tools was equally optimistic. Mapes Piano String Company was "not expecting problems," likewise West System epoxy distributors. Jillian Lange of International Piano Supply wrote that in mid-1998 they had tested everything they use and it is all fine. Lloyd Meyer of Renner USA also was expecting no difficulties. Obviously, this is a very abbreviated list of suppliers and there is room for research, but you get the picture.

Most of us use cars of one flavor or another to get around to our customers. All of the major car manufacturers say they expect no problems with their vehicles.¹⁷ (The Red Cross does recommend topping off our vehicles' gas tanks a few days before 1/1/00.)¹⁸ If you plan to store gasoline long-term do use approved containers, add Stabil™ or some other similar product and pick your storage sites with caution. Many insurance companies are planning to not cover Y2K-related losses. Check your insurance policy for such clauses.

I suppose I am one of those charming but slightly off-center packrats for whom there is seldom such a thing as feeling over-prepared. I tend to bring along everything but the shop floor when I make a tuning call. So, despite the reassurances of the very nice folks at the supply houses, I am setting aside just a little extra of the absolute basics I'd

hate to be without, like hide glue crystals and sandpaper. I can't make those, they have an indefinite shelf life, and I'm sure to use them sooner or later. My shop is small and is already overflowing with old "spare" actions, pedals from dead pianos, scrap hunks of maple I can't bear to part with — you know, "stuff." I don't have space to stock one of everything, the way I'd like to, so I guess I'll have to take my chances there.

If disruptions get bad in my area I know I'll want to know how my customers are doing, so I plan to check on those who live alone or who I know don't have a back-up source of heat. Not making a big deal out of it, just casually stopping by. Follow-up calls after tuning are routine for me anyway. I know I appreciate it when my dentist, for example, checks on me later at home after he's done some dental work on my smile. Little things can make a difference. Just ask a computer programmer.

Notes:

1. *Y2K: The Millenium Bug*, by Shaunti Christine Feldhahn, (c)1998 by Multnomah Publishers; pp.160-162.
2. "Y2K: Can You Bank On It?," Northern Virginia Year 2000 Community Action Group, (c)1998 Infrastructure Defense, Inc. See www.novaY2K.org; e-mail to Y2Kfeedback@idefense.com.
3. "Why I am More Pessimistic Than Ever," Michael Hyatt, Nov. 30, 1998 on Y2KWatch.com Dec. 3, 1998 see also www.michaelhyatt.com.
4. Testimony of Federal Reserve Chairman Alan Greenspan before the Senate Banking Committee, Feb. 25, 1998.
5. From the article "Customer Defaulting On Loans Poses Biggest Problem for Banks," by Rusty Cawley, Jan. 4, 1999.
6. Interview with Dick Goodman, Director of Small Business Development Center, Hibbing Community College, Hibbing MN Dec.10, 1998.
7. Feldhahn, p. 176.
8. Gary North, "Surviving All Three Stages of a Complete Flight to Cash," *Remnant Review*, Oct. 30, 1998.
9. Y2Knewswire alert, Jan. 1, 1999 see www.Y2Knewswire.com.
10. "National Guard, FEMA Plan for Major Y2K Breakdown," third in a series by David M. Bresnahan, (c)1999 WorldNetDaily.com.
11. Summary, Year 2000 workshop for utility executives, hosted by Electric Power Research Institute, quoted in David Lore's "Will New Century Shut Off Utilities?" *Columbus (OH) Dispatch*, Jan. 12, 1998.
12. Official U.S. Government Y2K Report Card, Feldhahn, p. 85.
13. Jeri Clausing, "IRS Must Address Millenium Bug Before Other Issues, Agency's Chief Says," *The New York Times*, May 8, 1998.
14. Clausing.
15. Mike Walker, Deputy Director, Federal Emergency Management Agency (FEMA). see www.fema.gov.
16. American Red Cross, "What You Should Know", (c)1998 The American National Red Cross.
17. Y2K alert, Dec. 28, 1998, see www.Y2Knewswire.com.
18. American Red Cross. ■

An Essay on the History of Tuning — Part XI

By Skip Becker, RPT
Northeast Florida Chapter

The Birth of Our Profession

A Brief Synopsis of the History of Tuning

"It would have been extremely convenient for practical musicians if three times the ratio of 4 to 5, or four times that of 5 to 6, had been equal to the ratio of 1 to 2. As it happens to be otherwise, it has been much disputed in what intervals the imperfections should be placed."

— Thomas Young, 1800.

A More Lengthy Synopsis

The 19th century was less than two weeks old when Thomas Young delivered his paper on the principals of sound and light to the Royal Society (on January 11, 1800). The above quote comes from his section on temperament, in which he so eloquently summed up the history of temperament in two sentences. When Young submitted his paper to the Royal Society, the dispute had actually quieted down some, at least for practical musicians and remained that way for more than the next century. What 20th-century musicians call Well Temperament was in nearly universal practice. To be sure, Meantone Temperament was still common, still encouraged by many theorists, and apparently the permanent tuning for organs. C. J. Smyth writes in 1810: "Organ-builders and organ-tuners will, in spite of any charges of obstinacy, ignorance or policy, continue to tune as their ancestors did before them." (The organ at Wells Chapel was tuned to 1/4-comma Meantone until 1895.) Also at this time, Equal Temperament was beginning to receive its first serious attention from practical musicians. The *Encyclopedia Britannica's* "Temperament" section had included d'Alembert's treatment of Equal Temperament since 1783, and almost all modern music histories assume the total acceptance and dominance of Equal Temperament by 1800. The truth is that proponents of Equal Temperament were still considered quite radical. It wasn't until 1810 that J.C. Smyth published the actual beat rate calculations for Equal Temperament. Smyth's calculations, used in conjunction with standard-pitch tuning forks or tuning glasses, made it possible, for the first time, to tune Equal Temperament — but only on organs! Most theorists agreed that the tones of a piano were too elusive to count beats. Smyth didn't approve of the theory, but published his calculations for the sake of those organists of "little genius." He wrote that there was a "rage for modulation at present exerting its energies, to their utmost possible extent; a rage very favorable to the talents of those who have not invention sufficient to produce novel and beautiful melodies, and yet aspire to the character of interesting composers." As a practical matter, since it was impossible to achieve aurally on pianos (without 20th-century tuning techniques), a modified Pythagorean temperament often was recommended as an acceptable substitute for equal temperament.

However, the majority of musicians were satisfied that they had found perfection in Well Temperament (Werkmeister's term used throughout Germany and Austria), no matter what it was called (most often known as the "common tuning" or "well-tuning" in England and the "established tuning" in France). After all, what's in a name?

The Big Lie

The reader may wonder how so many music histories can be so wrong. It has been the experience of this author, especially within academia, that the "better" one's music education is, the more attached one is to the idea that Bach in 1722 dedicated his Well-Tempered Clavier to the "tuning perfection" of Equal Temperament, which has been in general use ever since. This is certainly the case with concert pianists, who, to a disproportionate degree, are Juilliard graduates. What did happen, beginning in the early 19th century, was a confusion of technical terms and a changing of definitions. Well Temperament and Meantone Temperament were both increasingly referred to as Equal Temperament by the imprecise; which unfortunately, then as now, included most musicians. Worse, it might be fair to say that the myth was promulgated into general acceptance by the professional tuners of the 19th century.

At the turn of the 19th century most encyclopedias had a section on temperament which contained two parts: directions for Well-tuning, and excerpts from d'Alembert's treatment of Rameau's theories about Equal Temperament. By Victorian times, the two parts had merged into one. Equal Temperament was the technical term chosen to describe the most common tuning: Well Temperament. Everybody liked the name. The implied philosophy of equalizing the keys had won out over any other technical concerns, somehow sounding at once scientific, democratic and modern. Here is the definition of Equal Temperament by William Staunton, from the "Temperament" section of Johnson's *Revised Universal Cyclopaedia*, 1889:

The Equal Temperament now in general use is a necessity of modern music. In this temperament the excess or deficiency above noted is distributed among all the keys, thereby rendering them all available for use, and enabling the composer to present harmonious combinations in even the remotest keys without any disagreeable effect. There are however, several shades or degrees of equal temperament, from the strictest uniformity to any amount of inequality which is still bearable. If all the keys were made exactly alike, there would be an undesirable loss of their individual character, and no difference perceptible, except in their degree of acuteness. To avoid this, some discrimination is commonly used in favor of certain popular keys, yet not to such an extent as to sensibly injure the effect of keys less favored. A difference is recognized at once between the major keys of D and Ab, even though the instrument in use is said to be equally

tempered. Some discrimination, therefore, has been exercised by the tuner; and sometimes the key which bears the greatest stress of imperfection is that which most attracts us by its beauty.

With such a definition, it is easy to see why so many hasty historians have concluded Equal Temperament began with Bach. We can also observe that this Victorian definition of Equal Temperament changed again in the early 20th century, due in no small measure to the efforts of William Braid White, founder of the Helmholtz Society, the first organization for piano tuners. The idea of "one and only one kind of equal temperament" was embraced wholeheartedly by academia and once again promulgated into acceptance by new generations of professional piano tuners. At this most recent change in the history of Equal Temperament, the 200-year legacy of Well Temperament was lost, the art form vanished and Equal Temperament gained legendary stature.

The First Professional Tuners Appear

1800 is also the year this author chooses for the birth of our profession. The birthplace is London, England. Although the presence of professional tuners had been reported in England since the 1720s, the opportunity for a vocation (as opposed to an avocation) didn't exist until there were needy instruments in sufficient numbers. For example, old Burkat Shudi and his son, leading mid-18th century London producers, turned out fewer than 20 instruments a year. In 1782, his successor and son-in-law, James Broadwood took over the firm. He, among others, realized that keyboards, with their intricate workings, were ideally suited for utilizing techniques of mass production. By 1800 Broadwood was churning out over 400 instruments per year. Most important, the new machined pianos were one-half to one-third the price of Shudi's handmade instruments. The purchasing power of the English was unrivaled anywhere in the world and even the new production lagged in the face of the demand for pianos. New manufacturers appeared and established concerns continued to increase production. Between 1802 and 1824, Broadwood alone produced 37,000 pianos – for an average of 1680 units per year or about five per day. British production methods and piano innovations (the pedals, the extended keyboard, and later, the metal bracing) were copied all over the Continent. Although the Continental pianos had "special advantages and although they absorbed much musical glory from their surroundings, the English instruments were better made and had wider capabilities and potentialities ... the word "English" became a talking point, a virtue word, in the mouths of German piano salesmen."

Somebody had to tune all those pianos. Manufacturers hired and trained ever larger numbers of workers specifically to tune. The stroke of the 19th century seems as good a time as any other, and better than most, to mark the birth of our profession.

