PIANO TECHNICIANS

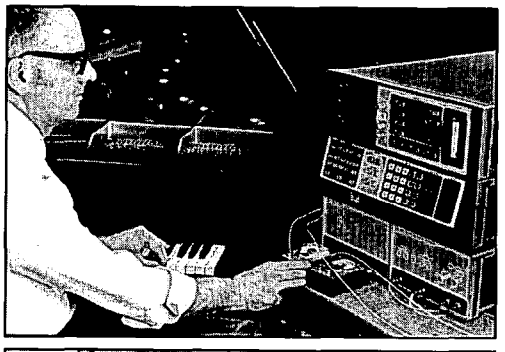
Journal

DECEMBER 1989

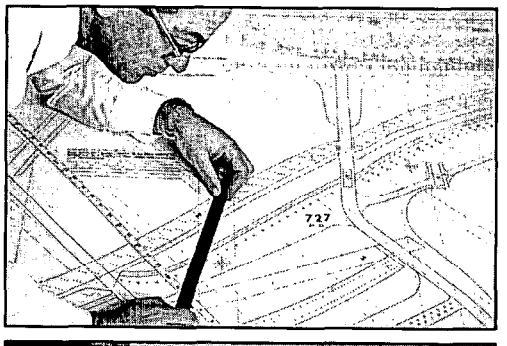
The Baldwin Piano...
You can see why it sounds better

At Baldwin we believe that perfect piano tone is an ideal shared with all those who design, build, play and service pianos. That's why continuous research in piano tone has always been one of our major commitments. And that's why our piano engineering and research department is one of the largest in the industry. And that's why you'll often find in every Baldwin piano innovations to improve piano tone introduced in our SD-10 concert grand.

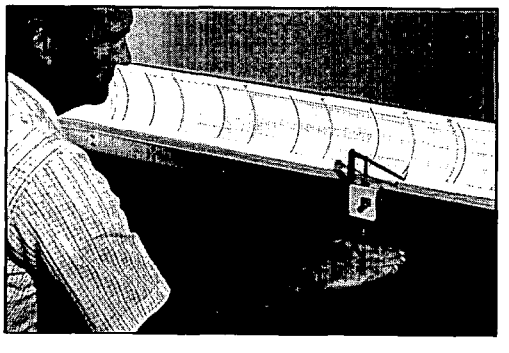
RESEARCH shows us why, as well as how, some things work better because we've taken a pioneering approach to piano improvement. We've substituted scientific testing and analysis for the unquestioning acceptance of traditional solutions. Some of the achievements that have resulted are treble termination bars (U.S. Pat. No. 3,477,331), the Acu-Just™ plate suspension system (U.S. Pat. Nos. 3,437,000 and 3,478,635), and vertically laminated bridges. Our patents are the most significant ones awarded for tonal improvements in grand piano tone in recent years.



ENGINEERING translates research into reality. To support our design innovations, we have produced our own testing and construction equipment and have expanded the use of precision tooling to insure that each Baldwin piano built will exactly match established standards of tone and performance. One example of this is a winding machine (U.S. Pat. No. 4,055,038) developed in connection with the SynchroTone™ Strings (U.S. Pat. No. 3,523,480).



MATERIAL STANDARDS insure continuing quality. For example, stringent standards for weight, dimension, taper, and hardness of hammer felt are established, and each sheet of felt is checked to be sure it meets those standards before it is accepted for production use.

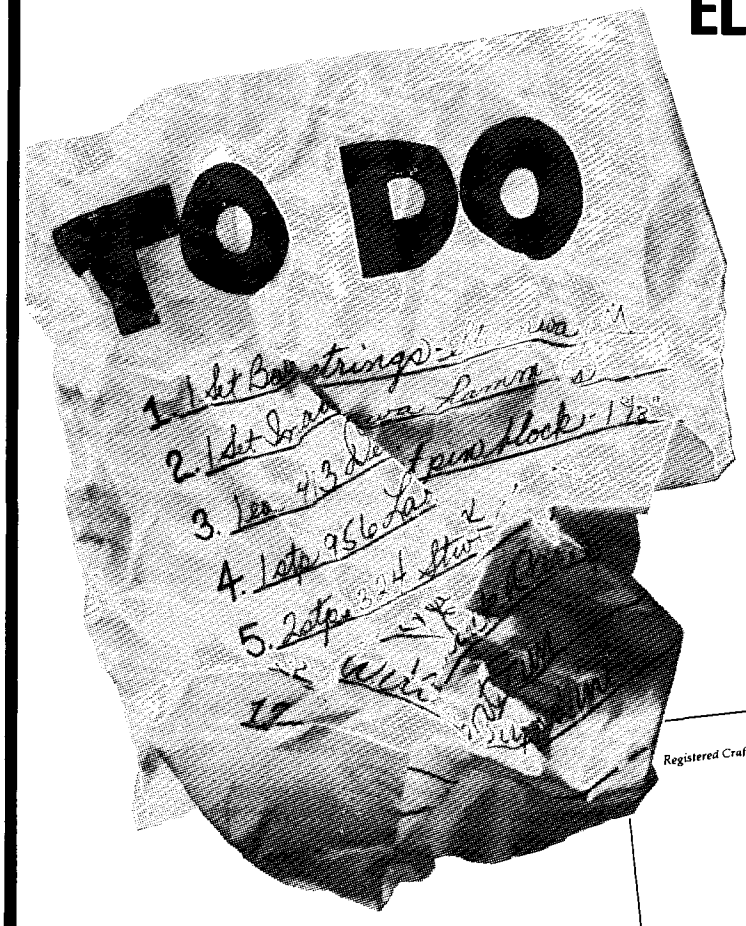


First in a series of informative ads on piano tone published by Baldwin Piano & Organ Company exclusively for the benefit of piano technicians.

Baldwin® – *Leading the way through research*

For more information contact Kent Webb, Technical Service Manager; for parts contact Linda Gann, Baldwin Piano & Organ Company, Highway 63 South, Trumann, AR 72472 — Phone: (501) 483-6116

ITEMS ORDERED: 14. PHONE CALLS MADE: 1
ELAPSED TIME: 3 min.



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Schaff Piano makes ordering supplies for your tuning and rebuilding business easy.

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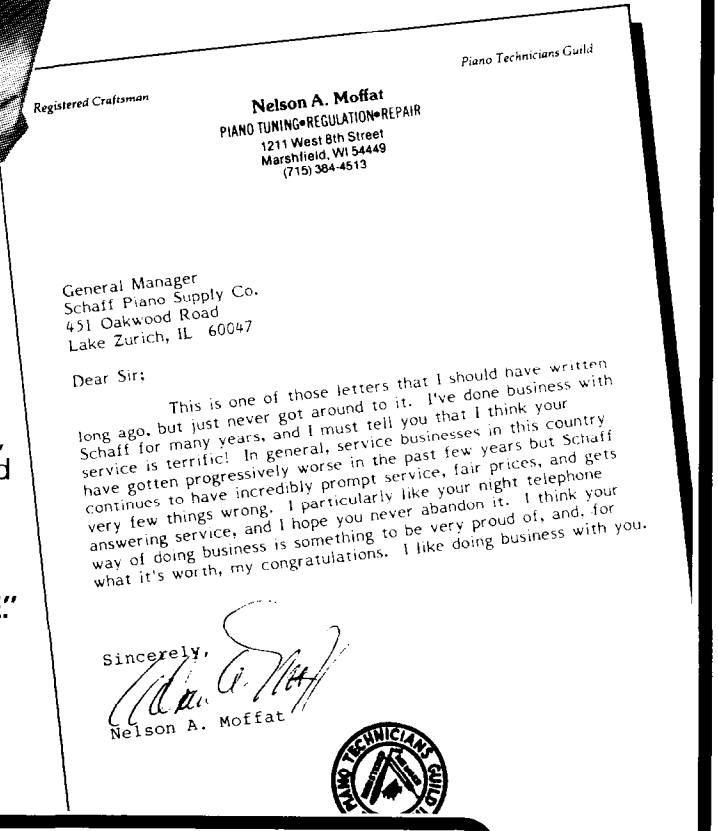

Registered Craftsman

Piano Technicians Guild

Nelson A. Moffat
PIANO TUNING•REGULATION•REPAIR
1211 West 8th Street
Marshfield, WI 54449
(715) 384-4513

General Manager
Schaff Piano Supply Co.
451 Oakwood Road
Lake Zurich, IL 60047

Dear Sir;

This is one of those letters that I should have written long ago, but just never got around to it. I've done business with Schaff for many years, and I must tell you that I think your service is terrific! In general, service businesses in this country have gotten progressively worse in the past few years but Schaff continues to have incredibly prompt service, fair prices, and gets very few things wrong. I particularly like your night telephone answering service, and I hope you never abandon it. I think your way of doing business is something to be very proud of, and, for what it's worth, my congratulations. I like doing business with you.

Sincerely,

Nelson A. Moffat

As the following unsolicited testimonial shows—Schaff not only talks a good game, but we back it up with results from satisfied customers.

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PIANO TECHNICIANS
Journal

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PRESIDENT'S MESSAGE

Seeking Answers In April

Ronald L. Berry, RTT
President

Who are the members of PTG? Do they do mostly tuning or do they do some rebuilding? Do they work alone or hire others? How many of our Associates are planning to become RTTs and how many are not technicians and will never become RTTs? How many rebuilders don't do tuning at all? These are just a few of the questions that have come up over the years; the answers to them are important to Bylaws changes that are coming up. Last year we had a proposal to make a Registered Technician category for those who don't tune but could pass the technical and written tests. We have little idea of how many people would be eligible for this category. Knowing general income ranges of our members and what percent comes from tuning, what from rebuilding, and what from sales will give us a much better picture of our member's businesses.

To find the answers to these questions we will be distributing a questionnaire to the membership. Carl Root, chairman of the Economic Affairs Committee, developed a questionnaire for the Washington Chapter. The Board was impressed with what he had done and asked him to rework it for use by the whole Guild. Data will be entered on answer sheets and thanks to the help of Danny Boone, it will be entered electrographically into a computer at Baylor University. This will give us all the information on a computer data base which will allow us to analyze it from many different angles.

To get responses to this questionnaire we are taking a different approach. Rather than mailing them to the members, we are asking each chapter to set aside part of its April meeting to have everyone answer the questionnaire at once. Then they are to be sent back as a group for processing. This will insure that people take the time to answer them. People should have their income figures ready for tax preparation so the information needed to answer the questions about income will still be fresh in mind. Of course, all information will be kept confidential. April also gives enough lead time to help chapters plan the meeting time to do these questionnaires. It is vital that every chapter participates in this questionnaire and encourages its members to attend to answer it.

Without real information we are only guessing at how changes in the Guild will affect the members. We know that the piano manufacturers and dealers have seen a downturn in business, but we have little idea whether or not technicians have been affected. It appears to me that the rebuilding business has changed. In the past rebuilding was mostly done by technicians who mainly did tuning and rebuilt a few pianos a year in their "spare" time. Has piano rebuilding become something that is not economically feasible any more for the technician who just rebuilds one or two pianos a year? We hope the answers to this questionnaire will let us know.

There will be more information coming about this questionnaire as April approaches, but I wanted to make everyone aware of it so you can save time at your April meeting. Watch for further information from the Home Office.

Have a happy holiday season and try not to get too burned out during the holiday tuning crunch.

Young Chang has given service a good name: Alan Vincent.

If you have any questions about Young Chang pianos, feel free to call Alan Vincent, our Director of Technical Services. He's been around the industry for years working in the technical service departments of other major manufacturers before joining our family. And, because he personally oversees the servicing of all Young Chang artist instruments, he knows what you face in your daily rounds.

Service is, of course, Alan's top priority. He manages a fully staffed service department which means you'll get an answer to your question when you need it; not when it's convenient for a part-time consultant to return your call. He knows from experience that parts on demand are essential for a technician to keep a reasonable schedule, so he demands increased efficiency at our two warehouses. In fact, having been through a few emergencies himself, he's adopted a policy of overnight part shipments for those repairs that can't wait for regular delivery.

To get your free copy of Young Chang's full service guide, write to Alan at Young Chang America, 13336 Alondra Blvd., Cerritos, CA 90701. Or call him at (213) 926-3200. And find out for yourself why we're so pleased to have Alan represent us.

YOUNG CHANG

The best the world has to offer.™

From The Home Office

Happy Holidays

Larry Goldsmith
Executive Director

For most of us, the holidays are times of warmth and good cheer. We feel closer to our families, our friends and our respective deities. Between Thanksgiving and New Year's, we have an opportunity to reflect on the good things in our lives. We are somehow more pure, more forgiving of our fellows' transgressions, more likely to achieve inner peace.

Unless, of course, we get caught up in tramping through shopping malls. Or get stuck in the snow. And then there's the need to squeeze in one more customer who forgot to make an appointment until the last minute.

It's a modern-day update of O. Henry's classic short story, "The Gift of the Magi." Remember? It's about a young couple who each sold their most valuable possession to buy the perfect gift for the other. Having done so, however, each rendered the other's gift useless. Today, the stress of shopping for the perfect gift can be so great that we rob ourselves of the joy of giving. We spend so much time getting everything done so we can spend time with our loved ones that we're not able to relax and enjoy them when we have the chance.

The key to enjoying the holidays, as with anything else, is to remember why we're doing what we do. Quiet moments of reflection are tough to find this time of year, but we have to make them. If we remember why we love someone, then the time and inconvenience of shopping for a gift becomes part of the gift. A very small part.

So it is with the rest of our lives. In the course of doing business, of making a living, there are conflicts — personality differences, competition, slights real and imagined, words spoken in haste that may have left lasting scars. And yet, the people in our professions, the people with whom we do business, make up a family of sorts.

As we make our way through the holidays, perhaps we can find it in our hearts to view those with whom we come in contact more clearly, to remember the good times and leave behind the bad. In a season of peace and understanding, what better time can we find to appreciate each other? And perhaps that peace and understanding will continue throughout the new year.

To each of you, dear readers, from all of us in the Home Office, go our heartfelt wishes for a most joyous holiday season and a happy and exceedingly prosperous new year.

Industry News

Custom Dolly Introduced

A custom-built piano dolly designed to match the appearance of fine grand pianos has been introduced by Frank Reynolds of Milwaukie, OR.

The "Touch of Class" dolly is manufactured from 2 1/2" by 3" tubular steel curved to resemble the curve of the piano. Welds are hand-ground, and the dolly is sandblasted and given three coats of black satin epoxy finish. Each of the three removable sets of casters consists of three 4" by 1 1/2" semi-hard rubber wheels, giving a total of nine wheels in contact with the floor.

According to Reynolds, who operates a cabinet and metal fabrication shop, the dolly's design came about through his work as chairman of his church building committee.

"I have always noticed that the grand piano dolly was purely functional, and had been given no consideration for style or beauty to match the grand piano. Here sits perhaps a $40,000 to $50,000 instrument resting on a set of flat steel plates fastened together at the center of the piano with nuts, washers and bolts, and probably costing $300-$400," Reynolds said. He noted that the average estimated price of the dollies was $1,900 at Portland.

The company provides detailed instructions for measuring and ordering dollies. For more information, call (503) 656-3025, or write to 7848 S.E. Cypress Road, Milwaukie, OR 97267.

Economic Affairs

Appraisals And Purchase Consultation

Carl Root
Economic Affairs Committee

Who's Qualified?

Not long after the proposed PTG rebuilding contract appeared in the June 1989 *Journal*, I received a letter from Ken Eschete, RTT; Algiers, LA, that deserves publication.

Dear Mr. Root,

Concerning the rebuilding contract, I think it would be wise to avoid the subject of appraisals. An obvious conflict of interest exists, since it would be to the best interest of the restorer to show a lower value before restoration, and an increased value after restoration. This would be pointed out in any attempt to enforce a contract.

Appraisals that might wind up in legal proceedings are best left to professional members of a recognized professional society of appraisers.

I wish you luck with your project. May I suggest that you obtain a copy of the Code of Ethics from the American Institute for the Conservation of Historic and Artistic Works; 3545 Williamsburg Lane; Washington, D.C. 20008. Phone (202) 364-1036. The guidelines which have been worked out for the restoration of valuable works of art, work very nicely for the restoration of pianos. There is no higher standard!

Ken Eschete, RTT

Ken's letterhead lists harpsichord, pianoforte, clavichord and tuning/restoration, so it is reasonable that he should question the assumption of increased value as a result of restoration. The replacement of worn parts in an antique instrument, while it may improve performance, reduces its integrity as an existing example of a rare instrument. At the Smithsonian here in Washington, D.C., there have been debates between conservators who would preserve an instrument's integrity and technicians who would maximize its performance capabilities. Overstrung pianos with cast iron plates and modern actions are usually, but not always, safe bets for rebuilding and a promise of increased value. If you're not sure if an instrument has antique value, consult experts both inside and outside the piano service field before considering rebuilding as opposed to restoration.

I agree that there might be a conflict of interest when a technician provides his own figures to indicate an increase in value after rebuilding (or restoration). However, there might also be a conflict of interest if a competitor is called in by either party to provide independent figures. I would be more concerned about this dilemma if I had heard of even one case where the figures provided on a contract were the source of conflict in a court case. I have included space for these numbers in the proposed contract because I do know of cases where the value of a piano was omitted, and when a fire destroyed the instrument or the rebuilding work was unsatisfactory, there was no previous agreement which would establish its value.

Are the members of a recognized professional society of appraisers the most qualified to place a value on pianos? I suggest that their usefulness is limited to antiques and the unusual instrument, where rarity is a more important determination of value than musical performance. Most pianos being considered for rebuilding are not yet rare instruments. Steve Brady, RTT, covers the variables that may be considered when placing a value on an instrument in the November 1988 *Journal*. He also has a nice computer program, which will assist the user in evaluating instruments for various appraisal requirements.

Unfortunately, many technicians are not qualified to appraise pianos either. They are, of course, the only individuals who have the potential to be experts because a technical background is necessary to evaluate not only the musical potential, but the life expectancy of an instrument, since wear and design are at least as important as age. The problem is that many technicians don't know the piano market. Trying to remember sticker prices in a store and ads in the newspaper still doesn't tell you the actual selling price. I keep records of price and date of purchase whenever that information is available. I also occasionally ask an owner if they would mind if I asked what they paid for their piano. It's not always appropriate, nor is it totally reliable, but how else will you accumulate sufficient data?

If you would like to test your expertise, and are curious about how your colleagues approach the subject, I recommend the following PTG chapter technical program: Select six different types of pianos at a local store, shop, church, school, etc. They can be new, old, trade-ins, pianos ready for rebuilding, whatever. Divide the chapter into six groups and take 20-30 minutes to evaluate and appraise the pianos assigned. Each group should decide what work is to be done, give a value for the piano before and after the work is completed, then report back to the chapter for discussion. The lack of agreement on value and the biases that technicians bring into the discussion concerning new, used, and rebuilt instruments may surprise you.

Tuners On The Take?

Many of you are aware of an offensive headline that accompanied a letter to the editor in the *The Music Trades*, July 1989. It read "Are Tuners On the Take?" and gave an example of a piano teacher who demanded a 20 percent commission from a store for sales referrals. So far, no one has discussed this in the pages of the *Journal*, but since some of

the points I have made in response to Ken's letter are germane to this topic, I will take this opportunity to make a few observations.

Technicians who use commissions as a form of extortion are probably so few in number as to be statistically irrelevant. Some of us accept modest commissions as compensation for time and expertise since few buyers are willing to pay us unless we have tools in our hands. Our primary concern should be service to the consumer. As a former technician/dealer, I must say that I saw no correlation between acceptance of a commission, from me or anyone else, and lack of interest in serving the customer's needs. I saw lots of bias, but no more than from those who refused commissions. Does the consumer get the best piano value when assisted by a technician? Not always, but they are rarely a party to a rip-off. Technicians are likely to recommend a good piano if for no other reason than to have a serviceable piano to add to their clientele.

Technicians, teachers, salesmen, and friends and neighbors have information, skills, and perspectives which are each useful to the piano-buying public. It is difficult to find one source of information that has the knowledge and objectivity sufficient to render the other sources of help superfluous. Piano consumers have a strange habit of directing the wrong questions to the wrong "experts."

Piano buyers place varying importance on performance characteristics, durability, appearance, image, price, and resale value. All too often, the technician focuses on the first two, while the consumer focuses on the last four.

Technicians know the most, and are asked the least. Parents will often find a teacher first, buy a piano and then look for a technician (three years later?).

Dealers don't seem to realize how useful technicians could be as allies not only in assisting first-time buyers, but in persuading current piano owners to upgrade to a better instrument. Disinterested technicians should concern dealers more than mercenary ones. Independent technicians who refer sales should be encouraged to do the follow-up service, and they should not be asked to work at a discount. They are selling their time, not stock off the shelf. If technicians were treated better and were given the necessary information and training, rather than seen as a source of unwelcome interference, the level of animosity that currently exists might soon dissipate, even as sales increase and pianos are added to the technician's clientele. ≡

THE TECHNICAL FORUM

One For The Road

Susan Graham
Technical Editor

Carl Root's cover photo and article last month showed what may be the ultimate tool case. Carrying tools and supplies is a subject of great interest to technicians: we find ourselves needing a variety of cases, chosen from among many possibilities. These may include toolcases made especially for piano technicians, converted doctors' bags, clarinet cases, and so forth. Ranking high on my list of favorite tool containers is a 1986 Toyota Corolla hatchback.

Well, yes, actually, it *is* cleverly disguised as an automobile, making it conveniently multi-functional. As a container, it holds an extraordinary amount of useful things, but requires the same care in packing and maintenance as smaller cases. Setting it up efficiently has proved so vital to my business that I really do regard it as a very large toolbox—with wheels and a motor.

The purchase of an import was not a slight to our domestic auto industry, incidentally. At the time, it was simply the best choice with the necessary features: back seats which fold completely flat to form a deck large enough for a concert grand action (minimum length 54"), and a rear hatch opening cut very low so little lifting is required to get things in and out.

Most of us spend the bulk of our time making service calls. When extensive work (more than a tuning) is needed, we have to determine what we can do in the home and what needs to go into the shop. One caution is that some homes simply are not appropriate as workplaces: extensive use of white as a decorating color; tiny, priceless and eminently breakable artwork surrounding the piano; or the excessively nosy or nervous customer do not make for a productive work situation. And, clearly, major or long-term projects need to come into the shop.

Other times it can be desirable or necessary to work on site. Those who offer specialized service may find that demand enlarges their normal traveling radius so it becomes more convenient to get work done on the spot. Those without extensive shop space may prefer working in the customer's living room to working in their own, particularly if the job can be completed in a day or less. Many procedures, such as regulation, need to be done in the piano. Even a "simple" repair can be done more efficiently, professionally and with better results if time has been spent preparing to work in the field.

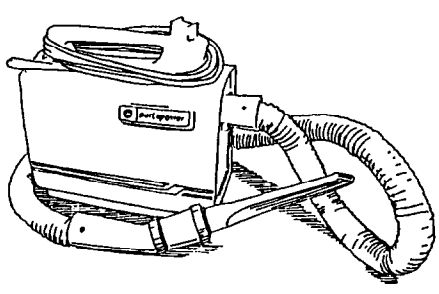
Even though we need to be prepared to work in homes, we don't want to have to drive large trucks. Gas prices and parking being what they are, the benefits of a small, efficient vehicle are obvious. This requires planning and refining what "goes with"; it becomes a challenge and even an art. Here are a few of my suggestions on the matter.

A good work surface is fundamental. To my mind, any part of the customer's furniture is not suitable. It is hazardous to their belongings, inconvenient and usually unsuitable (this, to me, includes the top of a grand piano—too high to work comfortably).

I carry a table. It unfolds to 60" x 30", large enough to hold an action and a few tools. Constructed of aluminum and fiberboard, it is lightweight enough to carry, but sturdy enough for our purposes. One source for these tables are the catalog stores which sell a large variety of merchandise either by mail order or from a showroom. They are often billed as "party tables." While it is possible to use a card table or a workmate, neither is really large enough, particularly for a vertical action which needs support under the end brackets.

After a few years of listening to the table rattle around in the back of my car, I decided it needed a cover. Starting with a large, flat piece of fleece-lined canvas, I simply folded it around the table and marked locations to attach velcro and then added canvas straps which go all the way around the table and form carrying handles. This cover doubles as a drop cloth, since it has no hardware which could damage floors. I unwrap the table, spread out the cover, and set up the table on it so it can catch the debris generated by action work.

Speaking of debris, how many times a week are we asked about dust in a piano? Carrying a small, powerful vacuum with a hose which can be used for suction or reversed to create a blower is extremely useful and a sure way to add that extra touch of service which makes a customer yours forever. I use a brush and a rag on a soundboard steel (or one of Bill Spurlock's soundboard squeegees) and then vacuum first to pick up loose dirt. Then switch the hose around and blow out the remainder—after cautioning the customer that this is going to generate a cloud of dust. If a spare hose is carried, it can be left in the "suction" mode and used to draw some of the flying debris into the machine as the other hose is blowing it free (power is diminished but still effective). It is also helpful to place a slightly dampened moving pad or old sheet at the far end of a grand piano (keep it off the bass strings)



and blow dust under that.

Dust in the piano I consider to be "their" debris: removing it is a service. On the other hand, anything generated in my work, such as hammer filings, is definitely my responsibility and I must deal with it. As consumers, we all find it extremely annoying to clean up after the plumber, the carpet layer or whomever. Although we may be home while they are at work, this does not mean that we have time to cater to them, providing buckets, rags, spare screwdrivers or extensive use of the phone. As nonessential service people, be especially aware of the inconvenience factor, and control it. Be prepared to clean up after yourself and do it.

So far I have a place to work and a means of containing any mess. Good light is also essential. A basic clamp light will serve: if the rubber coating on the clamp is in good condition, it can be attached to a lid or lid prop without finish damage but do be careful. There are small halogen worklights available: one source is Sunnlights, which advertises in our *Journal*.

Being a basically lazy person, I'm a great admirer of the wheel. I keep a folding luggage carrier in the car. When I arrive at a job, I go in the house, make the preliminary removal of case parts and clear a work area. Then I go back out and load the table, the worklight and the vacuum cleaner onto the luggage carrier and wheel them sedately into the house. It saves time and effort, and relieves the customer of any notion that they need to help me. I set up the table as close as possible to the piano, fasten the light, find the electrical outlet, and stow the vacuum and my toolcase under the table. I'm ready to work. (fig. 1)

To work efficiently, we carry a quantity of tools and supplies. It adds up to far too much to fit in one case, and it's a waste of effort to carry it all into the house when it isn't needed. I keep these things broken down into fairly small containers. The Genck case from Schaff is my basic tuning kit. This travels in the front seat with me, and is never left in the car. In the back, I carry a larger Datamaster case which holds overflow piano-specific tools: hammer iron, teflon kit, repinning kit, and so forth. A large plastic tackle box holds the "hardware" tools: glue gun, heat gun, cordless drill and bits, hacksaw, wood scrap, screws, bolts, etc. There's another plastic box for music wire (more about wire in a minute) and a small case which holds the socket set, the rust lube, the soundboard steel and a large wire brush (sort of a "first time tuning" kit).

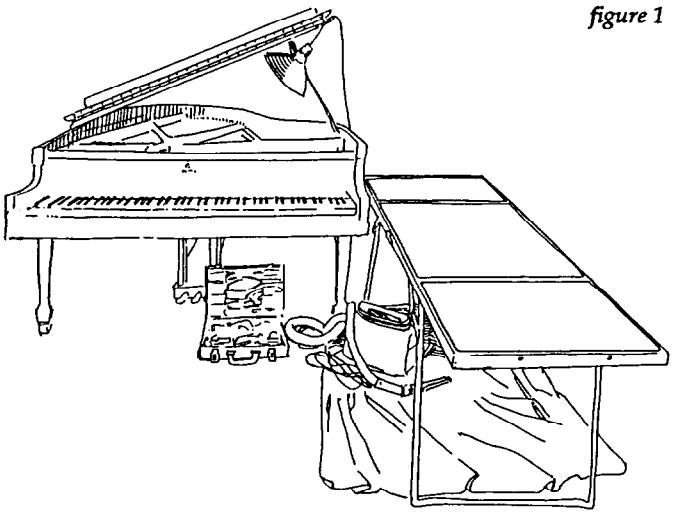


figure 1

An important consideration is a safe and protective method for transporting various glues and chemicals. Many adhesives are climate-sensitive: Titebond breaks down after only a few freeze-thaw cycles; epoxy and CA adhesives deteriorate under heat. It clearly is undesirable to expose flammable liquids such as acetone to heat, creating a car full of hazardous fumes. I store all these materials in a picnic cooler: the 2.5 gallon size is large enough for my purposes. For efficiency, I also store the squeeze bottle and syringe applicators in the cooler, along with a spare rag or two.

When it gets down to actual piano parts, I utilize several systems. One is the basic heavy-duty ziploc bag; I keep a small bag of assorted leather, felt and bushing cloth pieces in the basic tuning kit, and a larger bag of the same in the Datamaster (the duplication is simply because I do tend to use up materials and forget to replenish them from the shop). Large hardware stores and electronics products stores carry various sizes of ziplocs — very small ones are useful for a few punchings, shoepegs, rubber buttons, etc., in the basic kit. I also use ziplocs to kit-up materials for specific jobs. For instance, large wood screws for lyre and cheekblock fastening, t-nuts and their suitable machine bolts and tubing and thick leather for pedal repair are packed together since if one is needed, the others usually are as well.

Music wire, both German and domestic, is in a plastic tool box. I must confess that the German is still in one-pound coils. This is inefficient: I ought to cut off lengths of each size, label and coil them and carry them in a heavy padded mailing envelope (some day I'll get to it). On the other hand, the domestic wire is nicely contained on a spool such as is available from several of our suppliers (the one pictured in figure 2 is from Pacific). It is simply a plate of metal with l-hooks protruding from either side. Whole sizes 13-17 are coiled on one side, and half sizes on the other. The spool is available either loaded with wire or empty. I pass along the advice I received when contemplating the purchase: get the loaded one. Coiling on all that wire is more time consuming than one might suspect.

I have found this spool to be a very efficient and satisfactory way to carry wire. It should be kept in a moisture resistant container; a plastic tool box, or as Doug Wood in Seattle suggests, a storage canister sold for scuba equipment.

Action parts are kept in another style of plastic box. Instead of a central

figure 2

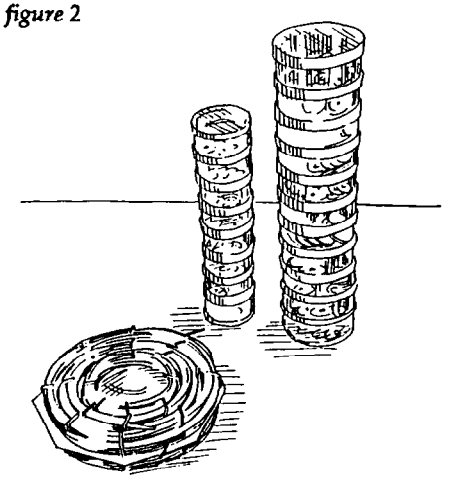
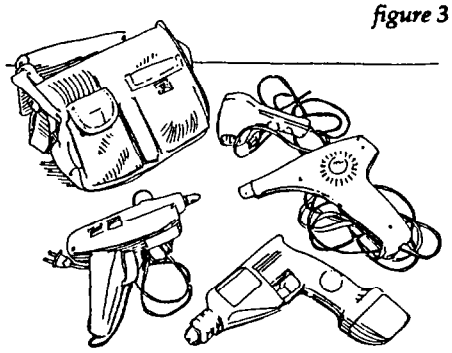


figure 3



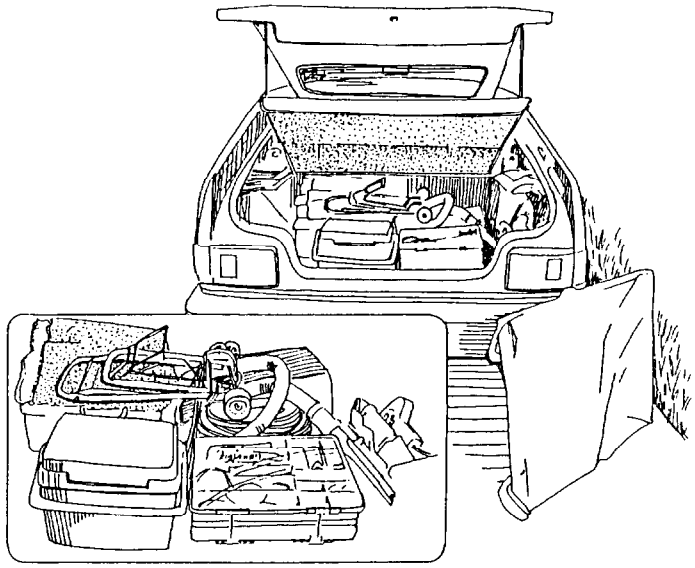
hinge, it has clear plastic "lids" which open on either side: in effect, two compartmentalized boxes glued together on the bottom. The compartments are quite deep, but the entire contents of the box can be seen without opening it. These are a sporting goods item, made in a variety of sizes as fishing tackle boxes (Plano is the brand on mine).

While you're in the fishing tackle department, look for stack-packs. These are shallow, clear plastic "jars" which screw together into columns (also shown in figure 2). They are threaded top and bottom: the bottom of one becomes the lid of the next. I do a lot of regulation, which requires a good supply of paper punchings. In the stackpacks they can be transported in a lightweight and compact form. The only caution is to be sure not to unscrew the jars upside down... They do tend to unscrew in the car from vibration, but in general I have less trouble with it than the plastic compartment boxes, and I find the round jars easier to reach into than those darn little squares which are always either too little to get a finger and a thumb in, or else so big the box as a unit takes up entirely too much room.

These cases, boxes, kits and containers are great in the car, but I still don't want to carry anything into the house I don't need, and I don't want to have to go back and forth a million times, either. You know how it goes — you carry your basic kit into the house. Then you come back out for the methanol, the squeeze bottle, the hairdryer, maybe the socket set or the glue gun. The next thing you know, you're in the house with handfuls of stuff which came in piece by piece. Now it's too much to carry back out in one trip (and you're probably late for your next job and in a hurry). For female technicians, the solution is simple: cram everything in your purse. However, this is hard on one's fashion accessories, and a little disconcerting at the lunch counter when you pull out a heat gun and a ratchet looking for change for the tip.

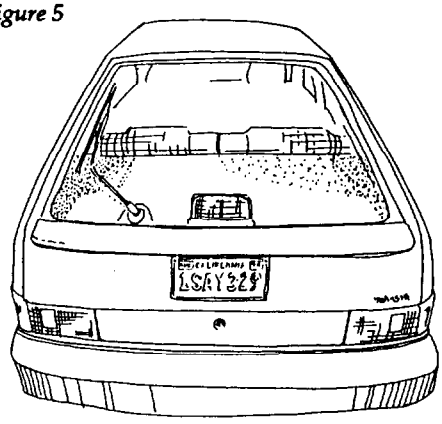
The solution is the "tool purse." I stopped in at the surplus outlet and picked up a few small canvas bags (fig. 3). These are ad hoc tool kits: I carry them empty, and load up the miscellaneous items out of each case as needed for particular calls. They're unbelievably handy, not only to carry things in and out of houses, but simply to corral some of the clutter which seem to accumulate in even the best-kept vehicle. When the end of the week comes and you want to be a social being, you can sweep everything into a few of these neat little canvas bags (and deal with sorting and storing it properly later).

figure 4



A final item worth specific mention is a large moving pad. This serves as an auxiliary drop cloth, but is mainly used to wrap actions for transporting. I never used to bother with this, but the shop help objected to the cavalier way I was throwing their good work into the back of the car, letting freshly-re-

figure 5



built actions fend for themselves amid the toolcases.

What really convinced to mend my ways, however, was the experience of nearly having a set of Baldwin concert grand keys stolen. Since it was just a keybushing job, I'd removed the stack and left it in the piano and had just the keys on the frame. Apparently, it was mistaken for some form of keyboard synthesizer by a couple of passing troublemakers. Had it not been for an alert storekeeper, this could have been a very expensive mistake. So, cover those actions, folks — *we* know that a piano action is useless without a piano, but not everyone does.

All this goes in the back of a Toyota Corolla. Everything folds up and fits in (fig. 4), the table goes on top of it all, and the cargo cover drops into place as the hatch is closed (fig. 5). Nothing screams *"Tools in here!"* It's tightly stored and doesn't rattle, yet as soon as I lift the table out of the way, everything is easy to see and get at. I like to be set up to work in the field if necessary or if I so choose. It's efficient (time=money) and tells my customers I'm serious about what I'm doing. Time spent organizing the car and the tools you carry is time well spent.

More on the Foredom:

The reversible-motor Foredom mentioned in the October issue is available through Pianotek, as well as McCall. It is exclusively carried by those suppliers, since Foredom does not want it falling into the hands of woodworkers who might try to use it with conventional bits (it is designed to be used in conjunction with the mini-beltsander for hammer shaping). My thanks to Pianotek for this clarification.

TUNING UP

Is This Temperament Equal Or Not?

Rick Baldassin
Tuning Editor

Our first letter this month comes from Kent Swafford, RTT, of Lenexa, Kansas. Kent writes:

Thank you for publishing and responding to my letter in the October 1989 Journal. *A typographical error rendered one sentence quite meaningless. I wrote: "His using the term "equal temperament" in this way seems to suggest that equal temperament is only theoretical, and that we use something other than equal temperament when we really tune pianos."*

Your response indicates that I did not express myself very clearly. From the point of view of musicians, the inharmonically-stretched tuning which we use on pianos satisfies the main requirement that musicians have of equal temperament, which is the ability to freely transpose music from key to key without changing the character of the music. And this ability to freely transpose music extends to all ranges of the piano. We will surely confuse our customers when we say our piano tunings are not equal and don't say what they are. The solution is to use the term equal temperament, but qualify it to specify what we are talking about, for example, the "mathematical model of equal temperament" versus the "inharmonically-mangled equal temperament of the piano."

My statement that chromatically ascending tempered intervals progress smoothly was not made in ignorance of what has been published of late in the *Journal*, but the statement was made as a result of what you have published. The question was not whether fourths, for example, might be contracted instead of expanded at some point in the piano; the question was how they came to be that way. My reading of the published charts is that across an entire piano scale, fourths do not, excepting for the fits and starts caused by inconsistency in inharmonicity, suddenly jump from expanded to contracted, but rather move from expanded to contracted in increments small enough to be described as a smooth progression. I intended for "smooth progression of beat rates to mean only that beat rates will change speed gradually, not that they would necessarily increase in speed. I am sorry for the imprecision of the language I used. It is the preservation of smoothly changing beat rates of successive tempered intervals in spite of inharmonicity that preserves in our piano tunings the between the mathematical model of equal temperament and the inharmonically-stretched equal temperament of the piano. Our aim in tuning pianos as I understand it, is to create the smoothest changing beat rates possible among all of the tempered intervals even at the expense of the smoothness of the beat rates in the succession of any one tempered interval. The underlying basis for this aim is surely the mathematical model of equal temperament. We only differ on whether our piano tunings deviate so much from the model that they must be considered something completely different.

I made no suggestion that close-to-mathematically-perfect equal temperaments aren't used on real instruments. However, since you bring it up, I do indeed question the musicality of such "perfection," given the lengths to which musicians go to mask such tunings with artificial vibrato, phasing effects, reverberation, deliberate pitch modulations, and outright de- tunings.

Why should it come as a surprise when two different applications of one mathematical model yield somewhat differing results? The question of how to explain to our customers the difficulty of tuning two instruments together should not even involve the term equal temperament. One of the first things I can remember learning about piano tuning was at the age of seven, when my piano teacher explained to me that pianos must be tuned "flat in the bass and sharp in the treble to sound right." My experience is that musicians accept this "fact," even if they do not correctly understand it. I say to my customers, 'Pianos are difficult to tune with other instruments, because in tuning a piano and trying to make it sound in tune with itself, each piano must have its own individual tuning. When this "custom" tuning is played with another instrument, including other pianos, the treble notes may sound sharper and the bass notes more flat than on the other instrument, but tampering with these flat and sharp notes would be tampering with something that is an inherent part of what makes the piano sound so beautiful. I have also been known to tell a customer that if he really wants a synthesizer to be in tune with his piano he should buy one of the modern synthesizers which can be "custom tuned," like the Yamaha DX7II. I then tell him that I will be available to help him set up a tuning table for his new synthesizer that will be available at the touch of a button and that will match his piano nearly perfectly, as long as he engages me at regular intervals to keep his piano in tune!

Our thanks to Kent for his letter. I appreciate so much the letters and responses which I get from *Journal* readers. It takes time, effort, and a certain amount of courage to air your thoughts in print. I know that prior to assuming this position, I never once wrote a letter to the editor. I guess I felt intimidated. I know it seems at times that readers are expressing their disagreement with the opinionated views of the editor. Other times, the editor seems in unbelief of the views of his readers. A lot of argument back and forth. What purpose does it serve? It causes us to think. We must

weigh the arguments back and forth, for and against, and ultimately make our own decision based on the facts, not who put them forth. Sometimes, the editor agrees with the letter, but postures himself in such a way as to take another view, if just to expose another angle. Questions like, "Do small pianos or big pianos need more stretch?" or "Is this temperament really equal, or not?" often do not lend themselves to a simple yes or no answer. What is important is that we understand the concepts well enough that we can talk about them intelligently. In a funny sort of way, the verbal "joust" serves this purpose.

So is the temperament we tune on the piano every day equal or not? Yes... well, no. I agree that we could be in big trouble if we started telling our customers we no longer tune in equal temperament. This would be very bad. Let's just leave the customer out of this. So what of our conversations amongst ourselves?

I think it is important for us to understand that because of inharmonicity in the piano, it is impossible for us to tune a temperament which matches equal temperament. This became obvious with the advent of the strobe tuner. Pianos, so I understand, (I can't say for sure because I wasn't alive at the time) were tuned to the strobes in equal temperament. The problem was that pianos tuned this way did not sound good. Some people mistakenly assumed because of this that pianos could not be tuned satisfactorily with electronic devices. Although there were some inherent problems with the accuracy of the instruments, the problems were more in the methods of application. It took the strobe to bring to light that aural tuners stretched the octaves to make them sound right. So for years we have known that our tunings deviate from equal temperament. But, as Kent says, so much that they must be considered something completely different? Yes, well, no.

I remember teaching a class some time ago where I posed the question, "Knowing now that we cannot tune the piano in equal temperament, what do we do?" Francis Mehaffey responded, "We try." This got a big laugh from the crowd. But his answer was profound. When we tune the piano, we try to recreate as many of the characteristics of equal temperament as we can. We try. The most notable of these characteristics is the smoothly increasing speed of the ascending parallel Major 3rds, 6ths, 10ths, and 17ths. From the charts which have been published, we know this is possible, at least through the middle of the piano where we can hear it. This characteristic is the one which distinguishes equal temperament from all others. What other characteristics should we look for?

Last May, I was teaching at the New England/Eastern Canada Regional Seminar, where I stated that there were four principle characteristics of equal temperament which we try to emulate when we tune the piano: 1. Smooth increasing speed of parallel Major Intervals, 2. The beat rates of contiguous Major 3rds should be in the ratio of 4:5 (or 5:4), 3... um..., and 4. Intervals of like kind should have the same cent width. I couldn't remember the third one! It reminded me of a story which I related to the class. When I was in college, I took an Industrial Education class. Industrial Education is what you call Wood Shop when you get to college. Our first project was to build a small case to house wood samples for the purpose of identification. The samples ranged from the most common to exotic woods. One day we came to class and found the samples neatly arranged on a table. The instructor was going to tell us the name of each sample, which was very important information for our next test. While the class stood in awe, the instructor went from sample to sample and recited its name from memory. My father was a craftsman carpenter, and I was more familiar with most types of wood than the average bear. It was quite to my amusement that this day I was introduced to a wood which I had never before seen, or at least heard of. The instructor went down the row, citing: "Number one is American Walnut, number two is Brazilian Rosewood, number three is Damfino, number four is African Mahogany, number five is Sugar Pine.... After a few seconds, I became very puzzled. I had never heard of "Damfino" before. Of course, neither had he. He, like me, had forgotten number 3.

The reason I could not remember number 3, was because it was a characteristic of equal temperament which we cannot emulate when we tune the piano — the fundamental frequencies progressing in the ratio of the twelfth root of two to one. Of the other two characteristics, much has been stated on the value of contiguous interval checks in the temperament, particularly the 4:5 ratio test for Major 3rds. In the middle of the piano, this ratio holds very well, even though the actual beat rates will probably be slower than in equal temperament.

The fourth characteristic was that like intervals had the same cent width. In equal temperament, all of the M3rds are +13.7 cents, all of the 5ths are -2.0 cents, all of the 4ths are +2.0 cents, and so on. On the piano, this is impossible, but it is possible to have the M3rds at or nearly the same width within the temperament. They may all be 13.0 cents wide instead of 13.7, but if this is the case, the 4:5 ratio will still hold true, and the progression of parallel M3rds will be beautiful.

So the object is to emulate as many of the characteristics as possible. Even if we emulate these characteristics beautifully in the middle of the piano, it is impossible to translate these to the extremes. Our salvation is the fact that while certain intervals are going wild on the "wrong side," we simply cannot hear them. Here again, our goal is to make the piano sound as much like equal temperament as we can. Equal temperament does not have noisy sounding octaves, twelfths, or double octaves. In addition, there continues to be a nice vibrato in the M17ths. In most cases, all of these characteristics can be achieved on the piano. On the poorer scales, we achieve as many as we can.

What have we learned from all of this? Hopefully, that we cannot use the beat rate charts for equal temperament in tuning the piano aurally, and that we cannot tune pianos with electronic devices and no stretch. Our aim is to make the piano sound like it is tuned in equal temperament as much as possible.

What should we call this temperament? I like "Equal Temperament on the modern piano," or "Equal Temperament" for short. I think as long as we know what we are talking about in context, we will be just fine.

Our next letter comes from Ken Burton, of Calgary, Alberta. Ken writes:

Thank you immensely for the carefully thought-out, carefully tested responses to letters in the Tuning Forum. I also appre-

ciated being in your workshop in Portland.

I am a Twentieth Century Rip Van Winkle. I joined the Guild in 1968 at the Calgary Convention and enjoyed the Journal *for several years. Because I was a part-time tuner, I let my membership lapse. A year ago, I began servicing full-time, and have resumed attending conventions, reading the* Journal, *and rejoined the Guild.*

But now I am hearing terms I have never heard before: 4:2 octave, 6:3 octave, etc. I realize that I have slept through the quartz-controlled tuning aid revolution. The tuning aids have brought many new insights because of their capacity to measure pitch so accurately. I thank you for your work of exploring these insights and making them accessible to us "aural tuners."

Could you please tell me where copies of the "On Pitch" series of articles can be found? I have noted your references to them, but have been unable to find them.