Death of Competing Keyboards

The reader should note that we have always been piano tuners; we are not descended by lineage from harpsichord tuners who had to adapt to their times. It was the large

numbers of pianos due to improved production techniques that created the need for professional tuners. Then as now, the best training generally came from the factories and the factories were making only pianos. By 1800 the keyboard rivals of the piano were no more. Broadwood quit production of harpsichords in the early 1790s. The redoubtable A.J. Hipkins tells us that Clementi made his last harpsichord in 1802. Not more than a double handful were made in the whole of the 19th century and that includes a revival of historical instruments beginning in the late 1880s, which lasted into the early 20th century. In France, 1798 was the last year the Paris Conservatoire gave an award for harpsichord playing; and during a cold winter in 1816, instruments which had been confiscated from the nobility during the Revolution were broken up and used for firewood.

Incidentally, history has recorded the exact time of death for the harpsichord: New Years Eve, 1795.² The reader doubts, perhaps. Well, here's the legend: the King's Band (that most conservative musical institution) had, as usual, hired the concert harpsichord for the evening's celebration. It was ignominiously returned after rehearsal, and the New Year was ushered in with a concert piano on the bandstand. Perhaps the general situation at the turn of the century is best demonstrated by the fact that "when Diblin sold his theatre in Leicester Place (London) in 1805 and its contents were auctioned, a Shudi harpsichord was offered and there was no bid, though a Hancock grand piano-forte fetched 70 Pounds Sterling."³

The spinet had been obsolete since the beginning of the 18th century; by the beginning of the 19th century, the poor (but inexpensive) cousin, the clavichord, had been a pale ghost for many years. But it did outlive the harpsichord by a couple of decades – the most modern manufacture date for a clavichord seems to be 1821. By the end of the 18th century, its status had been pretty much reduced to an inexpensive traveling instrument (Mozart had one among his effects when he died); but it always was enjoyed, as it is today, for its expressiveness. Throughout the 19th century, the great pianists gave recitals on reconditioned or rebuilt 18th-century clavichords.⁴ Dr. Charles Burney preserved the experience of the clavichord during his visit to C.P.E. Bach in 1772:

Bach was so obliging as to sit down to his Silbermann clavichord, and favourite instrument, upon which he played three or four of his choicest and most difficult compositions, with the delicacy, precision, and spirit, for which he is justly celebrated by his countrymen. In the pathetic and slow movements, whenever he had a long note to express, he absolutely contrived to produce, from his instrument, a cry of sorrow and complaint, such as can only be effected upon the clavichord, and perhaps by himself.... During this time, he grew so animated and possessed, that he not only played, but looked like one inspired. His eyes were fixed, his under lip fell, and drops of effervescence distilled from his countenance. He said, if he were to be set to work frequently, in this manner, he should grow young again.

Bach may have been kidding Burney a little. The Silbermann clavichord was not among his effects when Bach died. Three years after Burney saw him, Bach appears to have traded it in on a new clavichord of Italian manufacture.

Continued on Next Page

Our Forebears

In 1801, John Robison observed that the tuning of instruments had been committed entirely to tuners by profession (see Part VII of this present work). That profession had newly arisen, as a distinct one from music teachers and performing musicians. It is actually possible to know quite a bit about what turn-of-the-19th century tuners were doing and thinking, mostly from the writings of their critics, and in part because they were just like us. When they were faulted, it was mostly for not being musicians. Or they had had the audacity to use a different temperament than the favorite of whomever was railing against them. There's plenty of great reading about this stuff in Owen Jorgensen's *Tuning Etc.*, say sections 60 to 105, including specific temperaments, theories, opinions of theorists and a *bona fide* temperament war – which left in its wake a plethora of the kind of information that historians dream of. We know Meantone was still in practice because, for example, Lord Charles Stanhope (1753-1816) objected “to the two sorts of unequal temperament adopted by some tuners; the one, of throwing what they call the wolf between G# and D#. The other, of dividing this imperfection equally between the two 5ths G#/D# and D#/A#.” We know some tuners were practicing something very like Equal Temperament because Stanhope, and many others, objected to them, too. Stanhope's didactic opinions, more than anything else, touched off the “Great Temperament Controversies of 1806 to 1812.” In 1806, he was deeply offended by a negative review from John Farey, an eminent geologist, and the two of them spent the next several years trying to humiliate each other in print. Numerous writers came forward to express their views on the raging temperament controversies.

Oddly enough, professional tuners were not part of the controversy. To the theorists, the opinions of mere tuners had no value because they weren't musicians and knew little, if anything, about harmonics. They just didn't understand the problem. In 1810, A. Merrick describes something of our early forebears: “As to the generality of tuners (and many of them are very conceited men), I believe they know but little or nothing of harmonics. They learn one method by ear only, and remember it as they would a tune, without knowing a rule on which either is founded. That the ear and the memory alone are sufficient, after proper exercise, I am well convinced.” Mr. Merrick goes on to state that the rare tuner who has studied ratios finds it foolish to try and temper mathematically, when such judgments must be left to instinct.⁵

Another correspondent to the *Philosophical Magazine*, who signed his name “No Friend to Tuning Quacks,” disagreed with Merrick. He wrote that most professional tuners never resorted to melody in tuning. They were aware of beats, and they relied on them; even if they didn't actually count them. As Owen Jorgensen notes, this is true today.

Professional tuners were trained for a purpose, by men who had very specific ideas about tuning. In 1809 John Marsh (1752-1828) complained of the practice of

“those instrument makers, who, by their own authority, take upon them to explode the wolf, and direct their tuners to make every key alike, not knowing that if they really


were to do so ... they would infallibly spoil them all. I am told that some of the modern piano-forte makers, stipulate with such new tuners, as they have occasion to employ, that ‘they will have no wolf.’ This puts me in mind of the renowned Captain Oakhum's orders to his Surgeon, on board the Thunder, ‘Hark ye, d'ye mind, I'll have no sick on board my ship.’”

It is certainly true that the pioneer professional tuners remained above the fray – they didn't read the philosophical journals, they didn't attend lectures or write letters to the Royal Society. They were working for a living, tuning pianos. They were a different sort of person than the leisured gentlemen who disputed what they did (indeed, they were a different class). But they were keepers of a special knowledge, and they were regarded as experts by the public who hired them; and they were already a force to be reckoned with. It occurred to some of the embattled theorists that the professionals, those craftsmen actually doing all the tuning, just might, perhaps, have a contribution to make regarding the current state of the art of temperament. In order to settle the question of temperament, John Farey on February 1, 1808, appealed for help from any “gentleman, possessed of good instruments and the necessary knowledge and experience in making experiments and calculations in harmonics.” He requested that this person should:

“employ the best professional Tuners to tune his instruments, without any intimation to the Tuners, of his intentions or object; and before such instruments are put out of tune by use or standing, to ascertain exactly, by the beats of the different concords, by a monochord; and by other methods also for further satisfaction, the exact value of every interval in an Octave, using single strings only; these experiments varied and repeated, on Organs and Piano-Fortes, tuned by as many good tuners as possible, would by their results, enable us to say, how far any one system whatever has been adopted, or can be accomplished, by the method of tuning in use, and within what limits the different tuners, or the same person at different times, do in practice fix each note. Such a one would doubtless perform the most valuable piece of service.”

Mainstream histories have not included the emergence of the professional piano tuner. They have also neglected the great “Temperament War.” It certainly raged, but it affected relatively few people; as we have seen, not even professional tuners. In the early 19th century mainstream histories have tended to focus on other wars, mostly Napoleonic in nature, which affected the course of Western Civilization. The following chapter of this essay will present some of the highlights from both.

Notes:

1. Arthur Loesser; *Men, Women, and Pianos; a Social History*.
2. Alternate legend claims the King's birthday, June 5, 1795.
3. Raymond Russell, *Harpsichord and Clavichord*, page 120.
4. Mendelssohn, Moscheles, Salaman, and many others played and lectured on old instruments. On June 7, 1886 our illustrious forbear Arthur Hipkins lectured to the Musical Association in London, using five early keyboards; on that occasion, Anton Rubenstein turned the pages for him.
5. Owen Jorgensen, *Tuning, Etc.*, Section 90.
6. Jorgensen, Section 81. 

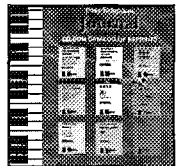
The Journal Reprints Kits are Now on CD-ROM

Members/\$100 • Non-Members/\$135

THE CD-ROM INCLUDES THESE ARTICLE REPRINT KITS FROM THE JOURNAL:

- BRIDGES AND SOUNDBOARD REPAIR
- DAMPERS, TRAPWORK & ACTION CENTERS
- GENERAL REPAIR
- HAMMERS & TOUCHWEIGHT

- KEYS
- PINBLOCKS AND PLATES
- REBUILDING SKILLS
- SOUNDBOARD INSTALLATION
- STRINGING CROWN AND DOWNBEARING



For more information:
Call the PTG Home Office at 816-753-7747
Fax 816-531-0070, e-mail ptg@unicom.net

JAY-MART PIANO WHOLESALERS

"The piano store for piano stores"

PURCHASING • SELLING • TRADING

Offering genuine wholesale priced pianos
Entry level through concert quality
Place your order now!

GRANDS • SMALL VERTICALS • UNUSUAL PIANOS

Transportation available worldwide

800-411-2363 (216)382-7600

Fax: (216)-382-3249

P.O. Box 21148, Cleveland, OH 44121

Volunteers Needed for Visually Impaired

The committee for the concerns of visually impaired technicians is looking for volunteers to be of assistance to sightless technicians who will be attending the 1999 PTG Technical Institute. Perhaps the two things, which might appear most formidable to the sightless technicians who are considering attending the convention, are getting to the right room at the proper time and touring the exhibit hall.

If you are interested in being of assistance, we offer you this opportunity to make the 1999 Convention more enjoyable and meaningful to a colleague and make a new friend in the bargain. If you know that you will be attending the convention in Kansas City, and are

interested in assisting, please contact Committee Chairman Richard Hassig, 2310 N. Ohio Ave., Davenport, IA 52804. Telephone 319-386-4084.

Other members serving on the committee are: Lorne Buntemeyer, Lawrence, KS; Roy Escobar, Houston, TX; and Don Mitchell, Vancouver, WA.

If any of these gentlemen is a friend of yours and you would like to discuss this concept with them, please do so.

I am not into e-mail as yet. If that is your preferred means of communication, please contact Sandy Roady at the PTG Home Office at sroady@unicom.net.

— Richard Hassig

The PTG Foundation Needs Your Help!