I have another question which is troubling me. It is possible that this is an issue which has been thoroughly explored and communicated, and I have slept through this one, as well. If this is so, please forgive me and tell me where I can find the answers. The issue is "pounding" or the tuning blow. I have always felt that if my hammer technique is good, heavy pounding is unnecessary. But, lately, I have run into a couple of good tuners who advocate unmerciful pounding. One showed me with his Sight-O-Tuner that after I had set a string on an older grand, he could knock it down.

If this issue has not been explored, the modern tuning devices should be helpful in measuring what happens in some string segments with heavy pounding.

I presume the segment which most concerns us is the tailpiece between the hitch pin and nearest bridge pin. How many cents over pitch does the string have to be pulled before the tailpiece comes to its proper tension? Is heavy pounding the only way to equalize tension? How can an aural tuner know when this has happened? How does this factor change with different pianos? What happens if rotary or bending pressure is exerted on the pin during the tuning blow? Is this a desirable practice?

One technician told me that in the Yamaha factory, they taught him to pull the note sharp, then, exerting a very small counterclockwise force on the hammer, to heavily pound the note down into place. He recommends this as a fast way of tuning which stays solidly in tune. Is this right?

For me, this is not an academic issue. I am intent on learning the best way to tune aurally and will adopt this unpleasant practice if it is demonstrated to be the only way to achieve tuning stability. Thank you for your help.

Ken poses a lot of questions, and I am not sure I have the answers to all of them. Regarding the "On Pitch" series of articles, unfortunately they were published during a period of time when we changed management firms, and no extra *Journals* were published. To my knowledge there are no available copies, except those you may be able to buy from another tuner. Perhaps, if the interest level is high enough, they could be reprinted. I suggest you write to the Home Office concerning this. For your reference, the dates of publication were as follows: June 1983, July 1983, September 1983, October 1983, January 1984, February 1984, May 1984, June 1984, December 1984, January 1985, and March 1985.

Concerning the tuning blow, I suggest you read "Some Thoughts on Unstable Tuning," by Daniel Bowman, *Journal* February 1989, and "Tuning Up" by Rick Baldassin, *Journal*, April 1989. These articles deal with issues of hammer technique and the test blow. I have never performed any studies as you propose, by measuring various string segments. My experience has shown that the tail segment is affected very little by normal tuning. A gross change in the speaking segment must be made for the tail segment to move at all. When we tune, we primarily manipulate the tuning pin-agraffe segment, and the speaking segment. The object is to leave these two in a stable state. This can be done by neither hammer technique or test blows alone. A combination of the two is necessary. My experience has shown, however, that the smaller the pitch corrections being made, the less hard the test blow need be. Steady hard blows seem more effective than several soft blows, followed by a "merciless" blow. The combination of hard blows with simultaneous hammer movement seems to work best. I try to overshoot as little as possible, making the pitch adjustments as small as possible. This is why it is more efficient to go through the piano twice quickly, than once meticulously. The electronic tuning aid is of great help in determining tuning stability. With the use of the aid, the tuner can learn what combination of hammer movement and test blows give the best stability. Once this combination is learned, it can be re-created by tuning, for instance, the unisons by ear alone. Your concern for tuning stability is very legitimate. It is the most important aspect of tuning.

Our thanks to Kent Swafford, and Ken Burton for their letters and questions. Until next month, please send your questions and comments to **Rick Baldassin, Tuning Editor, 2684 W. 220 North, Provo, UT 84601.** ≡

Vertical Regulation: Part II

Bill Spurlock
Sacramento Valley Chapter

Last month we aligned parts, set key height, and regulated sample keys to determine the key dip and hammer blow dimensions which would work best for a given action. We then adjusted the hammer rail and set lost motion. This month I will conclude the regulation sequence, again emphasizing the reasons behind the regulation steps.

Of the various convention classes and articles on the subject that I have seen over the years, the most helpful have been those which looked at the "why" of regulation, rather than just listing steps. Often I've come away from those classes with a whole different perspective on action operation, and with my ability to diagnose action problems taking a quantum leap forward. I hope this series might give experienced technicians a couple of useful new insights, and also help those new to the trade (in particular those preparing for the technical exam) to get a handle on what goes on between the key and the hammer.

Setting Key Level And Dip

Initially we only set rough key height. We then proceeded to set hammer blow distance and lost motion; these adjustments can affect the weight of action parts resting on the capstans, and therefore can affect key level. Thus with blow and lost motion set, we can now do a final key leveling job, as described in the October 89 *Journal* article of this series. Any time key height is changed, the capstan is moved slightly for or aft, possibly affecting lost motion. Thus it is a good idea to re-check lost motion after leveling, using the jack return test described last month.

Obviously key height affects key dip, so we set dip *after* leveling. Since we judge white key dip from the adjacent key tops, it is important to do as good a leveling job as possible. Before setting dip, make sure that the checking distance is not too close; otherwise the backchecks can block against the catchers before the keys are down firmly on the front punchings. (See the October article for details on setting dip, and for a simple modification to the key dip block to make the job easier.)

Having set white key dip, we can then proceed to set sharp dip in two ways: either by looking at the motion of the sharp key itself, or by looking for equal motion in the action parts between sharp and natural notes.

Setting sharp dip by measuring the motion of the sharp at the playing end of the key is tricky. The object of setting dip is to achieve the same amount of wippen lift for each of the 88 keys. This way, each hammer, jack, wippen and damper will operate through the same cycle whether they were lifted by a sharp or a natural key. In other words, we need the same amount of capstan rise for each key. Since sharps and naturals are different lengths and pivot at different places along their length, it becomes a geometry problem to figure out how much dip at the front end of a sharp will give the same amount of capstan rise as a given dip at the front of a natural. There are gauges with movable plungers which straddle the sharps and indicate sharp dip, but these are of no use unless we know how much movement we are looking for. One alternative method is to simply look for equal capstan rise between sharps and naturals as follows: with keys at rest, feel the wood of adjacent sharp and natural keys right next to the capstans (space permitting) or visually fix on the wood surfaces. Then, play the two keys and see if the surfaces feel (or look) the same level as before. Since the keys pivot at different points, this test is only valid right up to the capstans. On compact direct blow actions it is easier to watch the top surfaces of the wippens near the base of the bridle wire. With these tests there are always two naturals to compare with each sharp, in case you need a second opinion.

The method recommended by most manufacturers, and the one I prefer, is to judge equal capstan lift by looking for equal backcheck motion (checking distance). This method is discussed later under "Checking."

Setting Let-Off

Let-off is one adjustment that is independent of almost all others. It is unaffected by capstan setting, key height or dip, blow distance or checking. The only things that can affect let-off are changes in hammer size from wear or filing, wear of the hammer butt leather, respacing of wippens or butts, or wear or movement of the regulating buttons. Therefore, let-off can be set at any point in the sequence after the hammers and wippens have been aligned.

Before setting let-off, double check that the regulating rail screws are tight and that the rail is located the correct distance from the main action rail. Normally, the jack tenders should contact the regulating buttons in their centers (looking at the in and out position of the rail). In some cases the regulating rail also serves as a jack stop rail, and its in and out position is set as described later under "Setting Jack Stop Rail."

The let-off point should be as close as is practically possible to the strings, so maximum power is delivered to the hammer with the jack escaping at the last moment. This also allows a key to be played very softly and still ensure the hammer will get all the way to the string. Normally, 1/8" is a good measurement to use. However, given the flexibility of

the regulating rail and compressibility of regulating button felt, the actual let-off point under playing conditions will vary with the force of playing. You may have encountered cases where a hammer blocks on a hard blow, even though visual inspection shows let-off to be adequate. Here let-off distance must be increased until the hammers no longer block.

Sometimes a wholesale adjustment can be made by bending the regulating rail brackets up or down slightly, followed by fine adjustment with the individual screws. *Caution*: some brackets are very strong and it is possible to split the main action rail through excessive force (do you hear the voice of experience here?)

One popular method of gauging let-off involves placing a 1/8" strip of wood or magnetic strip against the strings and adjusting each regulating button until the hammers just barely bump the strip. A problem with this method is that, if the regulating rail is very flimsy or the regulating button felt is very soft, the actual let-off distance with no gauge in place may be less than intended or the hammers may even block.

My favorite method of setting let-off is as shown in Figure 1. Here, an approximate 1/2" x 1 1/2" x 10" wood block (preferably tapered as shown) is hung on the hammer rail between the shanks and the rail felt. (Coarse sandpaper glued to one surface allows the block

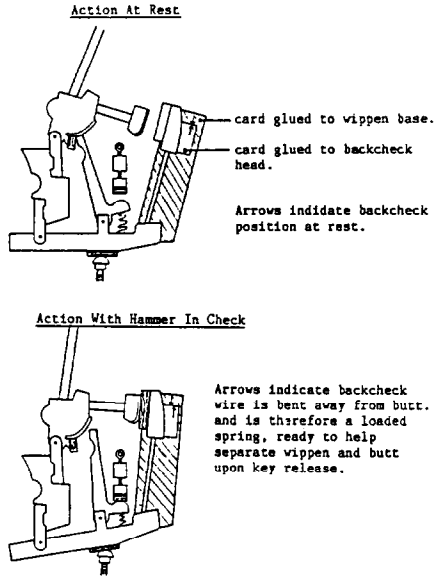


figure 2: Demonstration Of The Backcheck As A Repetition Spring

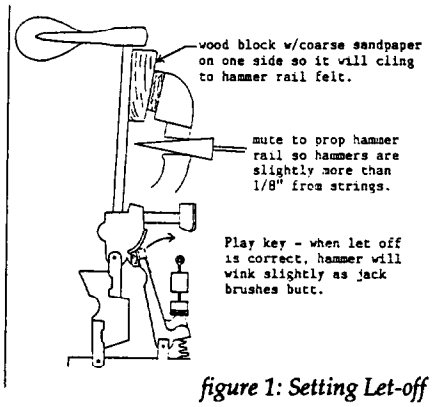


figure 1: Setting Let-off

to cling to the rest rail felt.) Then, the rail is propped forward until these hammers are slightly more than 1/8" from the strings. We now have the hammers held almost at the point of jack escapement, so we will know if let-off is set to 1/8" if each hammer just winks as its key is played. We will also have an aural indication as the hammer shank taps against the block. If a hammer does not wink, its let-off is too great. If a hammer moves more than the slightest wink, its let-off is too close. The advantage of this system is that it avoids the interference of the gauge mentioned above, while quickly giving a very consistent setting. Be sure to use one of the special let-off adjusting tools that will operate at an angle to the screw, otherwise screw breakage can occur.

Checking

The function of the backcheck is to catch and hold the hammer assembly close to the strings after rebound, so that with less than full key return the jack can get back under the butt for a repeat blow. Try this test: on a studio or full sized upright action, play a key with a moderate blow and hold the key down. Then with the other hand hold one finger out over the front end of the key to limit key return to about 1/2 or 2/3 of the way up. Then quickly release and restrike with a strong blow, even though you prevented the key from returning all the way to rest between blows. Now bend the backcheck away until the hammer no longer checks and repeat the test. This time the jack will probably not get back under the butt, and instead will just skip out or give a very weak glancing blow to the butt.

There is more to backcheck function than meets the eye. LaRoy Edwards has stated in his regulating classes that the backcheck wire and felt act as the "repetition spring" of the vertical action, actually pushing the wippen and key down away from the hammer butt upon key release. A few years ago I did the experiment illustrated in Figure 2 which clearly demonstrated the presence of this spring effect. As shown in the drawing, when the hammer is in check, the backcheck wire is deflected back toward the player slightly and is therefore a loaded spring. You can see this deflection when viewing an action model from the side by watching the backcheck wire in relation to the bridle wire at rest versus with the hammer in check. As the key is first released, the wire and compressed backcheck felt will spring back to their normal shapes; the result is a separating force between the wippen body and the hammer assembly. This separating force acts only for a very short time while the small amount of wire deflection "un-bends," but is enough to give the wippen a slight head start over the hammer assembly in returning toward the rest position and allows the jack to get back under the hammer butt before the key comes all the way back up.

The usual figure specified for checking distance is 5/8". Checking much closer than this might not do any good; a repeat blow occurring in the last 1/2" of hammer travel might be very weak because the jack would be in the midst of escaping at the same time it was supposed to be delivering a push to the hammer butt. Also, if the checking is set too close, the backcheck can block the hammer against the string on a very soft blow.

Before setting checking distance make sure that the angle of the backcheck heads is correct, as shown in Figure 3: the backcheck and catcher should meet parallel. Also, make sure that lost motion adjustments are correct, since any later capstan adjustment will change

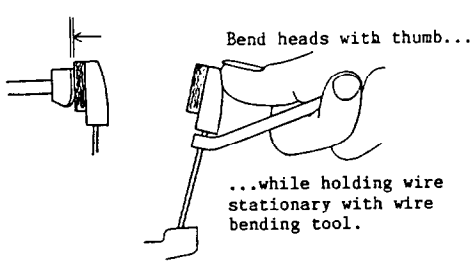


figure 3: Adjusting Backcheck Heads Parallel To Catchers

the checking distance that you are about to set.

If natural *and* sharp key dip are already set, we can proceed to set checking for all notes now. However, if we plan to set sharp dip by the equal-checking method, we will proceed as follows: First, adjust checking for all natural keys by pushing or pulling the backcheck in or out until these hammers all check at 5/8" from the strings when played with a consistent, moderate blow. Then, using a straightedge against the backcheck heads, adjust the backchecks of all sharp notes until they are in line with all natural backchecks. Now, if all capstans rise the same amount, all hammers should check an equal distance from the strings. Therefore we can adjust sharp dip by playing adjacent sharp and natural keys simultaneously and watching where the hammers check. If a sharp hammer checks closer, this indicates that its capstan is rising farther and therefore its dip is too great. If it checks farther from the string, its dip is too shallow. Of course, this method assumes that all catcher leather and backcheck felts are of uniform thickness, something that is never exactly so. However, backcheck movement is almost 3/4" or about twice the key dip distance, so small discrepancies in dip are magnified when seen at the backcheck. All in all, I find this method to be the easiest and most practical way to set the sharp dip.

Setting Jack Stop Rail

On an action without a close fitting jack stop rail, when the key is struck with a hard blow the jack momentarily flies back away from the hammer butt further than the regulating button would normally push it. This extra jack motion will appear as a blur when viewed from the side with a good light. (If you cannot see it, place a screwdriver tip a little beyond the furthest point that the jack travels on a soft blow; you will then hear a click as the jack flies further and hits the blade on a hard blow.) To avoid noise and to improve repetition speed by keeping the jack close to the hammer butt, all actions have some type of cushion or travel limiting device. The most common is a felt square on the inside of the catcher, just below the bridle strap hole. Other actions have a felt pad on the jack itself, a felt strip on the inside of the regulating rail, a separate adjustable jack stop rail, or a bumper spring from the inside of the catcher.

When the jack-stop device is a felted regulating rail or a separate jack stop rail, it should be adjusted to slightly clear the jacks at full key dip. Check by playing keys with a hard blow and holding down; make sure the jacks are not jamming into the rail felt.

Adjusting Bridle Wires

The bridle wires serve to keep the wippens from dropping so low that the jacks would fall below the butt felt when keys or action are removed. At the same time, bridle wires must not hold the bridle straps so taut that wippens are lifted (causing keys to go out of level) when the soft pedal moves the hammers halfway to the strings. Test by pushing groups of hammers all the way against the strings by hand to make sure no jacks fall beneath the butt felts. Then step on the soft pedal to move all hammers halfway to the strings while watching for wippens that wink.

Do the bridle straps help repetition? Remember that before a repeat blow can occur, the wippen must fall back slightly ahead of the hammer butt so that the jack can get back under. Anything pulling the butt and wippen together would have the opposite effect. As we have just adjusted our bridle wires, the wippens would have to return halfway to rest before the straps even became taut and could pull on the hammers. Clearly these are not the conditions occurring during a fast trill. Thus the bridle straps cannot have any effect of the action parts during high speed repetition. There art times when hammers will fail to fall back to rest because of a tight center, rubbing hammer, or butt spring problem. Here the bridle straps can help to pull them back and at least mask the symptom of the real problem.

Regulating Dampers

Dampers are a major factor in the tone and touch of a piano. Unfortunately, because they hide behind the action where we can't get at them easily, dampers are a little harder to regulate than some other action parts. However, with the right techniques and a systematic approach, it really is possible to regulate them properly, spoons and all!

Here I will assume that the damper felt and other components are in good repair, that all dampers are working well and that we are just regulating damper lift with the pedal and with the key (spoons). In a future article I will cover repairs of the damper system and complete re-adjustment after felt replacement.

Of course all damper heads should be properly spaced (side-to-side) and rotated square (as viewed from above) to the strings. However, existing damper felt that has always been misaligned should be left that way as long as it damps well because it has formed to the strings; respacing the heads would cause ringing dampers.

Dampers must first be regulated to lift evenly with the pedal, *then* the spoons should be adjusted to give even lift with the keys. At the same time all damper felt must seat squarely on the strings with even pressure top and bottom. Regulating for even pedal lift is done by bending the damper wires forward or backward at their base (top of the wood lever), constantly working the pedal to check, until all dampers lift simultaneously. Any significant bending at the base of the wires also effects the parallel mating of the damper felt to the strings, which is then adjusted by a bend at the top of the wire, just under the head. This bend then throws the first adjustment off again. Thus you must go back and forth until you have even pedal lift *and* parallel mating of the felt and strings.

In most cases, unless some poor damper replacement has been done, the wire bending required to achieve even pedal lift is very minor, and not enough to upset the parallel mating of the felt. In such cases I find it counterproductive to go in with the usual wire bending tools because they usually upset the side-to-side alignment slightly in the process of making fore and aft bends, especially in the bass where the wires are very angled. Instead, I prefer to just use my fingers and a hook or screwdriver, as shown in Figure 4, to make these small changes. I find this method allows much faster adjustment with fewer frazzled nerves. When the adjustment gets quite close, use your foot to just barely wink the pedal to identify the first few dampers to move. These can be slowed down by depressing the pedal fully and nudging the heads slightly with a finger.

After all dampers lift simultaneously with the pedal, the spoons can be adjusted so the dampers lift when the hammers are between 1/3 and 1/2 the blow distance. One way that some like to do this job is to find sample notes where the spoons lift correctly, remove the action from the piano, prop up the pedal lift rod until the sample dampers just start to lift when their hammers come off the rail (when lifting the wippens), and set the remaining spoons to match. This method will work if sufficient samples are used (at least one per octave), otherwise action flexing and uneven string height will result in uneven lift in the piano, even though lift seemed uniform on the bench. Often this method is used because of an assumption that spoons cannot be adjusted in the piano. Luckily, no one ever told this to the piano factory workers who routinely adjust whole sets of spoons in a matter of minutes.

Damper lift with the spoons has a big effect on the touch resistance of a piano, so it is important that spoon adjustments be as uniform as possible. After trying various methods of adjustment, I have found setting spoons in the piano with a spoon bending tool to be the fastest and most accurate method for me. Use of a spoon bender is not necessarily difficult, but is made that way because of the poor design of some of the available tools and the lack of instruction on the subject. Here I will present some methods that helped me to learn spoon bending, with the hope that others will give it a try.

The first requirement is a well-designed spoon bender. Figure 5 shows a particular model available from American Piano Supply that I favor (APSCO #16406); other suppliers may have something equivalent. This tool is more slender and the slotted end shorter than on some of the cheaper, bulkier models. I suggest getting two and bending the handle of one as shown for use on compact console actions. This tool is also available to fit into a universal tool handle, but I find the handle adds so much weight to the tool that I cannot feel what the "business end" is doing. If a round handle is desired, I suggest using a 1/2" wooden dowel.

Unlike most adjustments, spoon bending is done blind, so first we must teach our fingers what the tool feels like as it slips into the spoon. To do this, remove the action nuts, tip the action back toward you, look down in and put the tool on a spoon. Notice that the tool must lean to the side, toward the spoon. Slip the tool on and off the spoon, noticing what it feels like. Notice that lifting the wippen moves the spoon away from the action rail, making it easier to slip the tool in place. Close your eyes and notice what the bender sounds like as it clicks against the spoon. Push the action forward now and try to find the spoon without looking. Remember to lift the wippen slightly to make the spoon more accessible. Pull the action back and look if you're not sure where you are. You may find it helpful to place a piece of tape around the handle as a marker so you know how far in to reach with the tool.

Once you can get the tool on the spoon, try making some adjustments. The secret here is to hold the spoon bender in one hand and the end of the wippen with the other, and work one against the other. Do not try to move only the spoon bender; that would be like trying to cut paper by only holding one handle of a pair of scissors. Unfortunately, each piano design is different so you may have to repeat the above procedure occasionally with new designs. Some compact actions require that you remove the keys to get enough room to slip the tool under the action rail. On spinets the spoons are adjusted just like on larger uprights, except that the tool is held under the keybed.

It is fastest and most accurate to set the spoon lifting point with a gauge rather than by eye. This can be done by placing a strip of wood, 1/2 the blow distance in width, against the strings. Prop it in place with a hammer at each end (placing a wooden wedge between hammer and hammer rail), and lift wippens to bump each hammer against the strip; each damper should just wink as the hammer bumps the gauge.

Regulating The Pedals

The soft or hammer rail pedal should have no lost motion, but should not be adjusted up so tight that it holds the hammer rail up off its supports. A piece of firm blocking felt should be glued under the pedal to limit travel to one half the blow distance. Another block

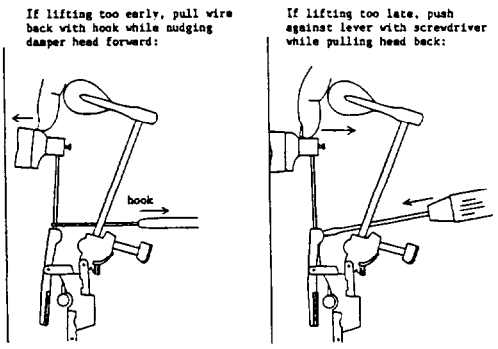


figure 4: Fine-Adjusting Damper Lift With The Pedal

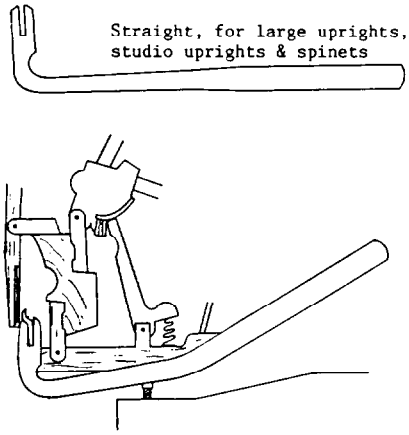
of felt can be glued between the hammer rail and the right action bracket to prevent the rail from flying forward in case of an over-enthusiastic stomp on the pedal. (Every technician should have a supply of this blocking felt; it's inexpensive and available from most supply houses and hammer makers as "hammer felt trimmings.")

The sustain pedal should have enough lost motion to ensure that the damper lift rod is well clear of all damper levers at rest, so that all dampers rest against the strings with their full spring force. Test by deflecting some strings inward; the dampers should follow the strings at least 1/16". The sustain pedal travel should also be limited by blocking felt, to limit damper lift to approximately the same amount as the dampers lift with the spoons.

Conclusion

For those who have not yet suffered enough, and who would like to spend a little time cementing these concepts in their minds, I suggest re-reading these last three articles, practicing each step as you go on an action model

figure 5: Spoon Bender



or piano. In addition, I recommend the following exercises:

1. On a regulated action or model, add front punchings to decrease the dip. Notice that the damper lift is less (although the damper starts to lift at the same point in the hammer travel), checking distance is increased, jack escapement is less and blubbering becomes more likely on a soft blow, but the let-off point remains the same. Remove front punchings to increase dip and notice the opposite effects.

2. Play and release the key slowly while holding the hammer against the string, and watch the motion of the jack. Notice that as you force the key down harder into the front punching the jack rotates further from the hammer butt.

3. Raise the capstan to shorten hammer blow distance and notice that checking distance becomes closer, let-off remains the same, total damper lift is increased and lifts sooner in the key stroke but at the same distance from the string, and jack escapement is increased.

4. Play the key with a hard blow and hold down. Nudge the key down harder and see that the backcheck wire flexes back away from the butt, relative to the bridle wire. As you first start to release pressure, notice that the jack starts rotating back toward the hammer butt even though the catcher and backcheck are still in contact.

5. Increase the let-off distance and see that jack escapement increases. Increase let-off to 3/4" and see that the blow drastically loses power and may not play at all on a very soft blow.

Such study will help one to be able to recognize action problems easily, and quickly determine which part or adjustment is at fault. Next month Fern Henry will present a step-by-step procedure for diagnosing that most common of complaints, the "sticking key."

EXAMINATIONS

Learning To Pass The PTG Tuning Exam: Part II

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Washington, D.C. Chapter

Part 2: Take This Test!

Last month I posed the question in my title, "Why Bother?" Piano technicians who have many satisfied customers and are already making a decent income in piano service may well question the value of submitting to the most objective and comprehensive evaluation of their tuning skills now available. I did not present a complete answer to that question, nor can I, because we are all different, and will each have our own reasons for wanting to achieve goals that may be difficult. I do know that this test is now sufficiently difficult to provide a challenge to our best Craftsmen, and most who take it seriously will come away with new insights into their daily work.

Before 1980, the scores given on tuning exams were less objective and, while not necessarily arbitrary, were not standardized; a tuning that passed at one test center might have failed somewhere else where standards were tougher. This is much less likely to occur today. With all the time, effort and membership dues money invested to develop and administer the current exam, I am frankly surprised that more RTTs who were tested before 1980 have not wanted to get back some of that investment and see how well they can do. I feel it is one of the benefits of PTG membership that we keep our exam fees artificially low so that more of our members have access to testing.

As with many performance tests, doing well on the tuning exam requires not only technical skills, but also test-taking skills. I hope to help all who are considering taking the test by discussing each of its areas and offering suggestions for how you might practice the particular skills being tested for. While preparing for it in this way, I do not think you will be able to avoid improving your tuning.

Before getting into the exam section by section, I thought you might like to know more about the exam as a whole, so this month we will have a look at the whole tuning exam from start to finish. First, I will talk about the typical exam piano, and how we prepare it for giving tests. Then we will go through the exam process as it would normally occur and touch on items of interest, with some emphasis on scoring criteria, and finish with a brief time study of the exam. That should be a good jumping off point for more detailed information and ideas on the individual sections.

As the discussion progresses, I will drop hints to help you practice your skills. This one appeared last time, and is important enough to appear again:

Hint #1: Tune a good-quality grand for an RTT and ask for a critical evaluation of your work. This opinion should give you an idea of whether your tuning would pass and, though not a guarantee, it could save you some grief (and exam fees) later. Get as many evaluations as you can from different RTTs.

Now let us continue by having a look at the whole tuning exam from start to finish.

Behind The Scenes With The Exam Piano

Pianos used for the PTG Tuning Exam are well-scaled, 5'9" or larger grands so chosen as to provide minimum obstacles to fine tuning. No piano is perfect, but in general we try to provide the best available. Anyone who has tuned and serviced a number of brands of currently available 6' or larger pianos should be familiar with the type of pianos we usually use. We check the voicing and action regulation, making improvements where possible and practical, but screening out pianos with gross problems. In addition to a nice piano, we try to provide a test room as free as possible from noise and other distractions.

In preparing a piano for conducting exams, we first completely tune and stabilize it within two cents of A-440, then strip mute and fine tune it once again. At this point, a committee led by a CTE aurally "nit-picks" the single-string tuning, listening and judiciously making small corrections until they feel that no significant improvements are possible. Though it is standard practice to do this "master tuning" carefully, lack of absolute perfection here is neither possible nor really necessary (one reason this exam works so well) as we will see later when we talk about "aural verification." The committee does the best job they can without taking all day and all night to do it. One to three hours is usually sufficient if the piano is stable.

We measure and record the master tuning, compensating either mathematically or with an offset in the measuring instrument for any small pitch discrepancy from A-440. This "Master at A-440" is our standard for comparison, written down and preserved for future reference. We will similarly measure and record test tunings, and compare them to this master tuning.

Whenever we make measurements anywhere in the tuning exam, we use standard partials. In order of octaves, from the first note of octave one, note C(4) in the low bass to the last note of octave seven, note B(87) in the high treble, the measuring instrument must be set on octaves 3, 4, 5, 5, 5, 6, and 7, corresponding to standard partials 4, 4, 4, 2, 1, 1, and 1. The important point to remember here is that we are not comparing your work to a machine tuning in making these measurements; we are

simply facilitating an objective comparison of a test tuning to the master tuning by converting both to numbers that are in fact comparable.

Another point here is that we do not score notes 1, 2, 3, and 88; you are only responsible for notes C(4) through B(87). Though this is more for our convenience than yours, I think it is reasonable to assume that if you pass on notes 4 to 87, the missing notes will fall into the normal range of your abilities. It is more fun, however, to tell examinees that they get these notes "free" and automatically score 100% on four notes before even picking up a tuning hammer.

As a final step before an exam and after recording the master tuning, we systematically destroy any semblance of it on the piano, as one would take apart a jigsaw puzzle and put the pieces back in the box, being careful to place half the pieces face-up and half the pieces face-down. At this point an examinee enters to try and pick up the pieces and fit them back together, restoring the order and harmony of the tuned piano.

Close Encounters Of The Detuned Kind

When you first hear the exam piano, you will discover that it has a peculiarly ethereal out-of-tune sound: an "Unidentifiably Fouled-up Object." Parallel major thirds seem to progress evenly in beat rate across the temperament area, but dig those crazy fourths, fifths and sixths! This is the sound of a "de-tuned" exam piano, and a demonstration that examinees are commonly subjected to in order to amaze and confound them, so be warned. To prepare this "UFO" for your "encounter," single strings are tuned alternately sharp and flat throughout the scale so as to maintain the overall balance of tension and to provide a standard starting point for all examinees. If you do not do *something* to correct this tuning, you will fail miserably. The side strings of unisons are also slightly detuned, so they would be an unreliable guide to tuning the center strings.

Hint #2: Practice tuning pianos that are completely strip-muted to single strings, especially if you do not normally tune that way. It is not something you want to do for the first time in the exam room.

Hint #3: Tune all the required single strings on the test piano at least once, if only quickly. You are severely penalized when you do not, and simply not tuning a few in the high treble or low bass because you ran out of time can cost you the exam. Spend your first 10-15 minutes or so to quickly go over the piano to smooth out the ups and downs of the detuning. This will also help you get a feel for the instrument. Practice this "quick and dirty" tuning in advance by doing it on pitch adjustments of strip-muted pianos, for which a similar procedure is appropriate.

Test Order

The eight scored categories of the basic exam (Part 1) are Pitch, Temperament, Midrange, Bass, Treble, High Treble, Stability and Unisons. You will have a time limit for the initial single-string tuning, after which we will score the first seven categories. This initial time limit is 1.5 hours for aural-only tuners, and 1 hour for those using a visual-display electronic tuning aid (VDTA). After this limit has expired we come in (with smiles on our faces, as required in the exam manual), call a halt, set up our equipment, measure your tuning, score the first six categories, aurally verify the results, and run and score the stability test, all of which can be done in an hour, more or less.

You will then have an additional one-half hour to tune solid-string trichord unisons on 24 midrange notes, outer strings to the middle, usually C(28) to B(51). In the unlikely event that there are wound strings in this range (as on the Baldwin SF10) or bad strings discovered too late to change pianos, we may use unisons outside the usual range to make up the difference. Unisons must be tuned aurally only, and we are required to remove all VDTAs from the exam room for the duration, including yours, if it is there. For aural-only tuners, the test is over after unisons are scored.

If you used a VDTA initially we will again detune the piano at this point and ask you to tune the midrange (octaves 3-4) aurally, for which you will have 45 minutes. For this section you should bring an accurate aural pitch source, because your VDTA will not be available to you for the duration. The three scored areas in this section of the exam (Part 2) are pitch, temperament and midrange.

Pitch And High Treble Instructions

You are responsible for leaving A(49) at A-440, regardless of what pitch standard you use or how accurate it may be. Any deviation in excess of 1.0 cents will result in points off. You could be off by as much as 3.0 cents and still pass. I will discuss methods of setting pitch in more detail in the next article. As I mentioned last month, you may also want to review Jim Coleman's "Passing the Tuning Test," *Journal*, August 1988.

The only area of the keyboard we specifically ask you to tune a certain way is the high treble, octave 7, notes C(76) to B(87). We ask that you do not stretch these notes higher than necessary to get clean-sounding octaves. We want to know, even in this area, how well you can control what you do and we cannot find that out if you do a great job tuning octave-fifths or double-octaves all the way to the top, which may be enough sharper than the single octaves to lower your score. You may recall Rick Baldassin's article on the "Picasso Tuners" *Journal*, April 1988, and the accompanying charts showing the effects of single, double, and triple octave tuning as you go up the scale. The point you should understand from Rick's article is that there are widely divergent ways to acceptably tune the treble for your customers, each with its advantages and disadvantages. However, in the exam room, PTG becomes your customer and wants you to tune clean-sounding single octaves at the top. Please understand, PTG is not dictating this as the only correct way to ever tune the top octave. This is only how we run our test to find out whether you can control what you do. If you do not or cannot, then we will find out, because that is the way we do the master tuning. Whatever you do in octave 7 is compared to a single-octave tuning.

Hint #4: Practice tuning the top octave by playing just the single octave, both notes simultaneously, especially if you usually tune in that area by playing the notes sequentially (which will drive the single octave too sharp), until you can hear the single octave when it beats as well as when it is clear.

Scoring Tolerances

The temperament we score is your choice, as long as it encompasses any 13 consecutive notes within the midrange octaves 3-4, notes C(28) to B(51). If you have no preference, we may score the octave F(33) to F(45) as a "default" temperament. Temperament and midrange points off begin above 0.9 cents, and the magnitude of the points increases at the rate of one point per each cent deviation from the master tuning. The chart at the bottom of this page illustrates how the tolerances change over the piano. All except pitch are always whole-number points. For example, an 11.9 cent deviation in a 3 cent tolerance range is 3 points; a 12.0 cent deviation in the same range is 4 points.

Although the tolerances further out from the midrange get wider, these areas are not necessarily less difficult. You have to get a passing score in each area of the test, and it is about as easy to fail with too many points in the bass as it is with too many points in the temperament, even though the bass accounts for 24 notes and the temperament involves only 13. I think the last time anyone evaluated the data, the most difficult section to pass is actually the midrange, but only by a little. When you are penalized in the temperament, some of the same points also work against your midrange score, but to differing degrees, as we will soon see.

Scoring Procedure in a Nutshell

The first step in scoring is to measure the cents deviation from A-440 on A(49). Further measurement and scoring then proceeds by any one of several approved methods, including a hand-scoring procedure or one of two computer programs, with variations on the exact procedure that I will not go into here, that depend on the measuring instrument. The net result is as follows: first, we measure and adjust the test tuning data to A-440 by subtracting a pitch correction number (PCN) from the test tuning data. The PCN is the result of the sum of the 13 test tuning temperament measurements minus the sum of the corresponding data from the master tuning, divided by 13.

For example, if your temperament was on average flatter than that of the master tuning, a negative PCN would result. When we subtract this negative number from all the test tuning data we have effectively sharpened the test tuning (by making all the measurements less negative) so it is the same average pitch (A-440) as the master tuning. This allows us to score the Temperament, Midrange, Bass, Treble and High Treble sections more or less independently of the Pitch section.

After we calculate the PCN and adjust the test tuning measurements, we then compare the "test-adjusted" data (test tuning minus PCN) to the master tuning data note for note, and calculate penalty points according to allowed tolerances.

As stated above, we can score a test tuning several different ways. I have tried to condense the procedure to its essence so you would know what is going on, whether it is on the hand-scoring form or inside a Sanderson Accu-Tuner specially equipped with the scoring program and buttons, or in a TI-59 with the program "PTT 5-3" loaded. You should bear in mind that often examinees do not see any scoring going on, and (especially with the SAT) it may be over before you realize it's started. During measurement and scoring, examiners will usually give examinees the option of taking a 30-45 minute break from the exam room, but allow them to stick around if they want to. If you do stick around, you will probably be put to work writing down numbers! (It beats biting your nails).

Aural Verification

After all this business is completed, we get down to checking some of our results in a procedure known as aural verification. This is where we may find out if there were serious errors in the scoring (such as a PCN being added instead of subtracted) or in the master tuning. It is possible that you could do a better tuning than the master tuning committee and this, like other procedural errors, could show up as a point or points that cannot be aurally verified. The notes involved simply sound too good to be wrong, and you will be happy to know that if that is the case we usually cross off the points.

The CTE-in-charge directs the process, choosing which notes for the verifiers to work on by calling out the note and asking them to play some aural checks and state whether they agree there is an error, and if so, whether it is sharp or flat. Examiners are not allowed to decide whether a two-point error really only sounds like a one-point error; if the error is aurally verified it stands, however many points it happens to be. Examiners will not usually take previously verified points into consideration, and will typically listen to each individual alleged error within the "constellation of intervals" of which it is the central member, as if all the other members were tuned perfectly. If examiners agree after playing a few aural checks that there is an error, and the direction of the error is as the score form indicates, then the error is considered aurally verified and is circled on the score form. If not, it is crossed off.

Usually, examiners will ask examinees to help, but contrary to popular belief, your assistance is not required. Traditionally, we have had the examinee sit at the keyboard and play aural checks to try to decide between "sharp, flat or okay." If the examinee agreed with the scoreform, the point or points would stand and the CTE-in-charge would go on to the next one. If not, then the other examiners present would step over to the piano, play a few checks and offer their opinion, knowing that whatever the examinee said was "wrong" (did not agree with the score form) but of course not letting that color their verdict. Examinees who disagree with

Scoring Tolerances

pitch:	points equal cents deviation from A-440 in excess of 1.0 cents on note A(49)
octave 1:	one point per 6.0 cents deviation; (bass)
octave 2:	one point per 3.0 cents deviation; (bass)
octaves 3-4:	one point per 1.0 cent deviation; (tmpt, midrange)
octave 5:	one point per 2.0 cents deviation; (treble)
octave 6:	one point per 3.0 cents deviation; (treble)
octave 7:	one point per 6.0 cents deviation;(high treble)
stability:	one point for any and all changes of 1.0 cent or more
unisons:	one point per 1.0 cents deviation among any two of the three strings

the score form have been known to be right occasionally! However, sometimes it works better to just have the examinee watch or take a break while the examiners go through a more objective aural verification, but that depends on the situation as the CTE-in-charge sees it.

Aural verification can occasionally result in our crossing off a point here or there, when examiners disagree with the score form, but rarely changes the overall result (pass/fail). In cases where there are many errors, we are only required to try to aurally verify the larger ones. There is no requirement to aurally verify each and every point, nor any practical necessity to do so. In any case, barring unusual circumstances, aural verification should be finished within a half hour, and we move on to the next step.

Converting Points To Scores

As we go through the aural verification and time permits, we convert points to a final percent score using a conversion factor or "multiplier" and subtracting the result from 100. For your information, the multipliers are currently as the chart at the bottom of the page shows.

Now that we have figured scores and aurally verified through the high treble section, it is time to score stability.

Hint #5: Maintain a professional attitude during the initial scoring so you will be able to finish the entire exam regardless of the results, and be receptive to suggestions for improvement.

Stability

To score stability on your single-string tuning, we set up the measuring instrument on the appropriate test partial of note C(28), measure it playing softly to get a "before" value, and record this in the appropriate place on the tuning test record. Then we simulate by hand the standard test blow of 8 ounces dead weight dropped from 6 inches onto the key, three times. We then re-measure and record the "after" value. If the difference between the before and after measurements is 1.0 cent or more, we score 1 point off. We perform this test on the 24 midrange notes, C(28) through B(51).

For you to score well in this section you need to have properly set the individual string/tuning pin systems by some combination of hammer technique and moderately hard test blows while you are tuning. However, it is not a good idea to worry about stability as an afterthought to your midrange tuning. You are wasting time if you destroy a nice temperament, for example, with 13 or more murderous test blows after the fact. You should be stabilizing the notes as you go. The quick pre-tuning I mentioned earlier (Hint #3) to avoid penalties for totally untuned notes would be a good first step also for reasons of stability. You need to get things in the ballpark and fairly close to home before going for the "strike." There have been a number of articles written on stability in recent issues of the *Journal*, and later in this series I will add another. In the meantime, you may want to review: Virgil Smith, *Journal*, August 1988, "The Tuning Touch"; Daniel Bowman, *Journal*, February 1989, "Some Thoughts on Unstable Tuning"; and Rick Baldassin, *Journal*, April 1989, "Tuning Up," which includes a letter from Norman Neblett and response on the subject.

Hint #6: Do not use any more forceful test blows during a tuning exam than you would normally use in the field to produce a stable tuning. You can check your own tuning stability by tuning a few midrange octaves on a strip-muted piano as you normally would, and using an instrument such as an Accu-Tuner to make sure that each note withstands three moderately hard test blows within the measurement accuracy of the instrument. Alternately, use contiguous interval checks before and after the test blows to detect any movement. There should be no difference in the before and after sounds of the intervals above and below the note being tested.

Unisons

After the stability test is completed, we proceed to the unison test. An examiner will first check midrange unisons to make sure they are all slightly out of tune for you, and then you will have one half hour to tune the outer strings to the middle, aurally only. When your time is up, the examiners will re-enter, set up the instruments, and listen to your unisons, playing fairly lightly and evenly up through the midrange. Any that sound "suspicious" (out of tolerance) get a mark on the test record for measurement. Once we have located the suspects aurally, we go back and measure and record each of their individual strings. Differences between each of the three two-string combinations per unison are computed and points assigned according to the tolerance. Often, a unison will have a noticeable wave or roll in it, but may still pass. Very occasionally, a unison will sound terrible but will show no appreciable differences among the strings. This usually means that all three strings are not the same wire size, or there is a termination problem, and such conditions somehow escaped attention in the initial inspection of the piano. In such a case you would normally be given the benefit of the doubt and not be penalized.

Hint #7: If possible, practice unisons before the exam by measuring each of the three strings in a goodly number of your aurally-tuned unisons (whether they sound good or not) to be sure you are well within test tolerances. See also Hint #1 — get a critical evaluation from an RTT.

The Aural Repeat Sections

For aural-only tuners, the exam is now complete and all that remains is the paperwork. For those who elected to use a VDTA, there is another part of the exam, Part 2, the "Aural Repeat." After unison scoring is complete, we detune the exam piano once again, strip mute it

Pitch:	Points x 10	A(49)
Temperament:	Points x 2.5	13 consecutive midrange notes
Midrange:	Points x 1.5	C(28)-B(51)
Bass:	Points x 1	C(1)-B(27)
Treble:	Points x 1	C(52)-B(75)
High Treble:	Points x 1	C(76)-B(87)
Stability:	Points x 4	24 midrange notes
Unisons:	Points x 2	24 midrange notes

and give you 45 minutes to tune the 24 midrange notes aurally only. Examiners are required to remove all VDTAs from the room for the duration of this tuning. Following this we will measure the single strings in the midrange and figure your score exactly as before but only for the three categories of Pitch, Temperament, and Midrange.

How Long Does All This Take?

If you tune aurally only, the test will normally run 3 - 4 hours. If you choose to use a VDTA initially, the test may take up to an hour longer because of the aural repeat part. The chart at the right should help you understand in general how the test runs, and why it takes as long as it does. All times except those designated as a "limit" are approximate. These limits may be shorter at your discretion, but never longer than shown.

I hope this review of the whole tuning exam process has been helpful to you in understanding what goes on during an exam, and why it takes as long as it does. Next month I will begin a section-by-section review, emphasizing additional techniques and approaches you can employ both in the field and the exam room to improve your tuning. The order of this review will be the same order as the tuning exam's scoring categories. The first in line will be pitch, so tune in again next month.

	Aural-Only Exam	Electronic-Aural Exam
Part 1:		
Set up time	.1 - .2 hrs.	
Time limit for single-string tuning	1.5 hrs.	1.0 hr.
Measuring test tuning	.3 - .7 hrs.	
Scoring:		
Pitch		
Temperament		
Midrange	.1 - .4 hrs.	
Bass		
Treble		
High Treble		
Aural Verification of above scores	.1 - .5 hrs.	
Stability test and scoring	.1 - .3 hrs.	
Time limit for unison tuning	.5 hrs.	
Unison scoring	.2 - .4 hrs.	
Subtotal time, Part 1	2.9 - 4.5 hrs	2.4 - 4.0 hrs.
Part 2:		
Detuning		.1 - .2 hrs.
Time limit for aural repeat of midrange		.75 hrs.
Measuring midrange		.2 - .3 hrs.
Scoring:		
Pitch		
Temperament		.1 - .3 hrs.
Midrange		
Aural verification		.1 - .3 hrs.
Subtotal time, Part 2	0	1.2 - 1.9 hrs.
Total time	2.9 - 4.5 hrs.	3.6 - 5.9 hrs.
Sub-total:		
Examinee time limits	2 hrs.	2.25 hrs.

GOOD VIBRATIONS

Questions Answered: Baldwin Assembly; Stress Systems; Soundboard Stiffness

Nick Gravagne
New Mexico Chapter

Though this column does not solicit questions from readers as do Susan's and Rick's, I do get question-laden mail and phone calls. I wish I had time to answer them all. I talked to Susan about the problem and she related to me that she was vaguely familiar with the feeling. I suggested that every so often I would write an article or two — a tying up of loose ends plus an inclusion of related tidbits — and Susan said, "Do it." So I did it. This is the first of two installments.

Baldwin's Accu-Just Downbearing

Question: *The Baldwin method for setting downbearing has been referred to in your articles. I understand that their process is advantageous from a production standpoint. How is this so?*

Although the Baldwin system allows for bearing to be individually and precisely set for each string, the advantage to Baldwin from a production standpoint is in how their unique system facilitates assembly. The soundboards are crowned as usual, but the bridges can be uniformly and efficiently processed — graphite, holes, notches and pins — without regard to making them oversize (purposely too tall) for eventual planing and consequent finishing. The plates and pinblocks can be installed to predetermined specs allowing for downbearing to be completely set at the unique vertical (rather than slanted) hitch pin.

Said another way, building a piano this way requires that the soundboard crown be *more or less* what it should be, that the bridges be *more or less* built to a specified height, the pinblock and plate be *more or less* set to height, and then, given these predetermined settings, downbearing can be set by maneuvering the rear string segment up or down on the hitch pin in order to obtain some desired angle. If this approach were tried on a piano without the vertical hitch pin, the downbearing angle would be different in each instrument due to small accumulations of discrepancies or otherwise insignificant errors. The Baldwin hitch pin absorbs these variables and allows for a consistent downbearing angle while at the same time trims the man-hours necessary to construct the piano. Therefore, the only people more happy than the designers are the cost accountants.