The history of PTG and its predecessors is in danger of being lost. As part of its mission, the PTG Foundation has taken on the task of preserving that history.

The work of collecting, organizing and preserving our past must be an ongoing part of our present. Your donation of money or historical materials will allow us to continue this important work. You may also designate the PTG Foundation as the beneficiary of your PTG death benefit. Contact the Home Office for details.

Honor a mentor, friend or associate, either living or deceased, with a tax-deductible contribution. Three contribution levels have been established:

- **Patron (\$100 or more)**
- **Contributor (\$50-\$99)**
- **Supporter (\$35)**

To make a contribution, or for more information, contact:

PTG Foundation
3930 Washington
Kansas City, MO 64111
(816) 753-7747

PTGF



By David Patterson, RPT
Toronto, Ontario Chapter

The Bartolomeo Chronicles

Bartolomeo Declines to Pull Out His Hair

Experiencing a true benefit of the job, Bartolomeo tests chromatic tenths as he simultaneously daydreams about his vacation. The player saunters by and mentions that the pedal has a noise. Bartolomeo's senses are alerted; the noise has been fixed before, he is told. He glances down to confirm the pedal system type – steel and nylon. For the sake of the onlooker, he suppresses his shudder.

Previous episodes of unseemly hair-pulling have caused him to develop a sanity-protection plan for steel/nylon pedal systems. He recalls occasions when he devoted enough searching time to have literally built a simple maple and cloth replacement system. Like small plastic soldiers configured on his side of the battlefield, he lines up his defenses in his mind's eye. Like a litany they repeat themselves.

Pedal “scrunches” in Asian pianos are almost always steel against steel. Often two or three overlapping noises confuse the issue of trouble-shooting. Sounds are transmitted through the steel and case to conceal the true location. Diagnose all noises thoroughly and listen first; the act of disturbing things can cause the symptom to disappear. Liquids and pastes cannot be relied upon in these situations. Carry several spare white-plastic spring cups or switch with the soft pedal if necessary. The hole through the pedal is a common cause and requires a bushing; keep spares of the nylon pedal insert that isolates the pedal from the steel pedal prop bolt. Tightening the hidden screw under the trap lever is an absolute necessity. Dismantle and tighten the entire system to provide a proper foundation.


Give a quote to completely dismantle and service the damper pedal, knowing full well that the free, impromptu, haphazard search can result in an uncertain repair. Carry and replace offending rubber grommets acting as pedal-rod dowel-pin bushings. Exchange with the soft pedal rod if

necessary. Non-parallel movement of the damper pedal lever represents a design difficulty. Changing the angle and position of the lever's bracket may be the only permanent solution. Fix damper “scrunching” with a lubricant at every damper spring contact point.

The entire piano is a rectangle which may flex into a parallelogram when this pedal is pushed. Bottom boards make noise as they flex downward under weight. They need tightening or repair, but can be temporarily propped with solid spacers wedged between floor and bottom. Lower front panels retain the rectangle shape during the flexing; they therefore can squeak or groan around their edges and may require neatly glued felt strips to insulate the finicky polyester-to-polyester surfaces. Noise is produced at the main heavy coil spring, in the common steel-against-steel pattern. Insulate the spring at the top, bottom and between coils if it continues to make noise.

Later, the pedal work completed, Bartolomeo wipes his brow as he finishes up the foul task. He then employs the granddaddy of all pedal tips as he works the pedal 100 times with his foot. Pushing it with his hand will not qualify. Pushing it without actually counting to 100 will not qualify. Letting the client do the 100 tests the next day before phoning *definitely* does not qualify. He recounts the many times the dreaded “ree-ee-ree-ee-ree-ee-ree-ee” has gradually returned as he counted through the eighties or nineties.

As Bartolomeo prepares to leave he is proud of his subjugation of the steel/nylon pedal system. He slips the muffler into position and quickly performs the customary check of its operation. But wait. When he adjusts it high enough to be out of the way of the hammers, then lowers and activates it, the hammers are not muffled effectively. Conversely, if he adjusts the turnbuckle to lower the felt for proper muffling, then raises and deactivates it, the felt gets in the way of the hammers during normal playing. Let's see, now ... he knows that with faulty mufflers he can bend the brackets under the keybed to alter the total travel distance of the muffler. If he just...

Next month, Bartolomeo takes stock of his checklists. 

The World's Great Pianos

Original Dimensioned Action Parts

Premium Blue Hammers

Hammer Boring & Hanging Service

Universal Underlever Assembly



Quality Renner Tools

Keyboard Bushing Cloth & Leather

Graphited Flange Bushing Cloth

Free Catalog & Price List Available

Use Genuine Renner Action Parts



Renner USA
POB 1223
Weston, CT 06883
Phone: 203-221-7500
Fax: 203-454-7866

Or Contact:
Rick Baldassin
Teaching & Technical Consultant
Phone: 801-292-4441
Fax: 801-298-1441

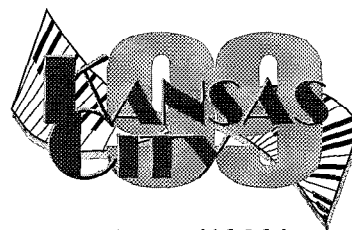
Many of the great figures in jazz played in Kansas City. You can, too! Count Basie organized his band here.

Saxophonist Charlie Parker tried to sneak into clubs here as a boy and developed his style of playing here. The Kansas City Jazz Museum offers interactive displays and exhibits explaining Kansas City jazz and honoring jazz greats.

Kansas City. It's a great town with a rich history, a giant in the development of jazz, and an outstanding city to host the 42nd Annual Piano Technicians Guild Convention and Technical Institute, July 21-25. Make plans now to attend!



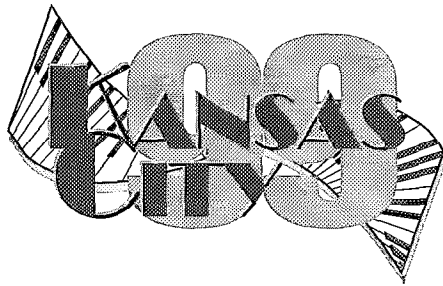
The Kansas City Jazz Museum celebrates "America's classical music" and Kansas City's contribution to jazz as part of the 18th & Vine Historic District.



www.ptg.org/1999/conv

Going to Kansas City!

Now that your plans to be in Kansas City are a done deal, it's time to tailor your learning experience to your own special needs. This year we got the brochure and schedule out early so you'd have plenty of time for just that. As the diversity of new classes and subjects has increased in recent years, so has the difficulty in deciding which classes to pick. After classes started, I would see many people in the lobby staring at the schedule and trying to decide what to learn next from the myriad of choices. Of course as piano technicians, any class you attend can only be a benefit. But we must keep our eye on earning as well as on learning. Know what you want and where to be before you even leave home. Plan ahead to be in special offerings such as our many hands-on sections: The Rebuilding Workshop, Applied Skills – Field Repairs, Tuning Tutoring, One on One, and Grand and Vertical Regulation.



The Examination and Test Standards Committee, chaired by Richard Bittner is offering the opportunity to preview the Technical and Tuning Exams. You can also preview the Written Exam and if you think you're ready, take the exam immediately following the class. If you are ready to take the Exams and have been pre-screened by a member of your chapter, then by all means, try your hand at upgrading to RPT. It is one of the single most satisfying things you can do as a member of PTG.

Almost every aspect of our field will be taught in KC this summer – from renting pianos to selling your business. There's a lot to decide. It's not too late to find a roommate to defray your costs at the hotel. Log on to our web site at www.ptg.org/1999/conv/ and click on the all new bulletin board. Find a roommate, a group to go golfing with, a parent to share child watching with. You can connect for many needs on this vital new communication tool.

If you're not planning to be in Kansas City, I hope you are making your plans to be with us in Arlington, VA, in 2000 for next summer's extravaganza. After all, how many Institutes can you afford to miss?

— John Ragusa, RPT
1999 Institute Director

Where's the Beef?

Some Things You May Want To Know About Kansas City, Maybe Not

By Bill Prindle
Kansas City Chapter

I grew up 50 miles north of Kansas City in a smaller city. I always thought that KC was the big ugly city, but what I found after moving here about four years ago was that the city is more like living in an area that has a bunch of small town stuck together. In other words people are pretty laid back and friendly. Unless, of course, you are driving down the freeway, then it is every man for himself, as seems to be the norm across the nation today. You may want to know that it is customary for one, two or sometimes three cars to go through the red light before someone takes it serious enough to stop.

The area is loaded with many wonderful places to eat. We are famous for BBQ such as Gates, Bryants and others. Each has a unique flavor to the sauce or sauces they offer, so if you are a gourmet, consult a local for tips. We have great steak houses, Mexican food restaurants and other ethnic fares. We even pride ourselves on great hamburgers. If you want something expensive, go to a movie and pick up dinner there.

We have some things around here that I am not sure exist in other areas. Because these things just do not make sense to me. We have Braille on our drive-up ATM machines. We park in our driveways and drive down our parkways. I saw a sign at a rest area just outside of town that said: "Small animals need to

be on a leash, large animals have to stay in the vehicle." How do you get a large animal in your car in the first place?

I have things that I like to do for fun living here that I thought I would share with you in case you are seeking some thrills while you are here. I like to go downtown and park close to the Folgers Coffee plant and roll the windows down and just smell the coffee. It's kind of fun to watch them tip up the trucks and watch the beans fall out, too. Then we have the Missouri River where you can take your honey and watch the submarine races. As if being in business for yourself isn't a big enough gamble, we have several river boat casinos that are willing to accept small and large dona-

Continued on Next Page

"Keep Talking"

The conversation about *marketing* for piano technicians needs to be on-going! Whether we refer to an article

MARKETING COMMITTEE

we've read recently or something we've tried in the field, we would do well

to keep this subject alive. Every year in this organization there are so many changes and fluctuations within and to the membership – be it new people joining, Associates becoming RPTs, 'regular' members finding themselves either elected or on a committee, etc. For what was once considered a hot topic, the enthusiasm about marketing is at a low ebb and many new people do not know of the rich resources available to them and perhaps a few 'oldies' have forgotten.

One form of "discussion" would be

Volunteers Needed for Visually Impaired

The committee for the concerns of visually impaired technicians is looking for volunteers to be of assistance to sightless technicians who will be attending the 1999 PTG Technical Institute. Perhaps the two things, which might appear most formidable to the sightless technicians who are considering attending the convention, are getting to the right room at the proper time and touring the exhibit hall.

If you are interested in being of assistance, we offer you this opportunity to make the 1999 Convention more enjoyable and meaningful to a colleague and make a new friend in the bargain. If you know that you will be attending the convention in Kansas City, and are interested in assisting, please contact Committee Chairman Richard Hassig, 2310 N. Ohio Ave., Davenport, IA 52804. Telephone 319-386-4084.