Stressed Out Or Caved In

Question: *You've written about stress systems, such as arches and domes, in discussions on soundboards. What actually is a stress and why is an arch or dome superior to a flat support? I've heard it said that modern arches don't "press out" at the ends like those of hundreds of years ago. Is this true of the modern soundboard?*

The word stress has two precise meanings depending on which discipline of engineering studies we are considering. The first, and most common conception of the word stress, comes to us from the study of *mechanics*, here it is understood to be an applied force distributed over a defined area such as pounds per square inch (psi). In ordinary usage, however, we omit the consideration of force-per-area and simply say that something is either minimally or seriously stressed because a force has been applied to it.

The second use of the word stress is not what we usually imagine. In the branch of engineering called *strengths of materials* a stress is also a force, but it is not an *applied force*. It is, rather, a *reactionary force* which springs to life in the fibers of a particular material in order to *resist* an applied force. If the inherent strength of the material (say, wood or steel) is weak relative to a given force, the material will not be able to generate of its own accord the required resisting stresses to react against the applied load, and the material will seriously deform or break. Students of this discipline spend their time thinking about and talking about why steel is stronger than wood, for example, and what the pertinent numbers and symbols mean.

A personal (if slightly uncomfortable) comprehension of the second meaning of the word stress can be had if you imagine that you are asked to stand up and bend your arm at the elbow so that your forearm is parallel to the floor with your palm facing up. Except for the weight of your forearm (which we'll call negligible) your entire arm is relaxed and unstressed. Now if a twenty-pound weight is placed in your hand and you are required to maintain the position of your arm, you will very quickly relate to the reciprocity of applied force and resisting stress as bones, tendons, and fibrous muscle material of the arm generate the required stress to keep everything in equilibrium. And another thing: stress and deformation — that is, a change in the shape of the acted-upon member or system — are always working as a pair (even if the latter cannot be seen, or can barely be measured); another fact quickly grasped when comparing your unstressed, pliable arm to the harder and stiffer stressed one. (Think of this the next time you feel "stressed out," or you hear that so-and-so got "bent out of shape." What is really happening?)

Stress Systems Either Work Hard, Or Smart

Imagine a person standing on a plank which spans a small creek. The plank will deflect downward under the person's weight and the top face of the plank will bend in compression while the bottom face will bend in tension. If this crude bridge is not very bulky, there will be gross, downward deflection. This is a simple stress system operating in one dimension only against the applied

load. It is relatively weak and inefficient and, although simple and cheap to set up, usually wasteful of material since it requires bulk in the member or assembly in order to be functional. If a soundboard were designed flat, it would need much deeper ribs than found on crowned boards in order to resist bearing. This one-dimensional stress system works hard, not smart.

An arch is a stronger, more efficient support and is referred to as a two-dimensional stress system. That is, a vertical force applied to an arch is redirected along its length and deposited at, and into, support abutments. In its stressed condition the arch is reacting longitudinally as well as upward to resist the load. Since the support abutments are crucial components in that they shoulder much of the applied force, the constructed arch requires less bulk of material compared to a one dimensional stress system in order to sustain the same load without gross deflection. Generally, a force acting on the convex surface of an arch has the effect of compressing, or squeezing it within the limiting confines of immovable supports. The arch works smart, not hard. See Figure 1.

Now if we take our arch and spin it from the top like a propeller, the figure of a dome will be formed. As can be imagined then, a dome incorporates an infinite number of arches extending out radially from a common center making this type structure a three-dimensional stress system — and it is exceedingly strong and efficient. Like the arch, vertical forces acting on a dome's convex surface place the entire structure in compression, and the effect of the force at the perimeter of the foundation is one of an outward push. A healthy soundboard/case system is essentially a dome captivated by a dense foundation. If that foundation gives way under the constant bearing pressure, the dome will downgrade to a simpler arch (for reasons we won't go into here). And if conditions are exacerbated through shrinkage or other destructive tendencies of poor design or old age, the arch will further downgrade to a simple one-dimensional stress system which cannot hope to support a downbearing load. Also like the arch, the dome depends less on bulk material for its resisting strength and more on the economy of redirecting forces to a more dense and stable foundation. Of the three systems the dome works smartest, and least hard.

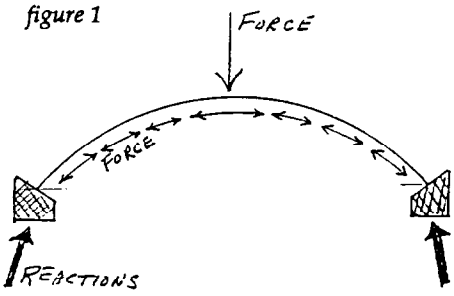
In the fascinating Medieval Era of Gothic Architecture, arches and domes dominated the scene. They also dumped on the scene quite a bit, however, because the aforementioned outward thrust was not properly canceled into strong abutments. The aesthetic "flying buttresses" on some of the exquisite cathedrals were actually not part of the original concept but were, rather, retrofits designed to hold the walls up so that the arched ceilings would not fall in on the heads of the congregations (thereby inflicting a liturgical crimp in the service). The problem was not so much in the design as in the choice of building materials — stone. Masonry material is great stuff if subjected to compressive forces only, but placed in tension, a potential work of art quickly becomes a pile of rubble.

"Modern arches," such as seen in much civil engineering and architecture, are often constructed of material which is inherently strong in both compression, and more importantly, tension. Steel, for example, due to its great molecular strength, generates huge reactionary stresses to an applied load. An arch made of steel, given the other aspects of applied forces are acceptable, will "press out" very little at the ends and not require massive supports to keep it from caving in. This is fine and reasonable (if often times aesthetically bland or downright ugly) given the exigencies of modern construction. A soundboard could be made so stiff and rigid that it would not require a strong, immovable support (the case rims). but it wouldn't be much of a soundboard. You've heard of the "strong, silent type." That's what this soundboard should be, strong and silent — the "Gary Cooper of soundboards."

Through A Soundboard Darkly

A reader sent me a copy of a short *Scientific American* (July 1989) article regarding soundboard thicknesses of stringed instruments. A certain harpsichord maker; Tillmann Steckner, of London, Ontario, inadvertantly held one of his soundboards up to a window and noticed that the light was not completely blocked; it "shone through." But it wasn't shining through evenly. Dark regions appeared in what he considered to be evenly grained, equally dense (unit for unit) spruce wood. What was blocking the light in those regions? Steckner reasoned that the dark areas must be density concentrations which go undetected

figure 1



during the normal course of surface inspection since they lie comfortably hidden in the internal composition of the wood. Backlighting, either natural or electric, is apparently a simple and effective X-ray-like means of revealing their whereabouts. Perhaps thinning the board in those regions to the point where the backlighted panel looked equally translucent would improve "the resonance of the wood, by making the overall distribution of mass — rather than thickness — more uniform." Working with electric backlight, Steckner tested his theory on a harpsichord he was building for the St. Thomas Church in Leipzig. The instrument played to rave revues, and Steckner claims that this particular harpsichord is his best yet.

Although this is certainly not a conclusive test — no argument from Steckner — the process, also called "grain printing," is considered dubious by high-ranking acoustitions such as Carleen M. Hutchins, authority on violin acoustics. "The stiffness of the wood is what's important," she says, "and you can't equate stiffness with light transmission."

The article raised this question in the mind of our reader: *Is there no connection between density and stiffness?*

Yes, there is a very definite connection between density and stiffness as long as we are comparing apples with apples, spruce with spruce, and unit with unit. At the risk of speaking in generalities and oversimplifications, suffice it to say that the more closely packed the molecules are for a particular substance the stronger and stiffer it is. Maple is more closely packed than balsa wood and it thus exhibits greater strength and resistance to bending. We are aware of this truth when we consider the felt of the piano hammer. Due to the way the felt is pressed around the molding, there exists a higher density of felt per cubic unit closer to the core than exists at the outer surfaces. Although the molecular construction of the felt is the same throughout the hammer, the inner area is relatively stronger and more resistant

to bending. As to instrument soundboards, Hutchins' comment that density is not necessarily detected through light transmission does not suggest that there is no connection between density and stiffness. (A Big Thanks to the reader who sent the article).

If Steckner's theory raises some intriguing questions it also indicates a few processing problems, at least for piano soundboard panels which are not only much thicker than the harpsichord counterparts, but usually purposely shaped for uneven distribution of mass. Except for an occasional soundboard made of uniform thickness, virtually all old boards are tapered so that the middle areas, the front areas, or both, are graded thicker than rear and side areas.

What captures my interest (and always has) is the relationship of the total mass, including ribbing, of any soundboard — piano, harpsichord, violin, guitar — to its resonant frequency and subsequent impact on tone. Violin makers have always been keen on this point and go to no small trouble to "tune the plates" such that the upper spruce soundboard is some definite musical interval (usually a third) apart from the maple back. To accomplish this, the plates, (especially top, spruce plates) are gouged, planed and scraped until the desired frequencies are brought out. The removal of wood material adjusts the mass of the plates so that thinning renders them less stiff, less strong, and of lower frequency. Some violin makers lay the plates (one at a time) over an electrically driven speaker which emits a certain frequency from a tone generator. The plate, which is lightly covered with small granular particles, is tested for vibratory behavior as part of the thinning process. Wood removal ceases when the plate is resonant with the emitted speaker tone. But no matter how the plates are tuned, the religion of these doctrines seems to have been empirically worked out. I suspect that there might be something here for piano makers and rebuilders and plan on looking into the matter more closely. For the present I weigh the old soundboard assembly and compare it to the weight of the replacement board in order to compare masses. But I am not necessarily looking to duplicate mass.

As to relationships of stiffness, strength and specific gravity (denseness), the three popular, domestic spruce species — Sitka, Eastern White, and Engleman — demonstrate inherent differences. The species are listed in order of highest relative stiffness with Sitka first. For the moment, the actual numbers are unimportant, but the implication that the choice of a species for soundboards, and any impact on strength and tone, seems a fruitful area for experimentation. For what it's worth, I used common flexure formulas to calculate the amount of bending that would occur in a 40" long, 1" square cross section, centrally loaded, and simply supported (i.e., non-arched and simply resting on end supports) for both Sitka and Engleman. The Sitka deflects by 1" while the less stiff Engleman by 1 1/4". Now it seems reasonable to assume that such differences imply dual consequences in resistance to downbearing as well as in tonal coloring. Strength aside, (an easier factor to compensate for), a stiffer material exhibits brighter and more penetrating carrying ability for upper partials than less stiff material, which isn't to suggest any superiority of one species over another.

The next article in this series will answer a few other pertinent questions after which future articles will move on to such subjects as the results of a grand plate welding repair (pictures included), and a series on bridge repair, reconditioning, and recapping. ≡

Book Review

"The Educated Piano" by Edward J. McMorrow

Reviewed by Alan K. Vincent
Memphis Chapter

Editor's Note: *Book reviews are carried in the* Journal *as an informational service to our readers. The opinions expressed are those of the author: reviews do not represent official* Journal *endorsement or opinion.*

Alan Vincent is an RTT with extensive experience in both the manufacturing and field service aspects of piano technology, having worked with Aeolian and Baldwin and as an independent technician. He is currently Director of Technical Services for Young Chang America.

"The Educated Piano" by Ed McMorrow presents many interesting ideas regarding several traditional aspects of piano service. This book will give both the accomplished and apprentice technician useful information and should be a welcome addition to the library of piano service literature.

In the introduction, the author poses the question, "Where have all the fine pianos gone?" This question leads the way into the first chapter, and through most of the book, as we are presented with many solid ideas about the instruments we now service.

The differences between the fine pianos of the past and many of today's instruments are mainly attributed to changes in tone regulation standards (or lack of standards) over the years.

Chapter one begins with a listing of the attributes of a fine piano according to the author. A wide dynamic range, singing tone and serviceability are a few of the qualities the author associates with a fine piano. Mr. McMorrow defines each of his "fine piano" criteria and then gives examples of how these are achieved by the manufacturing companies and by certain service procedures. Also mentioned are common rationalizations for pianos that exhibit poor construction or performance.

Stated as first among the requirements for a fine piano is that it have a wide dynamic range and illustrate stability of tone regulation. If the tone of the piano changes drastically within a few months after tone regulation, then the instrument would not be considered a fine piano. If a pianist cannot play fast and softly at the same time, without exciting a noisy tone, then the dynamic range of this instrument would be questioned.

The presence of a singing tone, tonal definition, projection and color are all presented as further attributes of the fine piano. Explanations of the desired pedal functions and how they relate to the fine piano are also included within this section.

The author states that the action of a fine piano should be responsive to quick changes in dynamic expression. Several of the fine piano attributes seem to stem from a distinctly artistic perspective. Statements on the longevity, serviceability and capability for rebuilding close the section on the attributes of the fine piano.

"The Educated Piano" continues with a general overview of the construction of the fine piano. Topics such as wood, metal casting, wire and felt are presented. How the various elements of construction come together to create the fine piano is also discussed.

Chapter one closes with a discourse on tone regulation and an introduction of the author's Light Hammer Tone Regulation (LHTR) concept. Some very basic information such as the instruction that technicians develop voicing skills on verticals before attempting to tone regulate the grand piano is included.

The LHTR Procedure is a very interesting concept. This involves a significant lightening of the hammer mass (25%—33%) through the removal of felt and wood from the molding. This reduces the dead weight at the end of the key leverage train and the friction within each key and action part assembly enough to allow for the removal of the lead weights from the playing end of the key. The reduced inertia and friction allows the key and hammer to be set into motion and stopped with ease. According to the author's observations, this increases the control the pianist has over the action and also improves the tonal output of the piano.

The second chapter is entltled "Piano Mechanics." Inharmonicity, different plate termination points, bridge termination points and other items are presented. Moving on to the bellying process, the book offers an explanation of the different methods used in manufacturing for crowning soundboards, an overview of soundboard tapering and downbearing. Although not delving too deeply into these subjects, the author does present some useful information.

Within this chapter, the mechanics and geometry of the grand action are discussed. A range of specifications is offered for such dimensions as the action spread, hammer molding center line to shank flange center and checking distance. Friction and touchweight are introduced and important factors in the hammer to string contact are detailed.

The remainder of Chapter Two deals with tuning theory and practices. The history of the development of equal temperament, beat rates, unison tuning and many other tuning subjects are discussed. This book offers many helpful ideas on temperament, octave and unison tuning. There is even a section on tuning the screw stringer grand. The controversial topic of electronic tuning is also presented at length, covering inherent errors of tuning instruments and which types are the most useful. Hints on bass and treble tuning and pitch raising are also included.

"Piano Service Procedures" is the title of the third chapter. The function and service of the capo bar is covered thoroughly. The 10-step sequence for

reshaping the capo bar is very helpful as is the information on detuning the duplex scale, although the author advocates an acute v-shape rather than the more conventional radiused configuration for the capo.

Chapter Three offers further explanation of the LHTR procedure. The described procedure is based on a post-1960 Steinway. Starting with correcting any strikepoint problems and fitting flanges to tilted screws, the LHTR process then progresses through evening the flange centerline and hammer strikeline. A uniform hammer line is necessary to maintain the uniform graduation of hammer mass during the tail shaping process, we are informed. The basis of the LHTR, the lightening of the hammer mass, is well documented and illustrated with excellent photographs. "Tricks of the trade" are also revealed, which will prove helpful to technicians performing this type of work regularly.

A section on grand regulation follows which should be helpful to technicians interested in improving this aspect of their skills. Tuning and hammer hardening are also included as steps in the LHTR procedure. Topics such as damper regulation and repair, key rebushing, action centers (including service help on the Teflon bushing) and treating verdigris close Chapter Three.

The fourth and final chapter is titled "Professional Practices." The subjects covered include tips on developing technical skills on the vertical piano, how to evaluate the rebuilding or reconditioning job, tools, concert work and even a "plug" for the PTG! Of particular interest is the section on professional ethics.

Hints on dealing with dealers and customers should be very helpful to all technicians.

The "Educated Piano" contains a lot of helpful information and interesting ideas. The LHTR technique is particularly profound and well grounded in theory. Some of the ideas expressed may be somewhat confusing to apprentice technicians as the author often does not delve too deeply into explanations of his ideas or of background material. I do feel that a through knowledge of static downweight and upweight measurements and the information they provide is necessary as preliminary knowledge before attempting implementation of the LHTR. Many field technicians are familiar with this, however, and classes are held throughout the PTG on this subject, for those who require background information. This will most likely be a popular book among piano technicians, and Ed McMorrow should be commended for his excellent contribution to the growing body of piano service books! ≡

ANTIQUE RESTORATION

The Tools Of Early Piano Building

Edward E. Swenson
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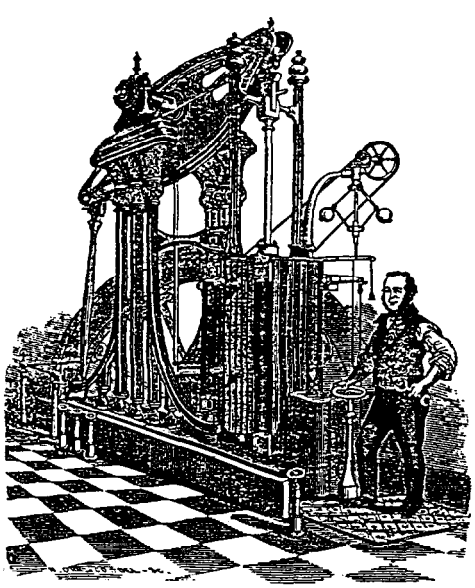
Very little is known about the tools, building methods and the materials used by early piano builders, particularly during the first hundred and fifty years of piano history, when the wood-framed fortepiano reached an extraordinary state of perfection. Famous makers obviously wanted to maintain their competitive edge and they jealously guarded their secret building procedures. To find information about early piano building, it is helpful to consult more detailed and generous mid-nineteenth century sources.

The motivation for the current fortepiano revival is that we should be allowed to hear the music of Mozart, Beethoven, Schubert, and others on the instruments which the composers originally intended. But are modern replicas or even restored originals really as good as the new instruments used by Classic and early Romantic period composers? Replica builders and the restorers of original instruments face considerable challenges in their pioneering attempts to duplicate both the craftsmanship and materials of early piano building. The large number of original fortepianos which have survived, often with original strings, hammers, complete keyboards and original finishes, is a tribute to both the excellent skill and high quality materials used by period builders. After an interruption of over one hundred years in the building of fortepianos, it is not surprising that modern replica makers must struggle to recreate the mastery of builders who grew up in a flourishing tradition of competitive hand craftsmanship. The skill of famous builders such as Stein, Walter, Graf and Streicher live on in their instruments, but their methods were not adequately described in writing at the time.



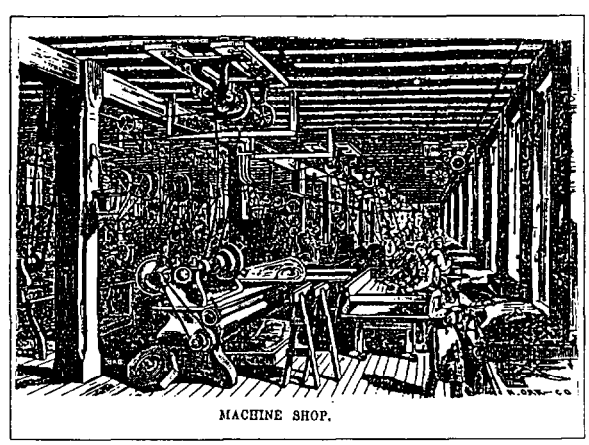
THE ENGINE.

One of the most extraordinary books about early piano building was written in Italian by Giacomo Ferd. Sievers in 1868.[1] Sievers began to work as a piano builder in his native St. Petersburg, Russia in 1833 and then moved his factory to Naples, Italy in the 1860s. His book, based on thirty-five years of first-hand practical experience, provides important descriptions of building procedures in an era before the advent of steam-and electric-powered machinery.

In a brief introduction, Sievers pointed out that the most important virtues for a piano builder are long years of practical experience, intimate knowledge of raw materials (including sources for the best quality products both at home and abroad), and familiarity with machinery. Although little is known about Sievers, many of his superbly made and beautifully finished instruments are still extant and in use in Europe. His knowledge of the international piano building scene extended beyond Western Europe. Sievers described, for example, the dynamic American piano trade in the middle of the nineteenth century:[2]

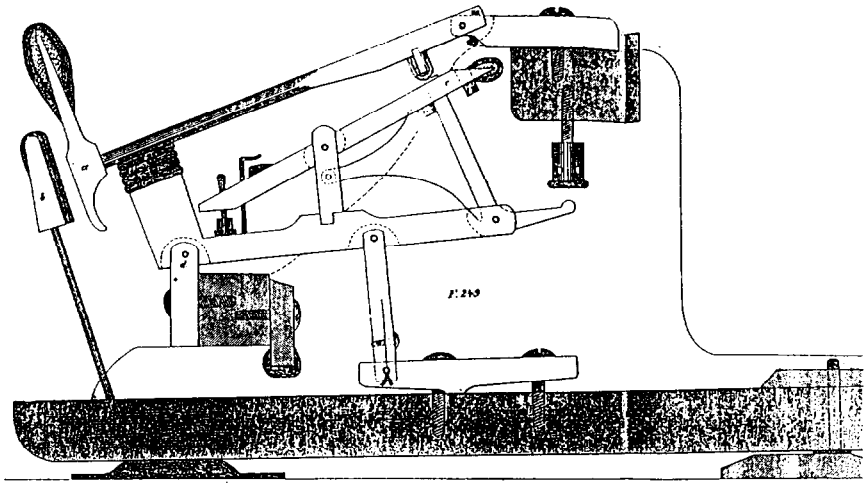
There are gigantic firms in Boston, Baltimore and New York. They follow the English school and they build good pianos with excellent hardware and materials of every sort and of real artistic value. The firm of Chickering in Boston is considered as the one which represents the greatest factory known so far; its physical plant is enormous; it is equipped with machines of every type, that is steam engines, forges for the smiths, foundries, and lathes. In sum, everything is organized together in the same establishment. Similarly the large Emerson company, also in Boston, manufactures about 1.000 pianofortes per year; in New York the large factories of Steinway, Haines, and Gabler and in Baltimore those of Knabe and others, not only supply a large number of pianofortes to the entire United States, but also export their instruments to Mexico, the Antilles and also South America.

Although Sievers may have visited the United States, it is more likely that he saw a copy of a contemporary American newspaper, which provided a thorough description of the Chickering factory, including drawings of the steam engine and belt-driven machinery:[3]



MACHINE SHOP.

Sievers' neglected study of early piano building techniques also includes an Atlas containing detailed scale drawings of piano actions and piano building tools along with recipes for spirit varnishes and glues. The drawing at top right shows Sievers' representation of an early Steinway grand action with crow's foot, rocker arm and wooden action hanger:[5]



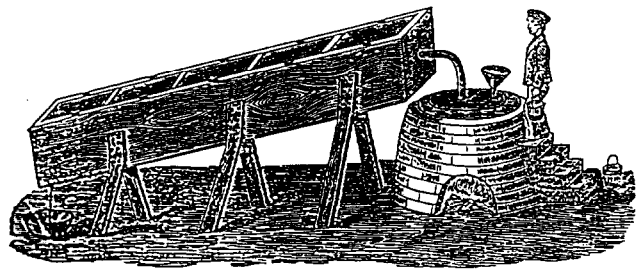
Based on his enormous skill and international experience, Sievers' book is essential reading for anyone interested in learning more about early piano building. In addition to providing detailed descriptions of various methods of seasoning wood, Sievers also offered this description and the lower illustration at right, of the steam kiln used at his factory:[4]

Seasoning Wood By Means Of Steam

An hermetically sealed boiler with a bolt-down lid containing approximately 20 buckets of water, and perfectly walled in by an oven of bricks, would be the major expense of this apparatus.

A box of strong fir, four meters long, 85 centimeters high and 65 centimeters wide, with a tight lid forms the second part. This box placed obliquely with one of its ends toward the boiler, receives the steam by means of an iron pipe — while the other end, placed at about 30 centimeters from the ground on fixed supports is furnished at its lowest point with a hole which allows an exit for the water condensed from the steam.

The pieces of wood, cut to the desired dimensions, are stacked like knives upon the little bridges in the box, with many little wood spacers inserted to prevent the pieces from touching. The cover is closed tightly and the apparatus is ready. The boiler must be maintained for 48 hours. Every three hours one adds the necessary water introducing it by means of a funnel fixed for this purpose in another pipe in the cover. The wood may be quite green, for the steam purges it of all the noxious substances which exit as a tincture as black as ink. Before removing the wood from the box, it is necessary to let it cool for approximately six hours. When removed the pieces are swollen and wet; placed in a dry and airy location they dry out rapidly, become light (in weight) and pale in color, but they remain stable and neither crack nor warp. They become more easy to work and take glue most excellently.



A short article cannot do justice the importance of Sievers' treatise, which has been out of print for nearly one hundred years, but we can reproduce some of Sievers' drawings (below, and on the following page) of the tools and machinery used at his factory.

Description of Selected Tools

Plate 1: planes, and work bench
Fig. 36: long-handle knife
Fig. 64: file cleaner made of thin, braided brass wire
Fig. 80: damper felt compressing pliers;
Fig. 78: key bushing pliers;
Fig. 92-95: male and female screw taps and handles for making wooden screw threads and sockets for piano legs;
Fig. 79: Viennese action capsule expanding pliers;
Fig. 88: screwdriver for two-slot screws.
Fig. 102: screw threading machine;
Fig. 104: wire cutting machine (with holes for different wire diameters).
Fig. 125: wedge-adjusted jig for planing wooden pieces to equal thickness;
Fig. 123: clamping press
Fig. 150: small bow drill for fine drilling; Fig. 151: bench drill (Sievers commented that the strength of two men was often required to drill large holes in thick stock with this drill).
Fig. 152: combination tredle saw, lathe and horizontal drilling machine
Fig. 211: wire testing machine
Fig. 212: bass string lathe
Fig. 213: & 214: wire gauges
Fig. 217: glue pot
Fig. 304: tuning lever with hook for making looped strings
Fig. 305: tuning mute

End Notes:

1. Giacomo F. Sievers, *Il Pianoforte, Guida Pratica per Costruttori, Accordatori, Dilettanti e Possessori di Pianoforti con 300 disegni.* Napoli: Stabilimento Tipografico Ghio, 1868 (Text vol. 1; Atlas vol. 2)
2. *Ibid, p. 10*
3. "Chickering & Sons' Piano Forte Manufactory," *Ballous Pictorial Drawing Room Companion* (May 1859), pp. 56-7.
4. Sievers, *op. cit.*, pp. 21-2.
5. Sievers, *Atlas*, Table 8

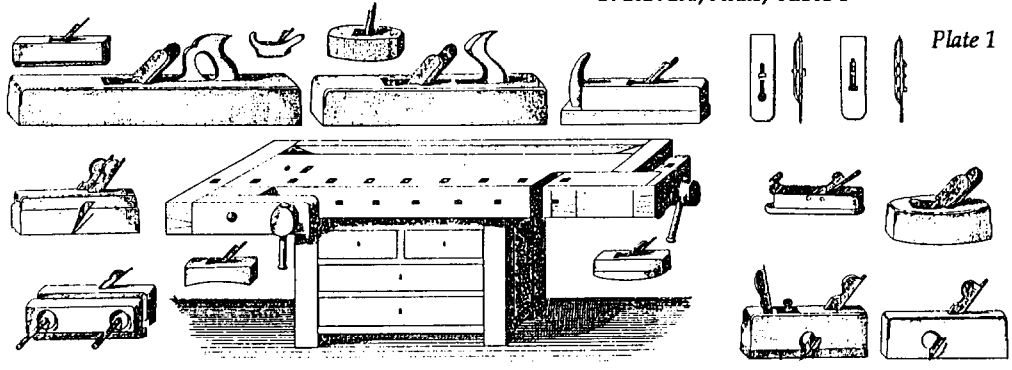
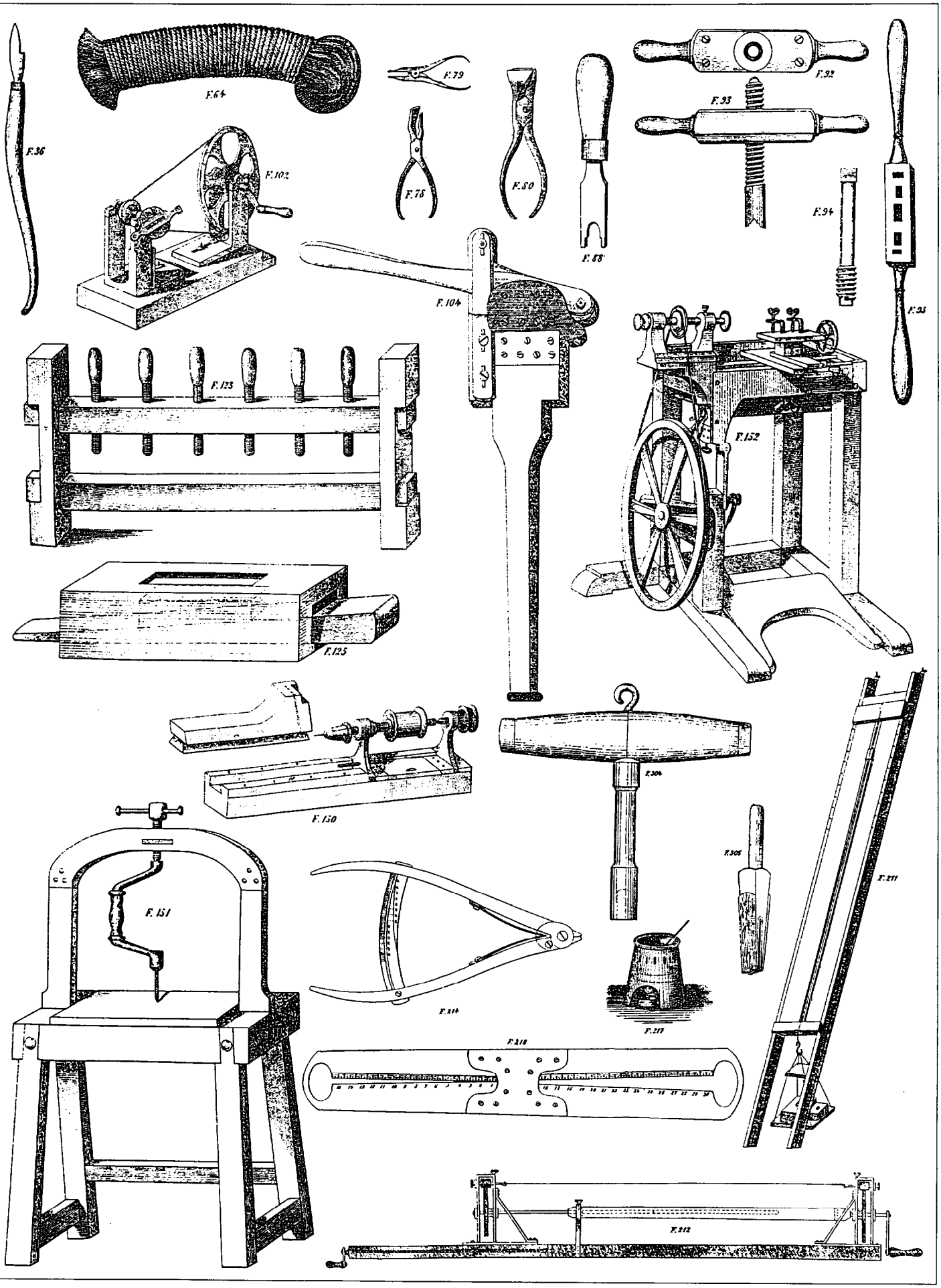


Plate 1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At Large

The PTG Asian Tour: Part II

Yat-Lam Hong
Western Michigan Chapter

Our next stop was Seoul, about 600 miles east of Beijing. Since China and South Korea have no diplomatic relations, we had to first fly south to near Shanghai and then northeast to Tokyo to catch a different flight to Seoul. (This is to avoid flying over South Korea's air space, and risking getting shot down.) Although United is an American airline, its flights originating from Beijing are considered "Chinese," which necessitated this roundabout routing. We actually traveled 1,800 miles to go 600 miles, and it was one of those anomalies due to politics.

The first thing that struck me in Seoul was the tight security. As we filed past customs at the Kimpo International Airport, we had to open every bag and every package for inspection. It was embarrassing to have one's dirty underwear inspected in public, for instance, but that's just one of the indignities one had to put up with for everyone's safety, or one just doesn't enter the country. If you think security is tight at arrival, it's much more so at departure. Upon entering the airport, a traveler has to go through *two* rounds of metal detectors and X-ray machines, plus a body search. Not only did every piece of luggage have to be inspected, all batteries from cameras, tape-recorders, etc. had to be removed from these devices (and kept separately by the airline personnel until one debarks the plane), as batteries could be used to power timing devices for bombs. There were overhead closed-circuit TV cameras everywhere, and we couldn't help feeling watched all the time. Security was so tight that I couldn't find a single wastebasket in the entire airport, and even the men's rooms had only hot-air hand-driers instead of paper towels, which would have necessitated containers for disposal of waste papers. (Wastebaskets could be ideal hiding places for bombs.) Uniformed guards were everywhere, and, I'm sure, plainclothes men, too.

Tight security was also evident in the busy shopping areas. We saw riot police in groups of five or six stationed every few blocks apart, each carrying machine guns and walkie-talkies. I got the impression that, if anyone tried to create a disturbance of any kind, he'd be "taken care of" immediately. Obviously, the Korean Government holds the attitude that the best way to prevent trouble is to expect it at all times. Judging by the frequency of protests and demonstrations there, such a policy may be a necessity — although the real solution is to eliminate the desire and need for such demonstrations (and frequently their accompanying violence). But that would've called for a total obliteration of poverty, ignorance, social injustice, corruption, etc., at every level of society, and it's a lot easier said than done.

Our stay in Korea was a hectic one, as we visited three major piano manufacturers in two days: Young Chang and Samick one day, and Sojin the next. All three companies are located in cities within an hour's drive of Seoul, and all three are newcomers in the piano business — relatively speaking.

Located in Inchon, about 20 miles west of Seoul, Young Chang is just over 30 years old. It has three factories there, but we had time to visit only one, and even that was a rather hurried visit, because of the tight schedule. Like some others, Young Chang is an "international" piano, as it gets its materials from all over the world: Sitka spruce from Alaska, rock maple from Vermont and Michigan, mahogany from Indonesia, hammer felts from England, and steel strings from Germany. In 1982, it also won the Frankfurt Music Fair International Trophy for Technology, of which the company is quite proud. Currently Young Chang makes six sizes of grands (from 4' 11" to the 9' concert grand) and seven sizes of verticals.

During our tour, we saw much automation and computerized technology at work. One of the most impressive was the storage system in the warehouse, where finished pianos, all sealed in plastic and sitting on individual pallets, were stacked on steel racks six or seven stories tall. We were given a demonstration of how it works. The hydraulic crane would pick up a piano at the loading gate, and move it on railroad tracks to the desired location. Then the piano was raised to the proper storage level, and simply shoved into place. Pianos can be retrieved the same way — all untouched by human hands. The operators work from inside a glass-paneled room, controlling the computers, which also keep track of the exact location of each piano in storage. Thus, the workers are spared the dangerous job of moving pianos around.

Our tour leader, Mr. H. J. Kwon, spoke very good English, and we didn't have to strain ourselves to understand him. Among other things, he told us that the three Young Chang factories have a total of 5,400 employees, and the company produces 100,000 verticals and 12,000 grands a year.

That afternoon, we visited Samick Musical Instruments Manufacturing Company in Bupyong. Mr. Hyo Ick Lee, the company president, personally greeted us, and spoke to us in a large meeting room, through an interpreter, about the company's history. Samick was formed in 1958, and started manufacturing vertical pianos in 1960. It was the first Korean manufacturer to export pianos. Grand production started in 1970. In 1982, Samick signed a joint venture agreement with the Baldwin Piano & Organ Company. In 1983, it hired German scale designer, Klaus Fenner, to upgrade its pianos. Along the way, the company has garnered some impressive prizes, including the "Grand Prize in Industry" awarded by the presi-

dent of Korea (1977), the "$20 Million Tower" Trophy for exporting in excess of that amount (1983), the "Gold Prize" in Quality Contest by "The Diapason," the French monthly magazine (1985), and the Japanese Industrial Standard "Mark of Excellence" award (1988).

Like Young Chang, Samick also imports a good deal of materials from abroad, some from the same sources: Sitka spruce for soundboards from Alaska, hammer felts from England, strings and Delignit pinblocks from Germany, etc. The plates of both companies are made by a vacuum casting process, whereby air bubbles are completely sucked out, thus eliminating the possibility of hidden weak spots in the metal. This "V-Process" also gives the plates a much smoother finish and greater visual appeal.

Samick is a conglomerate consisting of eight separate factories, each producing a different product or components thereof: upright pianos, grand pianos, piano actions, stringed instruments, metal works, electronic musical instruments, woodworking plant, and a sawmill. Besides pianos, Samick also makes harmonicas, reed organs, guitars, banjos, violins, drums, cymbals, electronic keyboards, etc.

One of the remarkable things that Klaus Fenner's "Imperial German Scale" did for Samick was to create longer strings than the competitors' in pianos of the same size. Samick's 118 cm. model (46.5"), for example, actually has longer strings than the 131 cm. model (51.5") of another brand. One could probably say Samick is a German piano made in Korea.

Mr. Lee, Samick's president, is a devout born-again Christian. His religious beliefs permeate the factory environment, and quite a few of his employees are also Christians. The 300-seat meeting room, where we had our introductory lecture, serves as a full-gospel church on Sundays, where employees could come for their worship services. Equipped with a large supply of hymn books and Bibles, the room was also decorated with crosses and pictures of Jesus and Virgin Mary. (Come to think of it, this is certainly not the only piano company where the president's Christian faith is reflected in the factory. We have an American piano company that fits this description, too.) Certainly, there's nothing wrong with asking for Divine Guidance in one's work.

At the several Samick factories we visited, we saw much automation at work. For example, plate drilling was all done by computer-controlled robots, and so were many other operations in action parts manufacturing. The enormous machine shop produces all the hardware used in Samick pianos: bridle wires, backcheck wires, desk knobs, action brackets, center pins, bridge pins, tuning pins, set screws, hinges, pedals... Not only were these machines built by Samick, but the machines that built *those* machines were also built by Samick. In spite of all the automation, Samick still has to employ 6,700 workers to staff all its operations. The factories are spread so far apart that we had to go by bus between factories. The problem is again due to expansion at different stages, and the unavailability of land nearby.

We ate well that day — perhaps too well: Lunch as guests of Young Chang, and dinner as guests of Samick. The meals were at different restaurants, both featuring (mostly) Korean food in buffet style. For some of us, these meals were our first encounter with Korean cuisine, which was an eye-opener, or rather, mouth-opener, as quite a bit of it was hot and spicy. For example, kimchi (cabbage pickled in vinegar, peppers, garlic, etc.) was just too powerful for some, and had to be downed with lots of iced water. It seems Koreans like to eat a lot of things raw: fish, shrimp, squid, octopus, which were just delightful. However, a few of us found the raw tripe a bit hard to stomach, which is, of course, the result of cultural conditioning, and not that there was anything wrong with the food itself. But then, there were lots of familiar fare, too: fried chicken, roast beef, lobsters... and about 20 different kinds of desserts to choose from. It was a day of feasting, for which we can't thank our hosts enough.

The next day, we visited the Sojin Piano Company, which is a division of the Daewoo Group, a giant industrial conglomerate. Sojin, which also makes Royale pianos, is located in Yeoju Kyunggi-Do, about an hour-and-half's drive south of Seoul. It was a more leisurely tour, as we were going to spend a whole day there. Unfortunately, it rained very heavily all day long. To keep us dry as we disembarked from the bus (and walked between buildings), some 10 or 12 Sojin employees would form a dry path with outstretched umbrellas for us to walk under, while getting soaking wet themselves. The sight rather reminded me of the time Queen Elizabeth I was visiting somewhere and came to a puddle in her path. Without the slightest hesitation, her escort took off his cloak and threw it over the puddle, so the queen could walk across without getting her shoes dirty. Similarly, we got Royal treatment at Sojin.

As was typical, our tour began with an introductory lecture, where we learned something about the company. The youngest of the three Korean piano manufacturers we visited, Sojin was established in 1964 in Guro-Dong, Seoul, as a maker of pianos, wall clocks, and guitars. With the participation of Daewoo Equity, the new factory at Yeoju (where we visited) was completed in 1980. It became part of the Daewoo Precision Industries Ltd. in 1983. In 1984, Sojin won the government's approval to use the KS (Korean Standard) mark on its pianos and actions. In 1986, Sojin employed German consultant Meister L. Schell to improve its pianos, and in 1987, won the Grand Prix of Total Quality Control by the Korean government. In 1988, Sojin employed Japanese consultant Mr. Ishikawa, and won the "Diapasson d'Or" award in France. The proudest award Sojin won was the June 1989 approval to use the JIS (Japanese Industry Standard) mark on its pianos and actions. Our tour guide said that pianos without the JIS seal of approval are simply not good enough. (By that standard, Sojin had just barely made it. We were there on June 8, 1989.)

As of June 1, 1989, Sojin has 1,185 employees on its staff. The breakdown is as follows: 59 engineers, 56 foremen, 961 technicians, 60 clerks, and 49 miscellaneous employees. The company now produces 24,000 verticals and 6,000 grands a year. Of the total annual output of 30,000 pianos, 12,000 are exported to the U.S., and 6,000 to Europe. The rest is for the domestic market. Currently, Sojin makes three sizes of grands (from 5' 2" to 7' 1") and eight models of verticals (from 42" to 48"). Sojin occupies a site of 195,000 square meters, and its factory has 55,000 square meters of floor space.

Its main machinery consists of two lines of automatic conveyor systems for vertical piano assembly, computer-controlled machines (for key-hole routing, key slitting and action parts machining, key-frame drilling, key-pin inserting, and plate-drilling), and 1,400 other non-computerized machines. Even with so many machines, a lot of the operations still had to be done by hand. One of these is key leveling, which uses a very clever device consisting of vertical

weights (actually steel rods) mounted in a rack in which they can slide up and down very easily over the keys. It's a set-up similar to the way harpsichord jacks work. If you do a lot of key leveling, such a tool should be a welcome addition to your shop.

For lunch, we were the guests of Sojin for a Korean-style barbecue at a restaurant out in the country. We were seated four to a square table with a hole in the center, into which was placed a pot of burning charcoal. Over this heat source, we grilled our own meat and applied seasoning to our own taste. It was somewhat similar to the Chinese "fire pot," and lots of fun!

That evening, to our pleasant surprise, Sojin delivered to our hotel, one for each of us, souvenir pennants of our visit, complete with mounting rods and a marble base. It was so freshly made that even the glue for the lettering wasn't dry yet. It was specially made for our visit, and we were greatly honored by this gesture of friendship.

Our next stop was Kyoto, Japan, where we were to attend the sixth convention of the International Association of Piano Builders and Technicians (IAPBT), which also happened to be the 60th anniversary of the Japan Piano Technicians' Association (JPTA). Although the convention was only a two-day affair, the layout was similar to our PTG conventions. There were exhibits by piano manufacturers and suppliers, and like PTG conventions, the busiest booths were the ones that sold piano tools and supplies. There were also classes on technical topics and a council meeting, where organizational matters were discussed and resolved. The five organizational members of IAPBT are the technicians' organizations in Australia, Korea, Taiwan, Japan, and the United States (PTG). (The European technicians have their own organizations, and are not a part of IAPBT.) It was here that we met some of PTG's old friends, such as Henry Haino, Kenzo Utsunomiya, and Mitch Ito.

Perhaps due to space problems or the need for noise reduction, the manufacturers' exhibits were in two separate rooms—one at each end of the building, apparently segregated by continent: one room had only European pianos, and the other, only Asian pianos. I had a chance to try out every piano in both rooms, and by comparing extremes with extremes, came to a fascinating conclusion: The best Asian piano is comparable in quality to the best European piano, but the worst European piano is still much better than the worst Asian piano, although it costs a lot more. Here, I must emphasize that this is strictly the prejudice of one technician, and it must not be mistaken for the opinion of the PTG group.

Quite by chance, I wandered into a room where a Kawai technician had just finished teaching a class on grand hammer and shank replacement, and learned from him the best way to trim off hammer shanks (that is, by using a Japanese saw, which cuts on the pull stroke, and a specially designed support block). Verbal communication was impossible, as I don't speak Japanese, and he doesn't speak English or Chinese, but through much pointing and gesticulating, he got the idea through to me, for which I'm most grateful. I was very much impressed by this spirit of sharing that was evident everywhere at the convention. At one of the suppliers' booths, I discovered the best hammer filing tool I'd ever used. I just wish I'd bought more of them while I was there.

However, our main business at the convention was to serve as delegates representing PTG at the Council Meeting. A good portion of the time was spent on discussing the importance of maintaining A-440 Hz. as the standard pitch, and on the election of new officers. Ron Berry, our PTG president, was elected the new president of IAPBT. It must have been the first time that one person was elected president of two major piano technicians' organizations simultaneously, and it appears that Ron has his work cut out for him.

Without meaning to slight anyone, I must say the superstar of the Council Meeting was Miss Masami Nishishiba, our simultaneous interpreter who translated everything from Japanese to English and vice versa with such ease and fluency, and without the faintest trace of stiltedness. It was a virtuoso performance, which just bowled me over. In a conference like ours where the participants don't speak the same language, the simultaneous interpreter could easily make or break the meeting, and we owed much of the success to Miss Nishishiba's efforts. Later, I even wrote a thank-you letter to the president of the company that provided us her services, and recommended that she be given a big raise. I hope she gets it.

From this point on, our group was joined by some of the IAPBT participants, which included Japanese, Taiwanese, and Korean technicians. (The Australians didn't come.) Our next stop was Hamamatsu, a city halfway between Kyoto and Tokyo, where we were to visit Kawai and Yamaha. We traveled the 150 miles by bus — well, actually two buses, and our group had swelled from 35 to about 90.

Our visit to Kawai was both rushed and slow at the same time. It was rushed because, by the time we arrived at our hotel in Hamamatsu and had lunch there (as guests of Kawai), it was already close to 2 p.m., and we only had about two-and-half hours before the Kawai factory shut down for the day. When we arrived at the factory in Ryuyo, just east of Hamamatsu about 12 kilometers from our hotel, we'd lost another half hour. Once we got there, we spent some time in the meeting room for an introductory lecture on what we were about to see, and then we were divided into six groups for our tour.