Other members serving on the committee are: Lorne Buntmeyer, Lawrence, KS; Roy Escobar, Houston, TX; and Don Mitchell, Vancouver, WA.

If any of these gentlemen is a friend of yours, and you would like to discuss this concept with them, please do so.

I am not into e-mail as yet. If that is your preferred means of communication, please contact Sandy Roady at the PTG Home Office at sroady@unicom.net.

— Richard Hassig

to review some marketing articles. If the Marketing Committee and its bountiful past efforts were unfamiliar territory, and one were keen to improve his/her business, one could go back to some old *Piano Technicians Journals* to read the "history" of the marketing committee and its priceless revelations and ideas. From the *Journals* they would find articles ranging from a variety of approaches, beginning with the introduction of marketing concepts to the PTG (in approximately October 1992), to the funny dialogues with "Randy Guy," to the business strategy approach for the serious thinkers, to the marketing tools, including the Technical Bulletins, brochures, humidity control systems, fridge magnets and more.

Then there's "The Business Resource Manual," that handy guide to Planning, Marketing, Customer Relations, Resources and clean livin', which is an absolute wealth of ideas not to be taken lightly. Alone, it has been known to triple a few incomes just by following even a handful of its useful suggestions. But its existence still could be in the dark for the newest converts here in the Guild.

Be not afraid to discuss with each other the effects or *non-effects* of your latest marketing strategy. Keep a moment open in your chapter meetings for dialogue about what works and what doesn't. This is where the folks who haven't heard of these possibilities will be enlightened and

those who have – enriched.

It is our sincere wish that the well-established tools and ideas, developed by such hard-working and committed members in the past, continue to be discussed, updated, stretched, poked, prodded, but above all, tried – to reward those who would use them.

— By the Marketing Committee

Where's the Beef?

Continued from Previous Page

tions to their coffers. Actually I have not partaken of such activity. I have found that the best way to double my money is to fold it and put it back in my pocket.

Don't forget major league baseball with the Royals. Worlds of Fun amusement park has more rides to challenge keeping your lunch down than a ... well you get the picture. Next door is Oceans of Fun for the sun and water challenged. You may enjoy going by the 18th and Vine area, famous in song and reputation. It was rebuilt for a movie set a few years ago to represent the period in it's prime. There is a jazz museum there with an audio library of some of the jazz greats.

We have the greatest members in our chapter. I have found them all to be open and helpful with any question I have. We will all be more than willing to take time to help you enjoy yourself when you come to town. So if you want to know, just ask.

Foundation Focus

Lucinda Lear Receives PTG Foundation Grant

The Piano Technicians Guild Foundation Grant has been awarded to a Waterloo, Iowa music teacher. Lucinda Lear, a Nationally Certified Teacher of Music, will use the \$1,000 grant to continue her music education.

The PTGF Grant is awarded each year to a Music Teachers National Association member who has held an MTNA Professional Certification or MTNA Associate Certificate for at



Tim and Lucinda Lear

least six years and is seeking financial assistance for advanced study oppor-

Continued on Next Page

1998-99 Secretary-Treasurer's Report

[Editor's Note: Due to a production error, the two paragraphs containing information on the PTG Emergency Fund were omitted from the 1998-99 Secretary-Treasurer's Report in the May 1999 Update to the Journal. The entire report is being reprinted to ensure clarity.]

Once again it is my pleasure to have this opportunity to present the Secretary-Treasurer's report for the Year 1998-99. PTG has continued on its course of solid financial management with the long-term goal of financial stability.

I am pleased to report that the fiscal year which ended December 31, 1998 was a very good one for PTG. We closed the year with a net income of \$44,675, with total revenue of \$945,844 and total expenses of \$895,203. Several factors were involved in PTG's financial success for 1998. Among them were: a very successful convention in Providence, careful management by the Home Office, more revenue from publications and careful monitoring of expenses on the part of the Board and PTG Committees. Even though we probably will have some added expenses in 1999 due to the Executive Director search, there is no reason to believe PTG will not continue its financial well-being for the year 1999 and beyond.

Today, PTG's balance sheet remains at \$1,347,269. Just as important, the association equity, which is accounting terminology that measures net worth, remains at \$636,581, and is equal to approximately 71 percent of PTG's total expenses for 1998. In other words, the association is equal to about eight and one-half months of operating expenses.

Emergency Reserve Fund

As always, the centerpiece of PTG's financial planning is our Emergency Reserve Fund. Our bylaws mandate that 2% of our gross income be contributed yearly to this fund. Therefore, based on the above figures, \$18,917 was contributed for 1998. In addition to that, I am recommending that an additional \$30,000 from our net profit be contributed to the fund. If this is approved by the Board, the total in the fund will be \$237,778. The Emergency Reserve Fund is, of course, a part of the overall association equity.

As it is with many organizations similar to PTG, our goal over the years has been to see the fund equal to between six and twelve months of operating expenses. I am happy to report that we are well on our way toward this goal.

Year 2000 Proposed Budget

A summary of the proposed budget for the year 2000 that will be presented to the 1999 Council in Kansas City accompanies this report, as does the Certified Public Accountant's report. The net income forecast in the 1999 budget is approximately \$26,000; the net income forecast for the year 2000 is close to \$30,000.

Please take a few moments to review the budget proposals and the accountant's report. Also please discuss the proposed budget with your chapter members and share your concerns with your delegates. This is your PTG money and we want to take PTG in the financial direction members want it to go.

I hope to see all of you in Kansas City in July!

Sincerely,

— Gracie L. Wagoner, RPT
PTG Secretary-Treasurer

Correction

The May 1999 Update to the Journal, Bylaw Proposal #5 incorrectly reported that the costs of death benefits equal 5.5% of dues. The correct cost is 5.5% of income or 11% of dues.

Lucinda Lear Receives PTG Foundation Grant

Continued from Previous Page

tunities related to the piano. Applicants must be at least 28 years old.

Lear currently is enrolled at the University of Northern Iowa and hopes to eventually earn a master's degree in piano pedagogy.

In addition to her NCTM certificate, Lear is also a Certified Iowa Master Teacher. She also has studied at the University of Northern Iowa in pursuit of a bachelor of music education degree with primary emphasis in voice and secondary emphasis in piano. For the past 15 years Lear has owned Lear Music Studio, a private piano and voice studio in Waterloo, where she teaches preschool through

adult students.

In 1989 Lear received the Eudora Carey Hoyer Scholarship from B Natural Music Club and was elected to Outstanding College Students of America. She has performed as soloist with numerous groups including the Waterloo Community Playhouse; the Cedar Rapids Metropolitan Chorale; several churches; and local, state and national conferences, conventions and meetings. She is an officer and member of Northeast Area Music Teachers Association (NAMTA) and the state certification chair of Iowa Music Teachers Association (IMTA).

Lear also has served as adjudicator for several music festivals and auditions, directed several children's choirs and currently serves as accompanist at

St. John America Lutheran Church of Cedar Falls and service pianist at Jesup American Lutheran Church.

She recently wrote to PTG: When one has a dream and/or goal, it is very assuring to receive outside affirmation that what we dream for is within reach and maybe not so crazy. Receiving the 1999 Scholarship from your association has done that for me and I am more than deeply grateful. You have helped to subside the doubts and fear (for a while anyway!). Please express my gratitude to all involved in the selection process. I have completed a successful audition today and am on my way to an exciting adventure thanks to you! I hope to see you in Minneapolis in 2000. ♪

M APRIL'S NEW MEMBERS —

Region 1

021 – Boston, MA

Thomas F. Rourk
81 Craigie Circle
Carlisle, MA 01741

062 – Toronto, ON

Dimitrios Prountzopoulos
2 Chrysler Crescent
Scarborough, ON M1R 2I8
Canada

78 – New Jersey

David E. Bates
80 Lewisburg Road
Sussex, NJ 07461

117 – Long Island-Suffolk, NY

Grigorios A. Chrysopoulos
95 West Broadway
Port Jefferson Station, NY
11776

151 – Pittsburgh, PA

James L. Curry
925 Sycamore Street
Washington, PA 15301

Region 2

331 – South Florida

Dan E. Karn
4151 NW 9th Street
Coconut Creek, FL 33066

334 – Palm Beach, FL

David M. Machado
11796 175th Rd., N.
Jupiter, FL 33478

335 – Sarasota-Ft. Myers, FL

Dennis G. Hershman
2640 39th Street, SW
Naples, FL 34117

James D. O'Neill
7076 Maida Lane
Ft. Myers, FL 33907

381 – Memphis, TN

John M. Formsma
103 Dogwood Lane
Blue Mountain, MS 38610

Region 3

701 – New Orleans, LA

Garrett R. McChesky
194 Becnel Drive
Slidell, LA 70458

871 – New Mexico

Dennis L. Wills
35 El Refugio Road
Tijeras, NM 87059

Region 4

431 – Columbus, OH

Mark A. Wilson
700 Boso Avenue
Ravenswood, WV 26164

462 – Indianapolis, IN

Brian R. Evers
7746 N. Michigan Road
Fairland, IN 46126

Daniel H. Jarrad
10080 W. 400 S.
Jamestown, IN 46147

532 – Milwaukee, WI

Jill G. Sanfilippo
3315 S. 7th Street
Milwaukee, WI 53215

549 – Appleton, WI

Jeffrey J. Arnold
1545 Capitol Drive, #104
Green Bay, WI 54303

600 – Waukegan, IL

Holly Frederichs
870 Huntington Circle
Lake Villa, IL 60046

601 – Chicago, IL

Donald P. Coutis
10201 South 88th Avenue
Palos Hills, IL 60465

David J. Monti
2048 Wessel Court
St. Charles, MO 60174

Region 5

631 – St. Louis, MO

Robert R. Donze
122 Maplewood
Sikeston, MO 63801

641 – Kansas City, MO

Dale A. Robinson
7909 Mercier
Kansas City, MO 64114

671 – Wichita, KS

Sharon K. Spencer
Rt. 2, Box 254
Udall, KS 67146

Region 6

901 – Los Angeles, CA

Karl E. Feuss
1506 Ilikai Avenue
San Jose, CA 95118

Phenoyd E. Nunley
16522 Armintha Street
Van Nuys, CA 91406

941 – San Francisco, CA

Phillip Nevearez III
5482 Scenic Avenue
Livermore, CA 94550

Region 7

001 – Calgary, AB

Igor Motchalov
216 Hampshire Court, NW
Calgary, AB T3A 4Y4
Canada

830 – Idaho West

Jeannie Dalton
700 S. Scott
Boise, ID 83705

975 – Rogue Valley, OR

Barbara A. Barasa
262 Hersey, Apt. D
Ashland, OR 97520

CONGRATULATIONS NEW RPT's

Region 2

201 Washington, DC

Paul A. Jacques
9348 Cherry Hill
Road, #505
College Park, MD 20740

Robin B. Olson
2404 Crest Street
Alexandria, VA 22302

Region 4

601 Chicago, IL

David Carpenter
5030 N. Nashville
Chicago, IL 60656

*In
Memory ...*

**Ralph
Hamilton**
Glasgow, KY

Time for Procrastination has Past

It won't be long now! If you are a procrastinator, you have procrastinated long enough! We want to hear from you now! The deadline for early registration for the 42nd Annual Piano Technicians Guild Convention & Technical Institute in Kansas City is June 18. Why pay more than you have to? Procrastinate on other things today and find the registration form *now*, fill it out, put it in the mail, pick up the telephone, call the hotel for reservations and call the airlines and purchase your tickets now! You know you are going to Kansas City convention to see the Home Office and museum and especially go with us on the tour to Independence, so don't dilly-dally – Do It Now!