The tour was also very slow, because the group I was in had participants who spoke Japanese, Chinese (Mandarin), Korean, and English, and most of them could understand only one of these languages. For example, the first place we visited was the famous anechoic chamber, which many have seen in Kawai's brochures. Our guide could speak only Japanese, and he explained the features of this research facility in Japanese. Then, his interpreter would translate his remarks into English, so the Americans could understand what was said. Then another technician, who was conversant in both Japanese and Korean, would translate the same remarks into Korean—for the benefit of the Korean technicians. While all this translating was going on, a Taiwanese technician who could understand Japanese would translate the same remarks into Chinese, so his colleagues from Taiwan could understand. This way, nobody had to feel he was being left out, and it was certainly the fairest way to treat everybody. When anyone asked a question in whatever language, his question would be translated into the other three languages, so everyone could understand what was being asked. Then our guide would answer in Japanese, which was again translated into English, Korean and Chinese. All this translating took up a long time, and it was exasperating trying to learn anything this way. We must have spent 40 minutes or so in that room, while, if one

language could serve all, 10 minutes should do.

In those 40 minutes, we became acutely aware of how handicapped we were—not knowing the language of the country we were visiting, and for that, we only have ourselves to blame. It probably hit me harder than the rest of the group, since we were in China only a few days earlier, where I could speak to anyone in their language, and had no difficulty reading street signs, asking for directions, ordering meals and beverages in restaurants, or bargaining with street vendors. It's as though, all of a sudden, I had become deaf, mute, and illiterate, which was a very humbling experience. I think there's a lesson here for all of us: we need to be a lot more tolerant of foreigners who have difficulty expressing themselves in our language. Pardon me for getting off the track. Now, back to the Kawai tour.

From the anechoic chamber, we moved on to the recital hall, where a fine pianist was there to play a short recital for us on Kawai's best piano, the model EX. (EX probably stands for "excellence?") This hall is also part of Kawai's acoustical research and development facility. It had movable panels on the ceiling and walls, which could be adjusted to simulate any concert hall in the world for reverberation time and other characteristics. Thus, the EX could be voiced to suit the acoustics of any auditorium before the piano ever sets foot (I mean, legs) there.

The recital was good and so was the piano, but it left us with less than an hour to see the rest of the factory, which was the main focus of our visit. The only way to see it all was to rush through every department, and with our guides urging us to move along, there was no time to linger at any one of the areas of interest to us. Unfortunately, photography was not allowed at Kawai; otherwise we could've toured the factory in detail later by studying our photographs. The only person permitted to take pictures was the official Kawai photographer, who was busy photographing us for Kawai's newsletter. On second thought, our very rushed tour could've been planned that way, because the threat of industrial espionage is a very real one, and with a group consisting of technicians from competitors in other countries, it was probably not in Kawai's interest to have anyone look at anything too closely.

That night, we were again the guests of Kawai at a sumptuous dinner party in our hotel ballroom. Mr. Shigeru Kawai, the company president, and all of his executives were there to greet us. The piano used by the combo was another EX; the food was superb, and drinks flowed like water, and it was another convivial evening, for which we're indebted to Kawai.

At one point during the party, I asked a Kawai executive how business was. He said, "Oh, just fine." Sensing a certain reluctance to talk, I waited until no one else was nearby, and asked him again, "How is business at Kawai — really?"

He looked around to make sure no one else was within earshot, and said in a lowered voice, "Business is difficult—very difficult. Our biggest competitor is right over there " — pointing to the other side of town. Without a question, he was referring to Brand Y pianos. Actually, it probably didn't matter much which direction he pointed, because all 15 Japanese piano companies are located in the Hamamatsu area. The other 13 are small enough that they don't present much of a problem, and the "Big Two" only have to worry about each other and the rest of the world. His remark only confirmed what we already knew: piano business is tough, and seems to be getting tougher all the time.

We spent the next day visiting Yamaha, the world's largest piano manufacturer, and toured three of its many facilities: the Piano Technical Academy, the Iwata Foundry, and the Grand Piano Assembly Plant. Because we had more time there, things went a lot smoother. Here, our tours were grouped according to the languages we speak, as Yamaha has a multi-lingual staff: the Americans would follow an English-speaking guide; the Koreans would follow a Korean-speaking guide; and so on. This way, no translation is needed for any of the groups, and we'd all have time to see more.

Yamaha's Piano Technical Academy is a first-class facility for training piano technicians primarily for Yamaha dealerships in Japan, although some of the graduates do go to work for other companies or for themselves. Located in a heavily wooded area, the atmosphere is rustic and quiet — except when jet planes take off and land at a nearby military base. It's a school where many famous pianists have visited. Photographs of Svjatoslav Richter and others are prominently displayed in the lobby. So far, there have been about 3,700 graduates from this school, servicing Yamaha pianos all over Japan. A few foreign students are occasionally accepted for admission, but they must master the language sufficiently to be able to cope with the instructions, which are all in Japanese.

The training here is rigorous, intensive, and systematic, and follows the 20/80 rule, which means that 20 percent of a student's time is spent on instruction, and the remaining 80 percent is spent practicing. Each student is assigned his own sound-proof practice room, and there are over 100 of them. The rooms for beginning students are all equipped with a vertical piano, while those for advanced students have a grand and a vertical, or a grand and a workbench. Needless to say, all the pianos are Yamahas. The average age of the students is 20, and about 50 percent are now women. The students are tested twice a month, and are ranked according to their progress. Those who fall behind are given special tutoring to help them catch up with their classmates. Each student pays about US $800.00 a month, which includes tuition, equipment, room, and board. We were told that, at that price, the payments don't come anywhere close to covering the actual expense of operating the school, and the Academy is heavily subsidized by Yamaha. In addition to classrooms most of which are equipped with action models and workbenches, the school also has its own library, lounge, dining room, exercise machines, and an auditorium, where concerts and lectures are held. Besides the training necessary to become competent piano technicians, the students also have to take courses in the history of the piano, acoustics, music theory, etc. The technical courses are taught by Yamaha factory technicians, and academic courses by visiting professors from nearby universities.

One rule of the Academy is that anyone who enters must remove his shoes and wear slippers or go around in stocking feet. This applied to us, too. Besides keeping street dirt out, the practice serves a psychological purpose: It's a reminder to everyone that the Academy is an entity totally separate from the outside world, and somehow it takes on an aura close to that of a religious sanctuary. The students may be tuning up a storm in the practice rooms, but the hallways are quiet, like the rest of the building. Tools and equipment are al-

ways treated with respect. In such an environment, vandalism, which is frequent at many American universities, is unknown. We were all very impressed by the Academy and the way it's run, and we only wish there were a first-rate school like this in the United States for training American piano technicians.

The next Yamaha facility we visited was the Iwata Foundry in Iwata, a small city about 10 kilometers east of Hamamatsu. All Yamaha's piano plates are cast here. This 450-employee foundry was built in 1966, and has a total plant area of 41,788 square meters, and a total site area of 123,438 square meters. It uses the Vacuum Sealed Mold Process ("V-Process") of casting, which was invented in Japan, and refined by Yamaha for casting piano plates. The same technique has been adopted by some Korean manufacturers, too. The advantages of V-Process are many; among them are: finer shape, smoother surface, higher precision, safer work conditions (less dust), and non-polluting to the environment. The way this highly automated plant was built, much of the operation takes place underground, where everything moves along a network of train tracks, and is out of sight. It was a very quiet and cool operation for a foundry, and almost the exact opposite of one in Ohio I visited some years ago, which was incredibly hot, dark, and noisy, and the workers' faces and bodies were all covered with dust and soot. It was an experience which must have been close to a descent to hell.

After lunch as guests of Yamaha, we visited the Grand Piano Assembly Plant back in Hamamatsu. Here we saw even more computerized technology at work. The key-leveling operation was a good example. After the keyboard and action had gone through a pounding machine, which helped settle all the new parts, the keys were checked by a laser beam, which measured all the keys that were too high or too low and by how much. The readings were printed out on a strip of paper, which told the key-leveling technician exactly which kind of, and how many, punchings to add to, or remove from, each key. He just did exactly what the printout said, and the keyboard became perfectly leveled. It was like magic: there was no need to fool with straightedges or key-leveling leads of any kind, and no checking afterwards was necessary. The computer and the laser beam combined had taken all the guesswork out of the job for him.

Another sequence of automation was even more extraordinary. This took place right after a grand had had its soundboard, bridges, pinblock, and plate installed. The piano would come to this station, where the electronic sensors would check out the piano and determine exactly which model it was, and then activate the computer program for this model. This piano would go to the next booth, where two mechanical "hands" would come down and simultaneously insert tuning pin bushings into the tuning pin holes in the plate — one starting from the treble to the middle, and the other from middle to the bass. Guided by the data stored in the computer's memory, the hands knew where the next tuning pin holes were, and headed straight for those positions without hesitation. Once there, the hands inserted the bushings and moved on to the next tuning pin holes. (In this case, the right hand knew exactly what the left hand was doing.) After all the tuning pin bushings were in, the hands were raised, and the piano moved on to the next booth, where two computer-guided drill bits would come down and drill the tuning pin holes the same way the bushings were inserted. After all the holes were drilled, the piano would move on to the next booth, where another pair of mechanical hands would insert tuning pins into these holes — uniformly and to a pre-set depth. As the piano came out of this booth, human stringers were eager and ready to string the pianos with the help of stringing machines. Up to this point, not only was the work all done by machines, but nobody was even watching what the machines were doing. It was as though the machines were alive and could see, and they worked very quickly. It must have taken someone a long time to program all those moves into the computer's memory: the direction, distance, and order of travel from one tuning pin to the next, but in mass production, the time thus invested would keep paying dividends in time and labor saved every time the program is used. It was like watching science fiction, but it was for real.

Following the factory tour was a piano recital in the concert hall. The pianist came from Tokyo just to play for us, and the piano was the Yamaha CF III concert grand. The pianist and the piano were both outstanding. Listening to this glorious instrument, it's not hard to imagine why some professional artists now prefer the CF III to Brand S pianos. The acoustics of the hall can be altered to simulate that of any concert hall in the world, and pianos going there can be "voiced to the hall" before they leave here. The acoustical alterations of this concert hall are done electronically by means of speakers hidden in the walls and ceiling, and controlled from a computerized panel in the back.

That evening, we were the guests of Yamaha (again!) at a dinner party at the Tsumagoi resort, which is about an hour's drive from Hamamatsu. Like Nemu-no-Sato or Haimurubushi, Tsumagoi is one of Yamaha's ventures into the recreational business. Totally owned by Yamaha, it's a mountain that's been developed into a huge sports resort, where club members can come to enjoy golf (preferably with Yamaha golf clubs), snow skiing (in winter), grass skiing (rest of the year), swimming, archery, horseback riding, tennis... It's equipped with a hotel which can accommodate 300 guests, a lodge that holds 600, four restaurants, four banquet halls, a disco, a gift shop, and a wedding hall. French cuisine and traditional Japanese food are available here. It's like an American country club — only perhaps ten times fancier. Everything here is super-luxurious: the lawns are well-manicured; the buildings are kept spotlessly clean; uniformed attendants are everywhere to cater to the guests' whims... I don't know how many employees work here, but the number has to be substantial. This is a place where Yamaha entertains its guests, and where the hard-working Yamaha executives can come with their families and friends to relax, recover, and regroup before venturing out to face a fiercely competitive world again. As special guests, we were given a complete tour of the resort in our buses, which were given special permission to drive on roads where motorized vehicles are not normally allowed.

After a welcoming speech by a Yamaha executive, the party began. Judging by the decorative ships on the 40-foot-long (at least) table, the theme of the evening was apparently sea food, although more traditional fare was also available. As we enjoyed ourselves, the waiters kept bringing trays and trays of food to refill the empty ones as though there was no end to it: fish, crabs, clams, mussels, lobsters, octopus, sea weeds, shrimp, squid, sushi... By the time we were done eating, the table still had

almost as much food on it as when we began. It was a feast to top feasts.

In a way, this banquet was the grand finale of our tour, as we were to travel to Tokyo the next morning to catch our flight back to San Francisco. Our very musical Anne Doerfler led us in singing the songs she had composed for the occasion. I'm not sure whether it was the music, or the drinks, or the fact that everyone was overwhelmed by a sense of fellowship and camaraderie, many of us started dancing around the room. It was especially amusing to see the normally very reserved and dignified Japanese technicians (who are probably never seen without their suits and ties) link arms, kick up their feet, and sing away at the top of their voices. We had a great time. (And both my camera and tape-recorder had to quit right then and there!)

Well, that was our PTG Asian tour — or at least, the portion I experienced. It had been educational and exciting in many unexpected ways. I have no regrets about having signed up for the trip, even though I didn't get to see Chairman Mao's portrait in Tiananmen Square. We've all learned a lot of things that we probably wouldn't have learned if we didn't go. How else could we have known that the great majority of the machines in all the factories are painted green, for example?

Each in our own way, we also did our share to promote international economy and the welfare of mankind — by leaving trails of money behind. One of us, for instance, bought 21 pairs of Reebok running shoes in Seoul, and had to buy an extra travel bag to bring them home! (In all fairness, I must point out that these shoes were meant as gifts for his children and grandchildren, and not for opening a retail store in the U.S.) Others went crazy over cameras, tuxedos, Angora sweaters, T-shirts, souvenirs of every imaginable kind.

In closing, I must publicly thank Charles Huether, our past PTG president, for volunteering to serve as our tour director. He had spent countless hours making arrangements to make everything on our itinerary come about, and presiding over this group at times was no easy job... We're truly indebted to Charlie for making it all possible.

If you didn't go on this trip, it was your loss. However, I'd like to remind you that the next IAPBT convention is scheduled for Seoul, Korea, in June, 1991. It's possible that another similar trip will be organized around this convention. It's not too early to start saving up for it. ≡

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1989 *Piano Technicians Journal* Articles

Danny Boone
Heart Of Texas Chapter

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Coming Events

Jan. 5-6, 1990	**Arizona State Seminar** Aztec Inn, Tuscon, AZ Contact: Kathleen Kattija-Ari, 4743 East Bellevue, Tuscon, AZ 85712 (602) 326-4936
Feb. 16-18, 1990	**California State Conference** Irvine Hilton, Orange County Contact: Austin Mason, 25842 Avenue, Cabrillo, San Juan Capistrano, CA 92675 (714) 661-1416
Mar. 2-4, 1990	**South Central Regional Spring Seminar** Hilton Hotel, Santa Fe, NM Contact: Joanie Wagoner, Rt. 4, Box 50-C, Santa Fe, NM 87501 (505) 984-8179
Mar. 29- Apr. 1, 1990	**Pennsylvania State Convention** Warrendale Sheraton Hotel Contact: David Barr, 524 Jones Street, Verona, PA 15147 (412) 828-1538
April 7, 1990	**East Tennessee One-Day Seminar** Heritage Music, Inc., 7212 Kingston Pike, Knoxville, TN Contact: Tom E. Graves, 228 Hillcrest Drive, Knoxville, TN 37918 (615) 688-0916
Apr. 20-22, 1990	**Michigan State Conference** Lansing, MI Contact: Les Jorgensen, 4201 Wabaningo, Okemos, MI 49964 (517) 349-5959
Apr.26-29, 1990	**NELCRO Seminar** Hotel Auberge Des Gouverneurs, Québec, Canada Contact: Roland Bessette, C.P. 364 SNCC, Brossard, Québec, J4Z 3N3 Canada, (514) 444-1135 or (514) 465-8076
Apr. 26-30, 1990	**Central West Regional Seminar** Henry the 8th Hotel, St. Louis, MO Contact: Liz Baker, 16301-A Manch Road, Glencoe, MO 63038 (314) 664-4914
May 18-19, 1990	**Intermountain Seminar** Provo, UT Contact: Jack Reeves, 486 N. 300 W., Orem, UT 84057 (801) 225-1757
July 7-11, 1990	**33rd Annual PTG Convention & Technical Institute** Hyatt Regency Dallas at Reunion Contact: Piano Technicians Guild, Inc., 4510 Belleview, Suite 100, Kansas City, MO 64111 (816) 753-7747

The Auxiliary Exchange

President's Message

The decade of the Eighties is almost over, and we look forward to the Nineties with interest, enthusiasm, and just a touch of apprehension; as we hear over and over about the Drug War, the homeless in our cities, the thousands of people trying to put homes and careers back on track after the devastation of two natural disasters; the hurricane on the East Coast and the earthquake on the West Coast. Just when we are at our low ebb, something wonderful, mystical and uplifting comes along. In a short while we will be celebrating the Yuletide with its holidays of Christmas, Hanukkah and the New Year.

The year 1989 saw us experiencing a delightful convention in Portland, OR, and a Scholarship Fund that is thriving, thanks to the ongoing support of our membership. This most worthwhile cause gives a special meaning and dimension to our organization. Our Cook Books, our piano pins, our sun-catcher ornaments, are our sales efforts for the Scholarship Fund; in addition to contributions from our membership, whether as a memorial to a deceased member, or a commemorative contribution in recognition of a valued friend or associate in the Auxiliary or the Guild. What an everlasting gift!

But we must not become complacent and apathetic. Young people are always coming up the line, and they need our encouragement and the impetus that competition for a scholarship provides. Register your confidence and trust in our youth — our leaders of tomorrow — with a donation of some of your Yuletide money to help our Scholarship Fund grow. Your gift will flourish and blossom in the years to come. Simply send your check, made out to PTGA Scholarship Fund, and forward it to the PTG Foundation, 4510 Belleview, Suite 100, Kansas City, MO, 64111. All donations will be acknowledged.

On behalf of the officers and members of the Piano Technicians Guild Auxiliary, I send to each and everyone, the good wishes of this holiday season.

Agnes Huether, President

Our Newest Board Member

Margaret Moonan, born in Kingston, NY, attended elementary and junior high school in that Hudson River town that was a whaling port long years before Marge was a gleam in her father's eye. Later the family moved to Danville, PA, where she graduated from high school.

In 1954, she graduated from Kaeuka College with B.A. degree, and went on to Cortland State University, NY, to pursue a Masters Degree in Elementary Education. For three years she taught second grade in Rome, NY. For her leisure enjoyment, Marge joined a local ski club, a very popular diversion in northern New York. On one of her jaunts she traveled to Snow Ridge, NY, in February. This trek proved to be her lucky day, as it was then and there that she met Bill. The following summer, six months later, they became engaged, and were married the following spring.

Marge and Bill are happy and proud of the past 33 years. They have been blessed and challenged with the task of raising three daughters and four sons! All of their children are musical and artistic. Their academic achievements, their concert performances and art shows; where their talents are portrayed, all affirm the good genes they acquired from their parents.

In addition to successfully raising her brood, Marge completed most of her Master's requirements, did substitute teaching and sang in Bill's Civic Chorus for seven years. Marge acknowledges that her main occupation has been, and continues to be, keeping up with her household of nine, even though most are "out of the nest" and have made the Moonans grandparents a few times over.

When she can find the time, Marge's favorite hobby is reading. She is a member of a Literature Group that meets once a month in each others homes. She enjoys cooking, trying out new baking recipes, swimming at the local "Y," and of course her involvement with PTGA and its Auxiliary. Marge has traveled extensively around the USA as the wife of the former Northeast Regional Vice President, and continues to play a significant role in the PTGA as our Corresponding Secretary and "Sunshiner" for the Northeast area.

Editor

In Memorium

The Piano Technicians Foundation acknowledges the generous contribution to the Piano Technicians Guild Auxiliary Scholarship Fund made by Agnes Huether, in memory of Maxine Buchman of the Twin Cities Chapter of the Auxiliary.

Want To Join PTGA?????

PTGA is an active support group for the Piano Technicians Guild. For information about joining, please write or phone our Membership Chairperson:

Arlene Paetow, Vice President
RFD 1, Box473
High Falls, NY 12440
(914) 687-0364

From Our Mailbag

It was good to hear from a few of our readers. Marge Moonan very much enjoyed last month's items about Jan Blees and the family's travels after the Portland Convention. Ginny Russell's post convention trek to Alaska also made fine reading. In addition, Arlene Paetow's account of the lovely Japanese Garden recalled fond memories of a beautiful day.

The Moonans made their trip before the convention. After their flight to Denver, CO, and a stop at "Brown's Palace," they took the 8 a.m. Amtrak, California Zephyr for a 14-hour ride through the Rocky Mountains to Salt Lake City. They toured that city, visited the Morman Tabernacle, and heard a magnificent organ recital. They found fellow travelers Ruth Ann Jordan and her husband, with whom they dined and watched the sun set, as the train rolled west to Portland.

It was a delight to hear from Erroll "Put" Crowl as well, and he's a "technician," but even he reads the Auxiliary Exchange!!

Editor

Yuletide 'Round The World

The "Sunday Sentinel" of Rome, NY urges its readers to "be sure to share with your children how their great grandparents might have celebrated the holidays. They'll enjoy imagining what it was like to live in the "old country" — and they will realize that Christmas has meaning that extends far beyond their own community."

In past issues of our "Exchange," the December issues recounted Christmas in Louisiana's Cajun Country, The Legend of the Poinsettia in Mexico, and the unforgettable editorial of Frank Church's letter to Virginia O'Hanlon, "Yes, Virginia, there is a Santa Claus ..." We did overlook a couple of countries and will now endeavor to present a few more traditions.

In the Scandinavian countries, there is a saying, "Christmas lasts a month." Here Christmas begins on St. Lucia's Day, when the youngest daughter, dressed as Lucia, the patron saint of the blind, opens her parents' bedroom door at dawn, wearing in her hair a wreath with burning candles. She brings them breakfast in bed, a warm assortment of special St. Lucia's buns and cakes. December 13 is her feast day, and she is invoked by those suffering diseases of the eye. In Sweden, the main family meal begins with a smorgasbord, followed by a sun-dried cod in cream sauce. Then there is ham, and finally a rice pudding, inside of which is hidden a whole almond. Whoever gets the almond, according to tradition, will be married before the end of the year!

France is noted for its beautiful "creches" — mangers filled with exquisite figurines that tell the Christmas story. French children put out their shoes to be filled with goodies by Father Christmas. In Alsace, there is goose as a special meal; in Brittany, buckwheat pancakes and sour cream; in Paris, oysters are popular.

In Italy, also noted for its beautiful creches, Christmas includes the feast of St. Nicholas on December 6, and culminates on the Twelfth Night, the feast of the Epiphany — when the Wise Men arrived with their gifts of gold, frankincense and myrrh. Families in Italy make every effort to display incredibly elaborate "presepios" or mangers, and these are in homes as well as churches until January 6.

In Ireland, a big, thick candle is lighted and placed on the sill of the most conspicuous window in the house. The youngest child usually lights it, and it stands as a beacon of welcome to any travelers, who, like Joseph and Mary, may be in need of shelter. While creches with figurines may be found in the homes of city residents in Ireland, those in rural areas take extra pains to see that the animals in the stables are well attended to. Fresh straw is placed in the cattle barns and the horses stables, to commemorate the birth of the Christ child who was kept warm by the breaths of the "ox and the ass," at the first Christmas. In addition to the adults and children enjoying meals of mashed potatoes, root vegetables and a goose or lamb, the Irish provide extra special rations for all of their farm animals and household pets.

The Christianized countries in Africa also have their traditional customs as in Europe with some slight variations. In Ghana there are fireworks and "fufu," a dish of pounded yams. Food is sent to neighbors and presents are exchanged. In Liberia, the Christmas tree is an oil palm decorated with bells.

Chanukah or Hanukkah, which is always in December, is also know as the Feast of Dedication, Feast of the Maccabees and also the Festival of Lights. Chanukah is celebrated for eight days primarily to recall the miracle of the cruse which held the sacred oil found in the ruins of the temple. The cruse contained only enough oil for one day's lighting, but lasted for the entire period of eight day's rejoicing. The Temple of Jerusalem had been sacked and desecrated by Antiochus Epiphanes, king of Syria in 168 B.C. Three years later, Judas Maccabees and his brothers instituted the feast to commemorate the cleansing and joy of the Jewish people.

The similarities between the Jewish festival of Chanukah and the Christian holiday are significant. Both are always in December, both feature the lighting of candles and giving of gifts to children and both are family celebrations observed in a spirit of gaiety. Their placement in our calendar may reflect a common origin emanating from the ancient pagan celebration of the winter solstice.

Agnes Huether, President

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Beatrice Drago	NY	5th
Kathryn Snyder	PA	7th
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Virgina Gibson	CA	23rd
Margorie Meyermann	DE	26th
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MANY HAPPY RETURNS!

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"LET'S TUNE UP" $20.00 per copy. Last few hardbacks will soon be gone. No immediate plans for another printing. Paperbacks still available at $17.50. Make checks payable to **John W. Travis, 8012 Carroll Avenue, Takoma Park, MD 20912.**

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WANTED: Still looking for Steinway player grand in fancy case (prefer unrestored). Will also consider Mason & Hamlin, Knabe or Chickering. Reward for successful leads. **Kavouras, 2740 Lighthouse Court, Lynwood, IL 60411 (708) 474-8787.**

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WANT TO BUY. Steinway duo-art player grand. Will pay finders fee. Especially want carved (fancy) case. Call Collect, **Jim Brady, (317) 259-4307, 2725 E. 56th Street, Indianapolis, IN 46220.**

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A. Total no. copies (net press run)	4,275	4,300
B. Paid and/or requested circulation		
1. Sales through dealers and carriers, street vendors and counter sales	0	0
2. Mail subscriptions (paid and/or requested)	3,956	3,962
C. Total paid and/or requested circulation	3,956	3,962
D. Free distribution by mail, carrier or other means. Samples, complimentary and other free copies.	28	27
E. Total distribution	3,984	3,989
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2. Return from news agents	0	0
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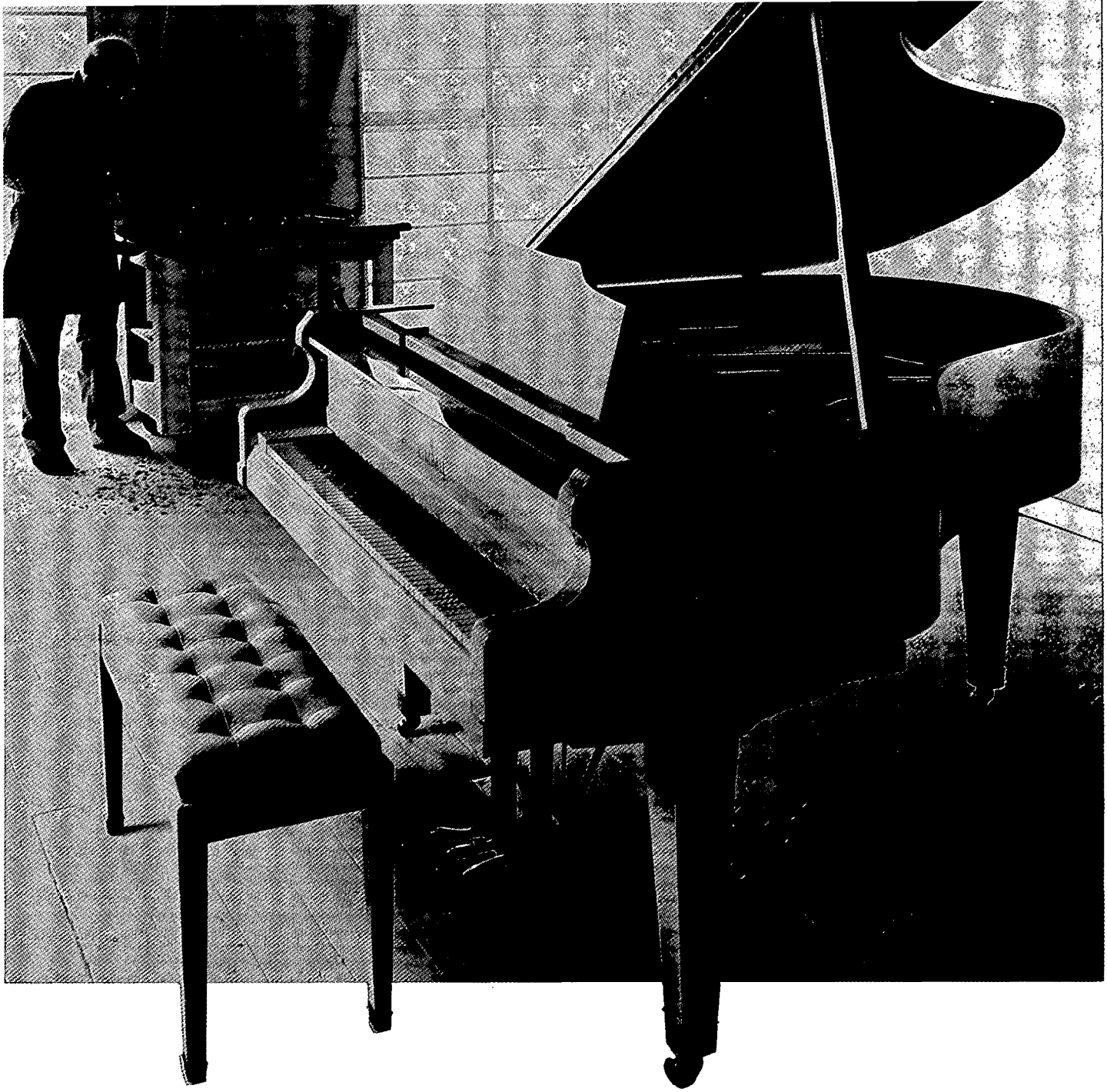
11. I certify that the statements made by me above are correct and complete (signed) Larry Goldsmith, Executive Director/Editor



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Tech Gazette

Yamaha Piano Service December, 1989

Eric Johnson Appointed New Concert Program Director

We are pleased to inform you that on October 30, 1989, Mr. Eric Johnson became Director of U.S. Concert Services.

Eric's well-rounded experience will be a major asset to Yamaha Concert Services. He was previously engaged in similar concert-related work for Bosendorfer Pianos in the United States, and was National Service manager for Kimball International, the parent company of Bosendorfer. Just prior to his appointment, Eric was an employee of the Yamaha Communications Center in New York City. In addition to being a qualified piano technician, Eric holds an MBA from the Johnson Graduate School of Management at Cornell University.

As Director of U.S. Concert Services, Eric replaces Mr. Turley Higgins, who has chosen to return to his North Carolina home as a Yamaha District Manager. Please join us in wishing both Eric and Turley continued success in their new positions!

Quartz Oscillator Provides Basic Frequencies in New Tuning Scope

The new Yamaha PT-100 Tuning Scope uses a quartz oscillator for its basic frequency generating system, and a large scale integrated circuit (LSI) performs all necessary calculations to generate the 88 (A1-C88) frequencies.

The PT-100 scope features a choice of eight scales, available by using a curve switch. Memorized in the PT-100 are a "standard" scale of almost all instruments other than the piano, plus seven "stretched" scales for pianos that match the scales Yamaha uses to factory-tune pianos (including electric pianos).

Applicable to classical temperament, the PT-100's sensitive built-in microphone can precisely measure how far an instrument is out of tune. The PT-100 is lightweight (1 lb. 14 oz./ 850g), portable, fits into your tuning tool bag, and operates by rechargeable battery so no AC outlet is required. Options include a hard case, AC adaptor, handy external step switch for noting changes by remote control, and a printer for printing out pitch measurements once they have been memorized by the unit. Cost, excluding options, is $625.

For more information on the PT-100 Tuning Scope, please call toll-free 1-800-521-9477.

Yamaha will participate in:

1990
DISKLAVIER™ SERVICE SEMINARS
#6 January 30-February 2
#7 February 20-23
#8 March 6-9

LITTLE RED SCHOOLHOUSE
#97 Janaury 8-12
#98 March 19-23

PTG SEMINARS

February 16-18	California State
March 2-4	South Central Regional
March 29-April 1	Pennsylvania State
April 26-30	Midwest Regional
July 7-11	33rd Annual PTG

YAMAHA

DEC. **UPDATE** 1989

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

Dates & Deadlines

December 18, 1989
RTT Tuning & Technical Examinations. San Francisco-Bay Area, California. Contact: Neil Panton, 5 Cedar Ct., Menlow Park, CA 94025, (415) 854-8038.

January 1, 1990
1990 dues due.

Deadline for submission of awards nominations to Awards Committee. Contact: Bob Morris, 1729 D Valley Road, Champaign, IL 61820.

January 20, 1990
RTT Tuning & Techncal Examinations. Sacramento, CA. Contact: Neil Panton, 5 Cedar Ct., Menlow Park, CA 94025, (415) 854-8038.

January 13-14, 1990
RTT Tuning Examinations. Southern California Area Examining Board. Contact: Carl Leiberman, (213) 392-2771.

January 31, 1990
1990 dues delinquent

February 1, 1990
Deadline for submission of officer nominations to Nominating Committee. Contact: Teri Powell, 1666 W. 261 St., Harbor City, CA 90710.

Proposed bylaws changes due to Bylaws Committee. Contact: Sharla Kistler, RD #8, Box 461, Allentown, PA 18104.

February 24, 1990
RTT Tuning Examinations. Central Illinois Test Center, Millikin University, Decatur, IL. Contact: John Baird, (217) 429-5651.

March 2, 1990
Members who are delinquent in 1990 dues to be dropped from roster.

Continued on next page

Officer Nominations Sought

Teri Powell
Nominating Committee Chair

In compliance with the Piano Technicians Guild Bylaws, the Guild Nominating Committee requests nominations for President, Vice President, Secretary-Treasurer and all Regional Vice Presidents to serve on the 1990-91 Guild Board of Directors.

Chapters may submit nominations, and any member in good standing may submit his or her own name for consideration by this committee. When nominations are received by the committee, the proposed member will be sent a consent-to-serve form and information on the duties of the office. Each nominee may submit no more than 15 lines of typed qualifications together with the signed consent-to-serve form. The committee will prepare a list of its selections for President, Vice President and Secretary-Treasurer and all of the nominations received for the three offices and for the offices of the seven Regional Vice Presidents. This list will be submitted to the Home Office no later than April 1, 1990, for publication in the May 1990 *Journal.*

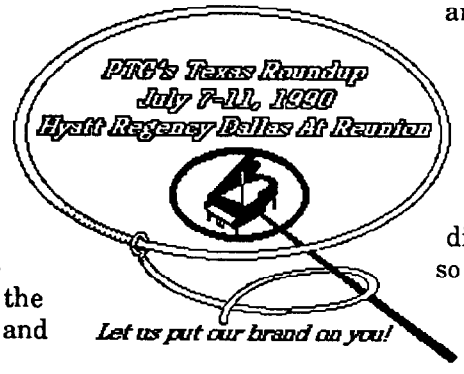
Please read the Guild Bylaws for full information on the required nominations procedure. Nominations must be submitted no later than Feb. 1, 1990, to Teri Powell, 1666 W. 261 St., Harbor City, CA 90710, or call (213) 326-6447.

Old Tool Show Planned For Convention

Richard Quint
Historian

There will be a display of old tools, catalogs and other interesting things from days of old at convention this year. We need your help to make this a success. If you have items you would like to display, please contact Ronald R. Sanford, 1503 Harding, Pasadena, TX 77502. (713) 473-2688 Ron is with the Houston chapter and he will be working with Thom Tomko of the host chapter to set up a glass- covered case so that your treasures will be safe.

This display will probably be near the membership booth in the exhibit area. Manufacturers and suppliers are also encouraged to participate. This can really be a fun thing. Ron has graciously agreed to coordinate this effort, so give him your support.



The Soundboard

Letters from readers on organizational matters will be published in this space each month. Letters should be concise and may be edited for length and style. Send letters to: Soundboard, 4510 Belleview, Suite 100, Kansas City, MO 64111.

Note Of Thanks

To all the Colorado and Nebraska technicians who, from the 1960's, helped make five PTG chapters in our area functional, Thanks! It is impossible to cite each of you but, without the help of then National President Jess Cunningham, the late Field Secretary Aubrey Willis, and past Executive Director Jim Burton, my activities in assisting would not have been possible. Thanks also to a committee who, in 1989 remembered what things were like in the late '60s and '70s. This Member of Note award came as a most complete and pleasant surprise! Bon Voyage, PTG.

Clarence "Clancy" Stout
Holyoke, CO

Dates & Deadlines...

March 23-24, 1990
RTT Tuning & Technical Examinations. Cincinnati Regional Testing Center, College-Conservatory of Music, Cincinnati, OH. Contact: Tuning Exams: Michael Wathen (513) 556-9565; Technical Exams: Don Gibbs (513) 575-1616. Note: payment due 30 days in advance.

April 9, 1990
RTT Tuning & Technical Examinations. San Francisco-Bay Area, California. Contact: Neil Panton, 5 Cedar Ct.; Menlow Park, CA 94025; (415) 854-8038.

July 7-11, 1990
33rd Annual Convention and Technical Institute. Hyatt Regency Dallas. Contact: Home Office, 4510 Belleview, Suite 100, Kansas City, MO 64111.

Editor's Note: Through a breakdown in communications, David Barr was not given an opportunity to respond to Mark Mestman's comments in the October Soundboard. Here's his response to that letter.

To The Soundboard:

It was quite a shock for me to discover Mr. Mestman's rebuttal of my July article in the October issue of the *Journal*. It had been my understanding that any author of an article published in our *Journal* would have the courtesy of self defense within the same issue and column. Unfortunately, this was overlooked. I welcome Mr. Mestman's point of view and truly congratulate him on his business success. I appreciate that he does not feel that my point of view is representative of the majority of Guild or otherwise technicians. I, at the same time, hold to my opinion, backed by substantial research through my business class, that the average technician is not as successful as Mr. Mestman. This is not the place for me to argue these points, nor do I believe that it would be to any of our advantages to do so. The Guild is about to publish a questionnaire which has been in development for some time now by the Chairman of the Economic Affairs Committee. If enough of us respond with honest forthright answers, we may be able to establish some national statistics for the first time.

I have written several very positive, upbeat articles in the past. I still feel these attributes within myself. However, I do not view the whole of my work or the industry or the Guild as though it were all perfect. There are weaknesses and sore spots that need to be illuminated. Otherwise, we may simply disillusion ourselves and cease to stride forward. Perhaps my last article was not one of my best efforts; of this I am not certain. I do know that I have hit a sore spot for some of you. I do not think that money is the whole answer. Unfortunately, it is very difficult to feel a strong sense of self-worth without at least enough.

Please, before too many of you blast me full of holes, read the whole article and, maybe, read one or two of my previous articles. My concluding points are not as full of gloom and doom as has been assumed. As a matter of fact, I completely agree with Mr. Mestman's final paragraph, "There is no need to feel that we piano technicians are no longer needed; the acoustic piano is here to stay and so are qualified piano technicians."

David J. Barr, RTT

Note: It is possible to respond to articles written under the heading of the Economic Affairs Committee by writing your comments or a complete article and addressing it to the Chairman of the Economic Affairs Committee, Carl Root. His mailing address can be found in the *Journal* Directory.

To the Soundboard:

When someone volunteers to undertake a project such as State Convention Chairman, it is imperative that he obtain competent help in order to make that endeavor a success. Such was the case for the Texas State Convention, held in Lubbock, Texas on October 13-15. Without the help of our local chapter, the task would have been monumental. Thanks to the following people for their help: *Dr. Roy Howard*, a master on the computer, who has put together many such conventions himself; *Bob Leonard*, who did any and everything I asked him to do, a tremendous amount of help; *Byron Nickolson*, who handled delivery of pianos and many other things; *Lawrence Lowe*, who helped make the mailer; *Al Hardin*, who handled the banquet, was MC at the banquet, and arranged all publicity. To these five men I, and the TSA, owe a very loud and long thank you!

Bob Johnson

Chapters Are Key in Membership Promotion

Richard Quint
Membership Promotion Committee

Increasing membership rolls is an ongoing task of any organization, otherwise, it will wither and die. Methods vary but something all have in common is the need to make the prospective member feel *wanted, welcome, and needed.* He/she needs to know that becoming a member is important to both him/her and the organization.

Some of you older members may recall when Aubrey Willis was field secretary a number of years ago. He would go into every town and hamlet and recruit any one with a tuning hammer and business card. As Ralph Kingsbury likes to tell it, "He'd even bring in the sweeper to make up the five necessary to form a chapter." That was then, and this is now.

It seems to me we need to point out the advantages of membership somewhat differently than we have in the past. In addition to having the national institute, seminars and the like, we need to stress the advantages of being an active participant in the local chapter. (There are some problems with new members being snubbed in some chapters.) The camaraderie enjoyed by active participation in a local chapter is a big plus, and can be profitable in more ways than one.

I think in this age of highly specialized skills in all areas of expertise, we have to remind ourselves that we cannot be expert at everything. Some of us will develop great skill at regulating and voicing for example, and be all thumbs when it comes to restringing. Others will be excellent concert tuners, and not do well at hanging hammers. My point is, someone in the local chapter is really good at something the rest of us can and should use. We need a cooperative effort to maximize the quality of the finished product.

It seems to me that if we stress the advantages of sharing expertise we can improve our image with clients. "Mrs. Jones, I will have one of my colleagues contact you about re-covering those keys for you." Sort of like calling in the brain surgeon for the head, and the foot doctor for the other end.

Let's go for it! There are technicians out there who need us ... and we need them!

In Respectful Memory...

Homer Wagman, RTT

Homer Wagman, for over 45 years, a gifted and highly productive craftsman, left our ranks October 20, 1989.

Among his many contributions to the spirit and substance of the Piano Technicians Guild was his service twice as National Convention Chairman when such gatherings were held in Detroit. For many years Homer was a regular feature of national convention classes as a member of the grand action regulation team, along with Willis Snyder and Scotty Welton. His technical versatility attracted a host of loyal clients seeking meticulous care in diagnosis and workmanship.

Early in his life Homer was encouraged by Charles F. Stein to enter the field of piano manufacturing. To this end Homer spent some time at the Stein experimental lab in LaGrange, IL, although he opted not to begin a building career.

His many warm friends around the nation can attest to his ready, gentle wit and his talent to get to the heart of technical problems. His helping hand and encouraging words were a role model for PTG, and human relations generally. An ardent worker in the Holy Cross Lutheran Church, he never preached scripture but lived it in daily life. Homer is survived by his wife, Lenore, three children, and ten grandchildren.

Harold Q. Smith, RTT

Harold Q. Smith, 74, active for some 45 years in our craft and organization, died of cancer Nov. 1, 1989, in his Birmingham home. Harold was an outstanding violinist, in addition to his very successful tuning career. In 1940, he came to Detroit from Kalamazoo to play in the WPA Symphony, and later played at the Fisher Theatre and Pine Knob, where local musicians were hired. He organized and participated in several string quartets, entertaining at professional levels. His many musical friends included the string section of the Detroit Symphony Orchestra, and many at the National Music Camp at Interlochen.

He turned to piano tuning in the late 1940s to supplement his income. Many of the people he tuned for also became his friends.

He is survived by his wife, Dorothy, seven daughters, and four grandchildren. A son, who had played as a violinist in the Detroit Symphony Orchestra, died previously.

Over the years Harold had developed strong sympathies for the underpriveleged of society, and this was manifested in his daily rounds. A memorial mass is scheduled for Nov. 26, 1989. There will be testimonials from Harold's many friends, and some beautiful quartet music enriching life's mysteries.

Sic Transit Gloria Mundi.
Stanley Oliver
Detroit-Windsor Chapter

Newsletters Are Symbol of Successful Chapter

Jim Hill
Chairman, Chapter Newsletter Committee

Well, the convention has come and gone and by now everyone is back to work. Vacations are over, the kids are in school. A funny thing happened to me at the convention.

President Ron Berry and I had been talking in the hall when I mentioned that I was interested in chapter newsletters. The next day, I was taking a break from helping with testing and was walking around the exhibit area. I just happened to stop at Fern Henry's and Bill Spurlock's booth, and Fern said, "Congratulations, Jim." I said, "Thanks. What for?" Fern replied, "Well, for becoming Newsletter Chairman. And, by the way, you missed your committee meeting." Was I ever pleasantly surprised? Of course, I was.

Last year my wife, Bonnie, and I had worked hard on our local newsletter, *The Salt Tablet.* We changed the format, used a desktop publishing program on our computer, went outside of the local chapter confines for news of special events pertaining to pianos and music, and got paid ads and subscriptions to *The Salt Tablet* from local music stores and other interested people who were not members.

Bonnie was the editor, doing most of the work, and I did most of the writing. When our chapter elected the new officers, Bonnie received a unanimous vote of confidence for her work in this assigned office as *Salt Tablet* Editor. The whole experience, though taking many extra hours, was really quite fun and exciting.

When I received from Ron Berry the Chapter Newsletter Committee charges, they simply said the following: "Promote chapter newsletters by submitting *Update* articles as often as possible. Encourage chapters to send newsletters to small chapters outside their immediate area to help stimulate activity in less active chapters. Encourage newsletter exchange. Provide current list of newsletter editors for publication in the *Journal.* Develop guidelines for propriety in newsletter content. Maintain contact with Chapter Management and Chapter Program Development Committees. Arrange a meeting for newsletter editors at the next annual convention. The Executive Director will help arrange this. The meeting will be to share problems and solutions regarding chapter newsletters."

The other members of this committee are Garland Goodwin of Columbus, NC; Roy Howard of Lubbock, TX; and Wade Johnson of Providence, RI. We are spread all the way across the continent.

The old saying that "The pen is mightier than the sword," is especially true in our profession. In a university marketing course I once had, a statement was made which has really stuck with me, "Your success in business depends 80 percent on your own public relations skills and 20 percent on your trade skills." I have found this always to be true. Many times the way that I found out was the hard way; when I had dropped my public relations guard and said the wrong thing to the right person which resulted in loss of business, friends, and in one case my job. There was never any question about my abilities; only my words or lack of them.

You who are responsible for your chapter newsletters, whether a chapter officer or the editor, have a great responsibility. That responsibility has many facets and like a fine gem the better you polish each one, the better our profession and the members in it will look. The following are just a few of these facets. I am sure that you can think of others.

1. Keep members informed:
   - about meetings
   - about member achievements
   - about new and innovative business ideas
   - about the piano technology changes and updates
   - about who, what, where, when, why, and how of member activities.
2. Keep your community informed:
   - about PTG chapter and national happenings
   - about innovative ideas relative to our profession about who, what, where, when, why, and how of people and companies relating to our profession.
3. Keep music stores informed.
4. Keep music teachers informed.

One other item that a chapter must know about a newsletter, is that it must be a budget item. It costs money to do it right; and also time. I do not advise that any chapter figure that they can have an effective newsletter by asking someone to "just run it off on their employer's Xerox machine during lunch time." That not only is not ethical unless the employer gives permission, but it takes much more time than that.

With about 26 members in our Salt Lake Chapter, we have a mailing list of about 60 which is updated monthly. The cost of our newsletter runs between $25 and $50 per month. Some of the costs are paid by classified ads, music store inserts, and non-member subscriptions, but the chapter must still kick in some funds to keep it going.

Well, you have seen the charges that President Ron Berry has given our committee, and you have read about how I feel. Now, it is up to you to make your newsletter do the job which you want done. I would very much appreciate being put on the mailing list of each chapter. Just mail your chapter newsletter to: Jim Hill, Chapter Newsletter Committee Chairman, P.O. Box 526137, Salt Lake City, UT 84152-6137.