Please read the proposed Bylaws amendments to our PTG Auxiliary Bylaws on page 47. We have just a few



Phyllis Tremper
PTGA President

items to vote on from last year, so it won't take long if you have thought about them beforehand. Please bring your Bylaws with you that were mailed to you last Fall. Put them in your suitcase right now. You hear, do it now so you won't forget them. Thank you.

Also plan to buy some raffle tickets for another beautiful afghan made with tender loving care by Beva Jean Wisenbaker. The proceeds, as you know, all go to our scholarship fund. That leads me to scholarship winners; we have two from Missouri this year. But the beautiful news is that one of the winners, our high school winner, is one of our own. Conrad Hulme is the son of Gregory Hulme, RPT. So I'm sure you will want to attend our recital/reception for them on Friday, July 23, 1999, immediately after our Auxiliary luncheon.

Be there. Music is the Spice of Life! I'll see you there!

— Phyllis Tremper, PTGA President ■

PA State Seminar a Hit

By Phyllis Tremper
PTGA President

PA State Seminar March 11-14, 1999 was wonderful. We spouses were treated like queens for the weekend. I always wanted a facial, but never took time for one, but we had a facial there. We were beautiful for the

dinner that night.

The trolley tour was most fun and interesting, too. I especially liked the ride down the mountain. I hope the KC trolley tour will be fun, too.

On Saturday, we attended a Creative Memories Clinic. I had never heard of this

before, but she showed us how to display our family photos in a theme album.

I want to thank the host chapter of the PA State Seminar for treating us spouses so royally and showing us a wonderful time. How can you top that next year? ■

Character

"Character is made by what you stand for; reputation by what you fall for."

— Robert Quillen

"Character, like a photograph, develops in darkness."

— Yousuf Karsh

"Character is much easier kept than recovered."

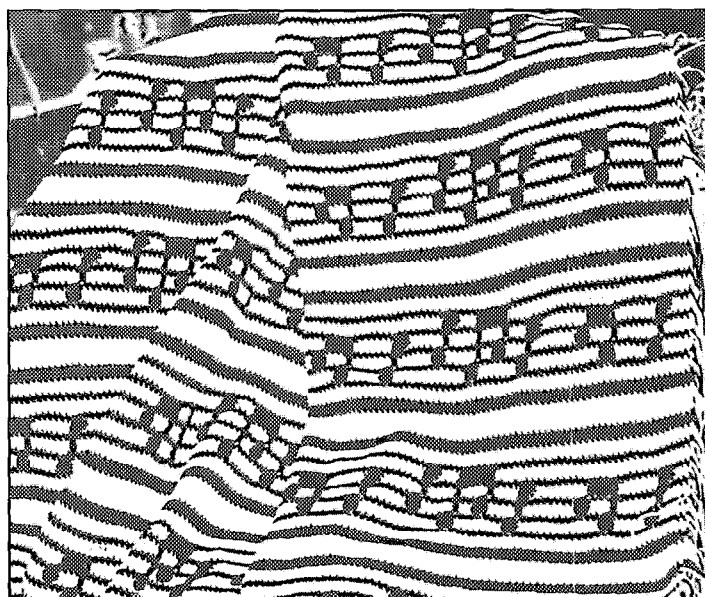
— Thomas Paine

Symphony Afghan Ready for KC Raffle

Symphony Afghan is finished and ready to be raffled off at the convention in Kansas City. All the proceeds will benefit the PTGA Scholarship Fund. It is a big 70" x 77" size. I have put in hundreds of hours and thousands of stitches into the making of the afghan. Whoever wins the afghan will have the benefit of my stitching pleasure. Those of you who do not win the afghan are winners in a different way. You are winners because you have made a contribution to the Scholarship Fund. I hope each of you will think of it in this way when you make the decision about buying tickets. I hope you will make a generous contribution.

I do not have any more published piano or music related afghan patterns, but I have some ideas rolling around in my head to design my own if you would like me to continue making them to be raffled at the conventions. Let me know if you would like me to continue.

— Beva Jean Wisenbaker, Corresponding Secretary ■



Proposed Amendments to the Piano Technicians Guild Auxiliary Bylaws

Additions

Deletions

Amend Article IV Section 3. Recording Secretary: Line 66, by inserting "and have available at all meetings" after the words "shall keep."

Amend Article IV Section 3. Recording Secretary: Line 67, by inserting "a copy of current minutes and" after the words "shall have available at all meetings."

Amend Article IV Section 3. Recording Secretary: Line 70, by inserting "action taken by the PTGA Board and the Council at meetings" after the words "of officers."

The Recording Secretary shall record and have custody of minutes of all meetings of the PTGA, shall keep and have available at all meetings a current copy of the PTGA Bylaws and Standing Rules, shall have available at all meetings a copy of current minutes and a list of all committees and their members, and shall receive reports as required by these bylaws. The Recording Secretary will be responsible for ensuring that proper notice of meetings, bylaws amendments, nominations of officers, action taken by the PTGA Board and the Council at meetings, and other important information is presented to the membership in a timely fashion and in accordance with these bylaws.

Amend Article IV Section 3. Corresponding Secretary:

Line 76 by deleting "to represent each region for the purpose of maintaining" after the word "members" and inserting "to maintain contact with the assigned."

The Corresponding Secretary shall also coordinate and appoint members ~~to represent each region for the purpose of maintaining~~ to maintain contact with assigned PTGA members.

Comments: The amendments specify that the Recording Secretary have available at all meetings a current copy of the PTGA Bylaws and Standing Rules and also a copy of current minutes. There is also clarification that the action taken by the PTGA Board and the Council (minutes) be sent to the membership.

The proposed amendment in relation to the Corresponding Secretary agrees with the PTGA no longer having representation by region.

Adoption of the four proposed amendments is recommended by the Bylaws Committee.

—Evelyn Ternstrom, Chair
Bylaws Committee ■

AUXILIARY exchange

DEDICATED TO AUXILIARY NEWS AND INTERESTS

PTG Auxiliary Executive Board

Phyllis Tremper President

413 Skaggs Road, Morehead, KY 40351-8851
Phone: 606/783-1717
e-mail: f.trempe@morehead-st.edu

Diane Hennessy Vice President

1920 West Broadway, Columbia, MO 65203
Phone: 573/445-5076 / Fax: 573/445-6111
Business Phone: 573/445-6111
e-mail: DHENNESS@aol.com

Evelyn Ternstrom Recording Secretary

1377 Milton Avenue, Walnut Creek, CA 94596
Phone: 510/279-4301 / Fax: 510/939-2475
e-mail: ternstrm@ix.netcom.com

Beva Jean Wisenbaker Corresponding Secretary

1103 Walton, Houston, TX 77009-3033
Phone: 713/864-6935

Marilyn Raudenbush Treasurer

20 N. Laurel Street, Millville, NJ 08332-4148
Phone: 609/825-2857 / Fax: 609/825-8456
e-mail: RAUDY88@aol.com

Bits of Heaven

*Spring brings a bit of Heaven
To resurrected earth,
For everywhere the eye can see
Are signs of bright rebirth.*

*Arising from their graves of ice,
The crocuses lift their heads...
And all around the countryside
Are lovely flower beds.*

*The barren trees of Winter
Are filled with buds today,
As the birds return rejoicing
From their Winter holiday.*

*The snowflakes of December
Are April memories,
Caressed by southern breezes
And sun-kissed melodies.*

*The doubts and fears of Winter
Give way to joy and mirth
For Spring brings bits of Heaven
To resurrected earth!*

— Clay Harrison

CLASSIFIEDS

Classified Advertising rates are 40 cents per word with an \$8.00 minimum. Full payment must accompany each insertion request.

Closing date for placing ads is six weeks prior to the month of publication.

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

Send check or money order (U.S. funds, please) made payable to
Piano Technicians Journal,
3930 Washington,
Kansas City, MO 64111-2963

FOR SALE



ACCU-TUNERS FOR SALE. Sanderson Distributor. James Acheson, 7906 Elliott Street, Vancouver BC V5S 2P2 Canada. 604-325-6751.

REYBURN CYBERTUNER is a complete software package that transforms your Windows or Macintosh laptop computer into a professional stand-alone tuning device. Easy to use, micro-adjustable, pitch raise amazingly close with just one pass, self-corrects for scaling problems (spinets, short grands, etc), sell more voicing jobs with Pianalyzer's color display of any note's full tonal spectrum, PTG approved for scoring tuning exam. 30-day money back guarantee. \$795. Mitch Kiel, 1-888-1-LUV-RCT (1-888-458-8728) e-mail: mitch@reyburn.com or visit our web site at: www.reyburn.com

SANDERSON ACCU-TUNERS NEW & USED. BOB CONRAD 800-776-4342.

HEX SHANK ADAPTER—Adapt your power screwdriver to fit any combination tool you like. Save time and effort. See review on page 14 in the Oct. '98 *Journal*. Cost: \$14.50 including shipping. Ken Amend, RPT, 3352 Holiday Dr. S., Salem, OR. 97302; 1-800-489-8920; kamend@open.org

SANDERSON ACCU-TUNERS, including the SAT III from Authorized distributor. Consignment sale of used Accu-Tuners and Sight-O-Tuners or new Accu-Tuner customers. Call for details. Rick Baldassin, 801-292-4441.

NEW: DIMENSIONALLY CORRECT ENCORE^{wb} Finest GERMAN quality shanks and flanges. AMERICAN style with no large hex shanks, for closer weight and flex duplication. Wally Brooks and Helmut Abel GMBH have designed, duplicated, and produced the new ENCORE^{wb} shanks and flanges to the closest possible engineering dimensions. Steinway type available with 16mm original or modified 16.5mm knuckle to center pin. C shanks available with 17mm or 18mm knuckle spread, to match old Mason & Hamlin and Pratt Read actions. Shanks for Chickering and Knabe are narrowed to 11.25mm like originals. Available for most American pianos at the introductory price of \$299.00. Available only at Brooks, Ltd. Call 1-800-326-2440 for sample kit, information and ordering.

FRONT DUPLEX MUTES. Use while tuning to help stop the "zing" of the front duplex. Each mute will cover four unisons. \$12.50 per pair, includes shipping. Bill Clayton, RPT, 1539 Grovewood Dr., Charlotte, NC 28208.

DAMPP-CHASER PRODUCTS; PROTEK LUBRICANTS. Fully stocked inventory for same day shipping on all orders. Free installation advice and tech support. Call today to place an order or for a free price list. **PIANO CLIMATE CONTROL SUPPLY**, Steve Cunningham 1-800-443-7509.

EDWARDS STRING COVERS is enlarging and now offers: 1. **GRAND PIANO STRING COVERS** (Beautifully custom made from 100% woven wool. Keeps clean and protects piano, improves tuning stability) 2. **FOAM BAFFLES** for underside of grands and back of verticals (Reduces volume around 1/3. Great for traditional pianos, retrofit player systems and Disklaviers) 3. **ALL DAMPP CHASER PRODUCTS** (New distributorship) Our promise is Quality and Fast, Knowledgeable Service. For full information and free sales kit contact **EDWARDS STRING COVERS**, attn: LaRoy or Judi Edwards, PO 646, Brookdale, CA 95007. Ph. 831-338-1828, FAX 831-338-4580.

HAMMERS AND ACTION PARTS: Finest quality Encore (by Abel). Nu-Tone and Abel Light hammers. Tokiwa action parts. Try the new Encore^{wb} dimensionally correct shanks and flanges with Encore hammers on your next rebuild. Hear and feel the difference. Brooks, Ltd. Steinway type whippens now available for that extra smooth feel. Encore hammers and shanks and flanges are made to the strict specifications of Wally Brooks by Helmut Abel, GMBH in Germany. Quality boring and shaping. We also specialize in pre-hanging grand hammers on new shanks. Write or call Brooks, Ltd., 376 Shore Road, Old Lyme, CT 06371. Phone 800-326-2440; FAX 860-434-8089.

FRANKLIN DUPLEX SLIDER. This exciting and ingenious new tool was invented and designed by a tuner for tuners exclusively, to tune any kind of rear adjustable duplex harmonic bridge, individual aliquot or contiguous. Call or write. **SINGING TONE** Box 2063, Peter Stuyvesant Sta., New York, NY 10009. (212)677-5760.

HAMMER BORING GUIDES. All metal, weigh 15 lbs. Accurate and easy to use. Improved since *Journal* article of June 1995. \$230.00. Instructions and photo available on request. Kent Gallaway, 709 Thorne, Ripon, WI 54971; 920-748-3265.

MOTHER GOOSE TOOLS Delivered USA. Brass String Level-Level \$25; Hammer Filing-Voicing Tray \$25; Hammer Fitting Block \$15; Capstan Regulating Pliers \$25; Slotted Screw Starter \$15. 1-800-343-5257. imatunr@primenet.com

PianoDB - Easy to use DATABASE FOR WINDOWS by D C AL CODA internet site: <http://www.dcalcada.com/>, kenhale@dcalcada.com

MOVING TO CANADA. I have a list of over 200 clients in the New York area, on a Mac database or printout. I will send a letter of recommendation for any qualified technician. Mostly regular six month or more long-time customers. \$10,000 or best offer. Peter C. Heim, phone: (718) 761-1068, email: pch7@interport.net after June 14: (403) 257-3499, email: free3@telusplanet.net

FORTEPIANO MAINTENANCE HANDBOOK. For Owners and Technicians. Technical but well-explained. Stringing, Action, Damping, other topics. Builders, suppliers listed. \$20 plus \$3 s&h. Margaret Hood Fortepianos, 580 West Cedar Street, Platteville, WI 53818. Call 608-348-6410 for more info.

HAVE YOUR HAMMERS & BASS STRINGS MADE BY SOMEONE WHO CARES What they will sound like after 1, 2 or 5 years. A. Isaac Pianos, 308 Betty Ann Dr., Willowdale, ON M2R 1B1 CANADA. (416) 229-2096

HANDCRAFTED TOOLS— For Bearing, Notching, Hammershaping, Ribshaping, and More! Call or write for free brochures. MAZZAGLIA Tools, PO Box 18, Groveland, MA 01834 (978) 372-1319

PIANOS - Yamaha and Kawai grands \$1850 and up. 23 Steinway grands and verticals. Large quantity of used American grands from \$700 up. We buy pianos. Ed's 504-542-7090.

BUCKSKIN for recovering grand knuckles and backchecks, upright butts and catchers. The "original equipment" supplying the industry for 140 years. Richard E. Meyer & Sons, Inc., 11 Factory Street, P.O. Box 307, Montgomery, NY 12549; 914-457-3834

SOUNDBOARDS BY NICK GRAVAGNE. Ready-to-install crowned boards or semi-complete. Over 200 new boards out there! New expanded and updated installation manual \$22. P.O. BOX 273; Sandia Park, NM 87047; 505-281-1504.

PIANO SCALING SOFTWARE for WIN & DOS. Plot inharmonicity, Tension, Break %, and more. Automatic Bass Rescaling, String Winding Sheets, Detailed Manual, and much more. Decimal & Metric. \$80.00. Tremaine Parsons, Box 241, Georgetown, CA 95634, 530-333-9299

PTOOLS - COMPUTER TOOLBOX FOR TECHNICIANS. WIN & DOS Client Management, Mailmerge, Correspondence, Import/Export, Labels, Envelopes, Autodial and more. Measurement Conversions. Trade Specifications, Zipcode, Supplies, and Resource Databases. Conversions, Specifications, Calculations, Repair Formulas, and more. \$30.00.

<http://ourworld.compuserve.com/homepages/ptools>. Tremaine Parsons, RPT; 530-333-9299.

CORY KEYBOARD PRODUCTS. Your customers will love the way these specially formulated cleaners and polishes make their pianos easier to maintain. Key cleaner, high gloss polish, satin finish conditioner and many other products. Used by technicians nationwide. Visa/MasterCard accepted. To order or for more information contact Larry Pisano. (949) 240-7568 phone/fax. Authorized distributor. ACCENT Piano Service.

NEW! ACCENT STRING COVER KITS. No paper patterns, no waiting, no additional appointments to install. Each Grand String Cover Kit has everything you need to make a professional quality, custom-fit wool string cover while you're on your regular service call. 1. Pre-trimmed and ironed highest-grade wool felt. 2. Unique "clip on" fiberglass rod support braces to suspend felt over the strings. 3. Marking chalk. All you do is mark the curve and trim. Installs in minutes. Available in Black, Brown and Burgundy in three sizes: for pianos up to 6', 7' and 9'. Prices start at \$105.00. Satisfaction guaranteed. Visa/MasterCard accepted. To order or for more information contact Larry Pisano. (949) 240-7568 phone/fax. ACCENT Piano Service.

WONDERWAND: Try the Tuning Lever you read and hear about. Enjoy Less Stress; Better and Faster Tunings: \$65.00 p.p. Wayne Saucier, RPT, 26 New York Ave., Wayne, NJ 07470.

*9' Mehlin & Sons, 1924, Eb \$4,500; *Knabe 5'8" Eb, \$3,900; *Howard/Baldwin 5'7" HPEb, 1994, \$6,995; *Baldwin/Howard, W/Pianodisc & Orchestra, \$9,995; *Schimmel, 6'9" Eb, \$14,900; *Yamaha G-2, 5'7", \$7,950; *Fisher Grand, 5'4" 1915 Circasian Walnut, \$4,895; *Kimball 4' 10" Frch. Prov. \$4,900; *Chickering, 5'8", \$4,000; *Knabe 5'4", \$2,995; Howard by Kawai, 5'9", ebony, \$7,700; *Yamaha, 5'7", walnut, "beautiful," \$7,995; *Wegman Petite, Frch. Prov., \$3,995; *Mason & Hamlin "BB" Mahogany, \$32,000; *Mason & Hamlin "BB" Mahogany, \$32,000; *Chickering & Sons 5'4" Mahogany, \$4,995; *Schafer & Sons 5'1" Walnut Gloss, \$4,500; *Wurlitzer "Petite" Frch. Prov., 5'10", \$7,700; *Yamaha Clavinova (MIDI) \$1,795. Call SCHROEDER'S PIANOS Since 1957 for a complete list of used pianos, 800-57 PIANO Visit our web page: [57 piano.com](http://57piano.com)

FOR SALE—Replacement Reeds wanted for use in Parlor Reed Organs. Direct inquiries to: Paul Toelken-supplier, PO Box 25017, Prescott Valley, AZ 86312, (520) 772-8914. ptaelken@northlink.com

SOUNDBOARDS, PINBLOCK MATERIAL AND TUNING PIN DRILL BITS NOW AVAILABLE FROM GENEVA INTERNATIONAL! Geneva International Corporation, exclusive U.S. distributors of Petrof and Weinbach pianos, is pleased to announce the availability of European spruce soundboard blanks, 7 ply quarter-sawn beech pinblock material, select hard maple Marion plywood pinblocks and 6 1/4" fast spiral helix drill bits. Get the best material at the best price! Call Alan Vincent at 1-800-533-2388 for pricing and more information.

REPAIR CHIPPED IVORY IN 20 MINUTES. "AcryliKey" ivory restoration system produces a strong, nearly invisible repair in minutes. Kit contains material enough for 50+ repairs. Also: pigments, mixing utensils, sanding pads, and complete instructions. Total cost, (shipping included) \$39.95. Richard Wagner RPT; P.O. Box 1952 Lake Oswego, OR 97035 (503) 697-9254. E-mail for extra information. Rjwag@Pacifier.com

HELP WANTED



APPRENTICE WANTED: Full service facility seeks dedicated person to work and learn. Key One, 1308 Factory Place #38, Los Angeles, CA 90013. Phone: 213-624-6634.

FULL TIME PIANO TECHNICIAN NEEDED. Hauer Music, one of the Nations largest music stores is seeking a qualified piano technician for servicing in-store and outside clients on fine brand pianos, such as Steinway, Boston, Bechstein, Charles Walter and others. The qualified applicant should have excellent tuning skills along with strong repair abilities. Also should be able to complete work in an efficient manner. Benefits and pay are excellent for a highly motivated person. This part of the country is known for its low cost of living and great work opportunities. Please send resume to Hauer Music, 120 South Paterson Blvd. Dayton, Ohio 45402. ATT: Douglas Atkins 180054 HAUER.

HELP WANTED— TUNER TECHNICIAN, RPT preferred for tuning, repairing and rebuilding for Reno's largest music store. Pay commensurate with experience. Contact Mike Rucks (775) 323-5443 or E-mail resume: staff@maytan.com

PIANO TECHNICIANS WANTED— 100+ year old company with one of the largest restoration facilities in the U.S. is enjoying continued growth and looking for persons with any of the following experience: Rebuilding, regulation, pianodisc installation and service, tuning, refinishing. Great salary and schedule. Full benefits, 401k with participation and more. Tired of being underappreciated and under paid? CALL (215) 438-3200 or send resume to: 5427 Germantown Ave., Philadelphia, PA 19144.

UNIQUE OPPORTUNITY in Calgary, Alberta Canada! Seeking professional piano technician experienced in piano rebuilding/restoration and workshop management for new Keyboard Museum which is currently under development. Required skills include rebuilding/restoration, tuning, regulation and voicing keyboard instruments from 1800 to present. Museum experience would be a definite plus. Forward resume by mail or fax to Andrew Mosker c/o Chinook Keyboard Centre, P.O. Box 480, Station M, Calgary Alberta Canada T2P 2J1. Phone 403-231-7757, Fax 403-231-7779.

TECHNICIAN NEEDED IMMEDIATELY IN RALEIGH, NC AREA— Established business has an immediate opening for qualified piano technician. Must be an efficient, stable tuner and have basic regulation and repair skills. Rebuilding skills a plus, but not required. Competitive salary based on experience. Commissions paid for jobs sold. Service vehicle with cell phone provided. For more information, or to submit your resume, call Ruggero Piano Service, Inc. 1-888-326-8002 or FAX us at 919-571-1531.

VICTOR'S is expanding. Need Piano Tuners, Refinishers, Restringers. Buy & Sell 500 fine grands, Hammond B3 & Leslies. 300 NW 54th Str., Miami, Fla. 33127. 305-751-7502.

TUNER/TECH NEEDED. Work with the best. Call Matt Grossman: 800-924-1900. E-mail: mattgrossman@vintagepianoworks.com

SERVICES



J.D. GRANDT PIANO SUPPLY CO.— Specializing in high quality bass string manufacturing (sample duplication/complete computerized rescaling) using Roslau core wire and Marke Degen copper. 25 years experience. Walter Schienke, 181 King Road, Richmond Hill, ON. L4E 2W1, (905) 773-0087, FAX: (905) 773-1887. E-mail: jdg_supco@msn.com

SOUNDBOARDS & BRIDGES DUPLICATED. Any board or bridge duplicated or made to your specs, "Board in a Box" or installation at our facility. Completely tooled and equipped for any piano. Rare and aged wood selection available. Complete restoration since 1963. BRIAN ALEXANDER, KEY ONE, 1308 Factory Place #38, Los Angeles, CA 90013. Phone: 213-624-6634, FAX: 213-689-1735.

STRAIGHT SIDES AND SQUARE FRONTS are the benchmarks of our quality key recovering. \$150/set tops and fronts. Plastic sharps installed \$90/set, key bushing using Spurlock precision cauls \$100/set. Shipping charges are additional. Key repairs, buttons, and other services available. Visa and M/C accepted. E-mail: ashmore@gv.net, call 530-273-8800. Yvonne Ashmore, RPT and C. Christensen, Keyboard Restorations, 12700 La Barr Meadows Road, Grass Valley, CA 95949.

STEINWAY Action Frame Rails Resoldered, Replaced, and/or Repositioned. For price list write or call John Dewey Enterprises, Inc; 861 E. 2900 North Road, Penfield, IL 61862-9603, phone (217)595-5535.

SOUNDBOARDS INSTALLED — Full and partial bellywork performed with sustain, clarity, and projection the objectives, as in the S&S B on exhibit in the GOR in Providence. Considerable backlog - contact soon for scheduling. Quality's the bottom line. David G. Hughes, RPT. Baltimore. 410-429-5060.

REFINISH PIANO HARDWARE in nickel, brass, or chrome. Metal finishing specialists for over thirty years. Parts shipped back to you in 2-3 weeks. Rush jobs can be accommodated. Whitman Company, Inc. 356 South Ave., Whitman, MA 02382. Ph. 1-800-783-2433.

REPLACEMENT SOUNDBOARD

PANELS — North Hudson Woodcraft has been producing QUALITY soundboard blanks for over 100 years. We will custom build a spruce soundboard to your specs. Rib stock, shim stock, and quartersawn Hard Maple also available. For information and prices call: NORTH HUDSON WOODCRAFT CORP. (315)429-3105 - FAX (315)429-3479.

KEYTOPS IN THE ROCKIES—Keys recovered with .089 white tops with fronts, buffed and notches beveled - \$120.00. KEYS REBUSHED—\$60.00 PER RAIL. EXPERIENCED, hundreds of sets recovered. References on request. Phillip Thurlow, RPT. 7773 S. Elizabeth Way, Littleton, CO 80122 (303)770-7064 OR (888)586-4683. RETURN SHIPPING WITH PREPAID ORDERS.

SIGHT-O-TUNER SERVICE: Repairs, calibration & modifications. Fast, reliable service. Richard J. Weinberger; 18818 Grandview Drive; Sun City West, AZ 85375. PH. 602-584-4116.

PIANO KEY SERVICE—

.075 Tops with Fronts - \$125.00
Premium Tops with Fronts- \$150.00
High Gloss Sharps (3 1/2") - \$65.00
Keys Rebushed: Premium Cloth- \$100.00
Custom Keys Made - Call for Price
Many other services available. Call or write for price list. FREE return freight on pre-paid orders of \$75.00.
WALKER PIANO SERVICE,
554 State Route 1907, Fulton, KY 42041,
1-800-745-6819. www.walkerpiano.com

PIANO KEYS . . . We manufacture replacement keysets for nearly any piano. The cost is often less than reworking the old keys. We use the finest materials and offer a number of options to suit your needs. Contact: Rick Wheeler at RoseLand Piano Co. (503)654-1888.



EMIL FRIES SCHOOL OF PIANO TUNING AND TECHNOLOGY.

Thorough education since 1949 in tuning, servicing and rebuilding pianos. Successful graduates worldwide, blind and sighted. One and two year courses. Emil Fries School of Piano Tuning & Technology. Ken Serviss, RPT, President — Don Mitchell, RPT, Dir. of Instruction. 2510 E. Evergreen Blvd., Vancouver, WA 98661-4323.
(360)693-1511, fax (360)693-6891.
e-mail: dsmith@pacifier.com /
web page: www.pacifier.com/~dsmith

THE RANDY POTTER SCHOOL OF PIANO TECHNOLOGY—Home Study programs for beginning students, associate members studying to upgrade to Registered Piano Technician, and RPT's wanting to continue their education. Tuning, repairing, regulating, voicing, apprentice training, business practices. Top instructors and materials. Call or write for information: RANDYPOTTER, RPT; 61592 ORION DRIVE; BEND, OR 97702; 541-382-5411.
See our ad on page 3.

NILES BRYANT OFFERS TWO HOME STUDY COURSES: Electronic Organ Servicing: Newly revised. Covers all makes and models — digital, analogue, LCT's, synthesizers, etc. Piano Technology: Tuning, regulating, repairing. Our 87th year! Free booklet; Write or call NILES BRYANT SCHOOL, Dept. G, Box 19700; Sacramento, CA 95819 — (916)454-4748 (24 hrs.)

The NORTH CAROLINA REGIONAL CONFERENCE offers 3 days of quality instruction in all phases of piano technology October 29-31, 1999 at the Radisson Hotel in High Point, NC. Double your income with the knowledge available? It's up to you. Conference is easy to get to . . . low air fares to High Point, NC; Train Station one block from Hotel; Only a few hours driving distance. For more information and registration contact David Feeny (336)697-2646.



INSTRUCTIONAL VIDEO TAPES.

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

SUPERIOR INSTRUCTIONAL TAPES

** Videos priced at \$25 each ** Beginning Tuning, Upright Regulation, Aural and Visual Tuning, Grand Action Rebuilding, Exploring the Accu-Tuner, Grand Action Regulation, Voicing, Pinblock Installation, A to A Temperament, Baldassin-Sanderson Temperament, Bass Tuning - 3-Ways. Superior Instructional Tapes; 4 W. Del Rio Drive; Tempe, AZ 85282; Ph. 602-966-9159.

WANTED



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

BACK ISSUES OF PTG JOURNALS WANTED—Mainly 1979-1983. Also wanted-Tuning and Regulating Tools. Call 702-870-6430 (24 hrs.). Leave message on machine.

WANTED: DOLMETSCH-CHICKERING Harpsichord by Michael W. Hart, PO Box 268, Corbin, KY 40702 (606)528-8760.

WANTED: Used Accu-Tuner, please call Nina Butler at 800-566-3472.

WANTED: Very old Chickering Grands pre-1900 to restore. Also, very old square pianos. PTG member, technician would appreciate your referrals. Contact Michael W. Hart, P.O. Box 268, Corbin, KY 40702 (606) 528-8760.

WANTED early square pianos-pre 1870-any make, or condition-especially original condition. Michael W. Hart, Box 268, Corbin, KY 40702. 606-528-8760.

WANTED: TINY PIANOS such as the Wurlitzer Student Butterfly or other small types. No more than 50 keys. Call toll-free: Doug Taylor, 1-888-895-6211. I'll pay shipping!

DISPLAY AD INDEX

AFSCO	9
Baldwin	11
Damp-Chaser Electronics	5
Decals Unlimited	15
Dryburgh Adhesives	3
Inventronics	13
Jaymart Wholesalers	13, 15, 39, 52
Majestic Piano	13
North Carolina Regional	3, 9
Oliag Ag	15
P & G Investments	15
Peterson Electro-Musical Products ...	27
PianoDisc	IBC
Pianotek	13
Randy Potter School	3
Rapid Development Software	9
Renner USA	41
Reyburn	15
SAFECO	3
Samick	7
San Francisco Piano Supply	9
Schaff Piano Supply	1
Singing Tone	3
Yamaha	BC
Young Chang	IFC

CALENDAR of EVENTS

July 21 - 25, 1999

PTG ANNUAL CONVENTION & INSTITUTE

Hyatt Regency Hotel, Kansas City, MO 64111
Contact: The Home Office (816) 753-7747
3930 Washington, Kansas City, MO 64111

October 8 - 10, 1999

TEXAS STATE ASSOCIATION

Waco Convention Center, Waco, TX
Contact: James Geiger (254)867-9589
3924 Kendall Lane, Waco, TX 76705

October 1 - 3, 1999

OHIO STATE / CENTRAL EAST REGIONAL

Grave Piano & Organ, Columbus, OH
Contact: Kim Fippin, (614)890-2197
275 Foxtrail Pl, Westerville, OH 43081

October 29 - 31, 1999

NORTH CAROLINA REGIONAL CONFERENCE

Radisson Hotel, High Point, NC
Contact: Dave Feeny (336)697-2646
3455 McConnel Rd., Greensboro, NC 27405

All seminars, conferences, conventions and events listed here are approved PTG activities. Chapters and regions wishing to have their functions listed must complete a seminar request form. To obtain one of these forms, contact the PTG Home Office or your Regional Vice President.

Once approval is given and your request form reaches the Home Office, your event will be listed six-months prior and each issue until the month in which it is to take place.

Deadline to be included in the Events Calendar is at least 45 days before the publication date; however once the request is approved, it automatically will be included in the next available issue.

ADVERTISE IN THE JOURNAL!

Classified Ads are 40¢ per word (minimum of \$8.40)

Display Ad costs are:

	12-time	6-time	1-time
Full page	\$554	\$607	\$688
2/3 page	\$433	\$499	\$562
1/2 page	\$318	\$365	\$409
1/3 page	\$222	\$247	\$289
1/4 page	\$189	\$205	\$238
1/6 page	\$126	\$138	\$163
1/8 page	\$105	\$115	\$134
2-Inch	\$52	\$63	\$82
1-Inch	\$26	\$31	\$41

Call the Home Office for more details

816-753-7747

www.ptg.org/1999/conv/

Last year the Institute put itself on the world map by setting up a web page on the Information Super Highway (Internet). This new and useful tool has been crafted and managed by the brilliant team of Dean Reyburn and Mitch Kiel. If you are online, you have to check this out. This year, Dean and Mitch have created a "Bulletin Board" where you can post messages, ask questions or look for room-mates in Kansas City. Check out exhibitor listings with lots of background information, instructor bios, and KC hotel info. Give us your feedback. This page is available to anybody in the world with Internet access. And it's done with style and creativity. Thanks, Dean and Mitch!!

Jay-Mart Wholesale

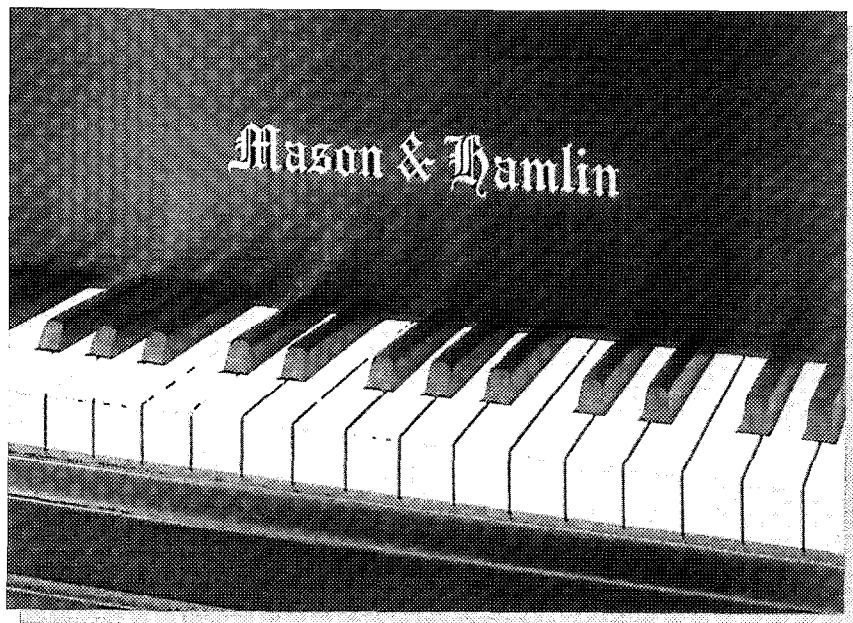
P.O. Box 21148, Cleveland, OH 44121
800-441-2363

Selling accumulated merchandise:

• 5 Studio consoles (5 octave) • Collection of piano case parts • Piano benches & stools
• 2 Lyon & Healy concert harps (need major repairs) • Antique oak piano chairs • Piano moving equipment (10 skid boards) • Also, many baby grand & studio console pianos

Why choose a Mason & Hamlin piano?

Tradition. Mason & Hamlin, founded in 1854, is one of the oldest, most respected names in piano manufacturing. Today's Mason & Hamlin piano is individually hand-crafted using many original company specifications and designs. All models feature the patented Tension Resonator, the crown retention system which was developed exclusively for Mason & Hamlin in 1900.



Tone. The Mason & Hamlin piano has a wide tonal palette: the bass end is very big, full and rich; the mid-range is clean and lyrical; the treble end is bell-like, with unmatched clarity.

Touch. Play boldly or introspectively—a Mason & Hamlin piano gives you freedom to explore the music deeply.

Appearance. Mason & Hamlin pianos have always been prized for their classic beauty. They are, simply, works of art for your works of art.



Celebrating 300 Years of Piano History



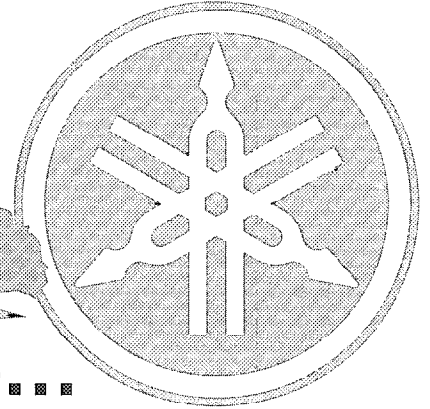
Mason & Hamlin

4111 N. Freeway Blvd., Sacramento, CA 95834 Telephone: 1-800-566-3472
Facsimile: 916-567-1941 Email: info@masonhamlin.com • Website: www.masonhamlin.com

PTG GAZETTE

June 1999

YAMAHA



Kansas City Here We Come...

Yamaha is proud to be a participant in the upcoming 42nd annual National Piano Technicians Convention in Kansas City. It looks like it's going to be a great convention. We hope to see you there!

"A Day With Disklavier"

On Wednesday, July 21, one day prior to the Institute classes, Yamaha will be offering for the first time, a full day of instruction on servicing Yamaha digital/acoustic pianos.

This class will give you hands-on experience learning how to service Yamaha Disklavier digital/acoustic pianos. "A Day With Disklavier" is intended for technicians that are currently servicing Yamaha Disklavier pianos as well as technicians who want to learn how to service these pianos.

Regardless of your Disklavier service experience, the training will be custom tailored to your experience level. Class size is limited, so you must pre-register by calling Judy Naylor at (800) 854-1569 or at (714) 522-9905.

The 37 Steps of Grand Regulation

In this class, LaRoy Edwards and Terri Niimi, instructors in our Little Red Schoolhouse Program, will be covering the 37 Steps of Grand Regulation and why the sequence of the steps are so important. This three-hour class will assist your understanding of grand regulation and will provide you with many tips on improving the touch of the grand piano.

Exhibit Hall

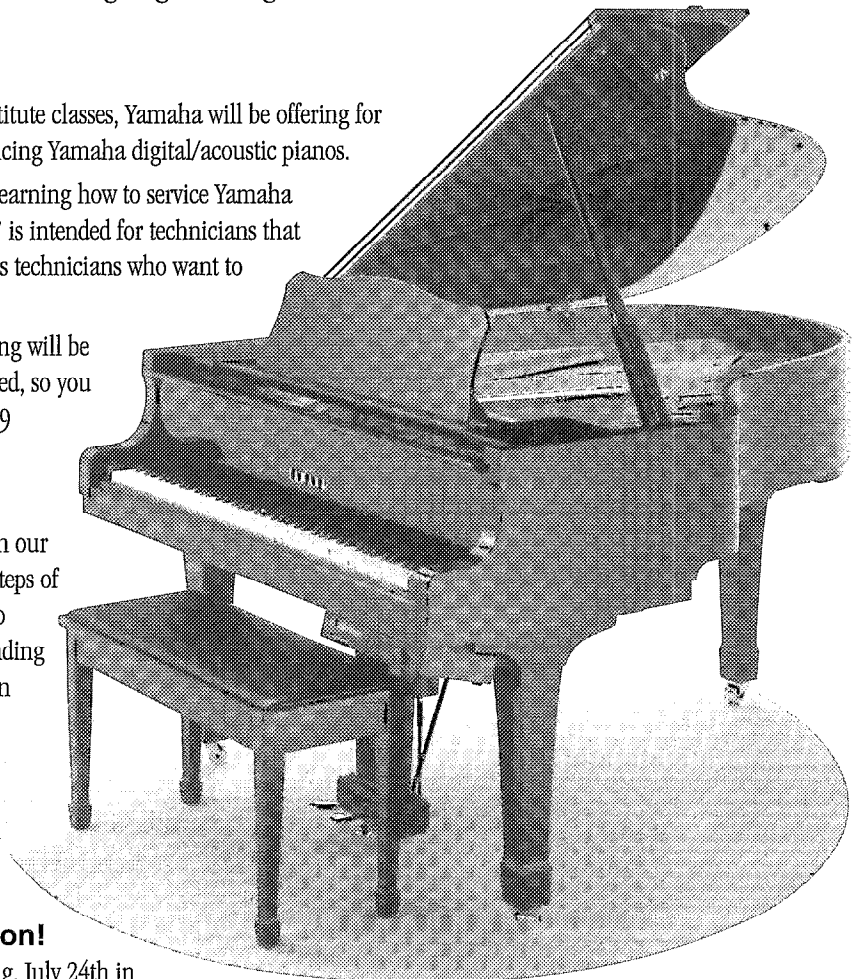
Greg, Mark, Steve, Bill, Terry and LaRoy will be in the Yamaha booth during the convention. Come by and say hello when you are in the Exhibit Hall.

A440 Big Band Plays at Yamaha Reception!

You are invited to attend our reception on Saturday evening, July 24th in the New York/Atlanta room.

The PTG A440 BIG BAND was such a success in Providence, we have decided to make it a tradition. If you are interested in participating, please let us know what instrument you play, so we can save a seat for you on the bandstand. Contact Steve Pearson at (800) 854-1569 or (714) 522-9843.

See you in Kansas City!



© 1999 Yamaha Corporation of America
Customer Support

P.O. Box 6600, Buena Park, CA 90622
Parts & Service: (800)854-1569 • Fax: (714)527-5782
www.yamaha.com