Piano Technicians Journal

August 1987

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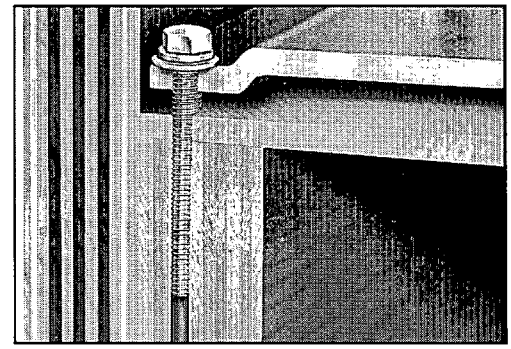

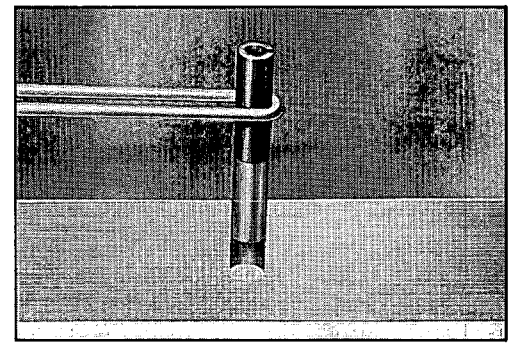

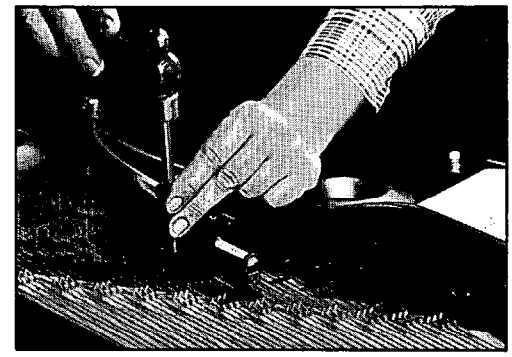

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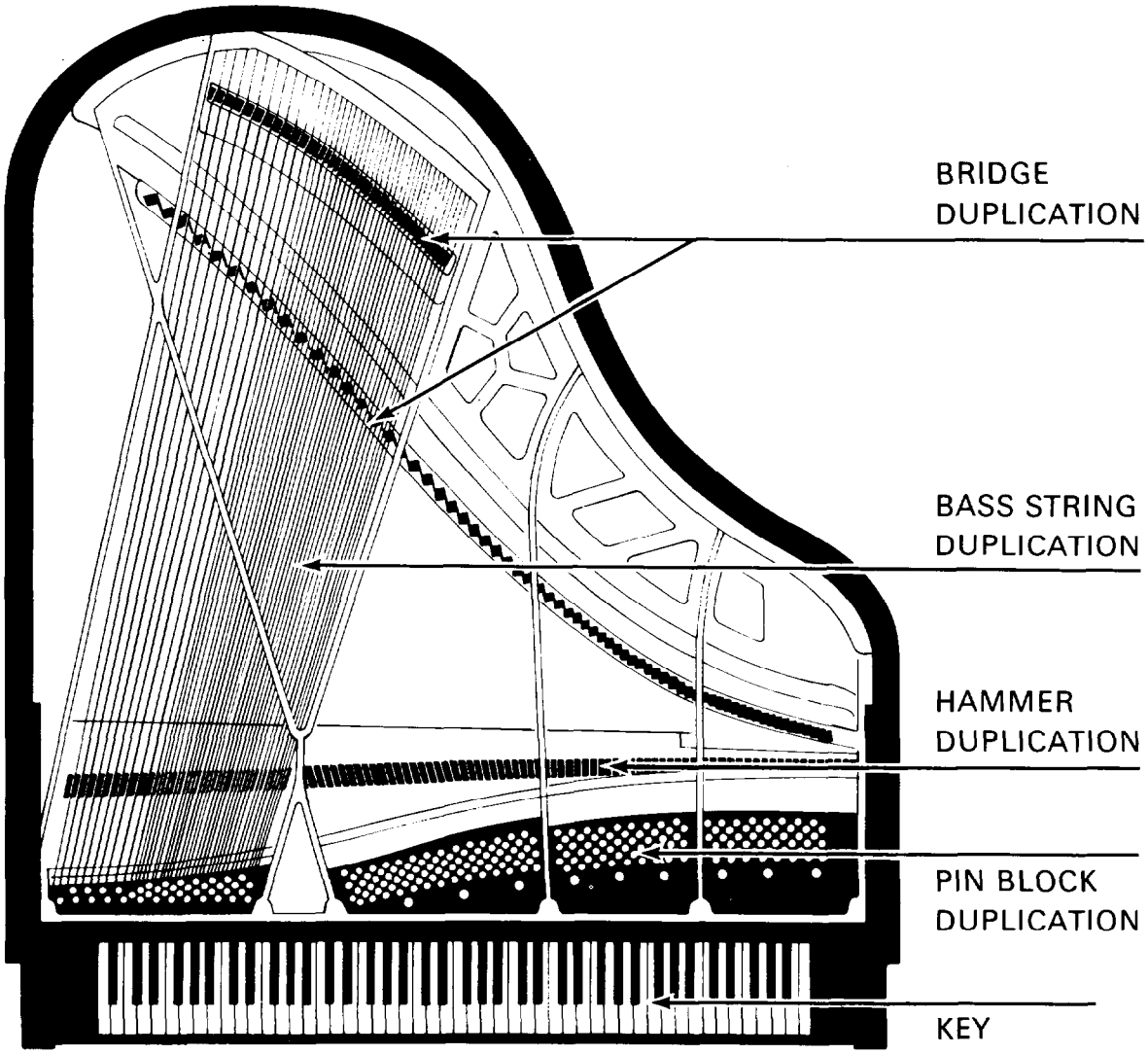

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The Piano Technicians Journal

August 1987

Official Publication Of The Piano Technicians Guild, Inc.

Volume 30
Number 8

IN THIS ISSUE...

PLUS...

THE COVER...

Beautiful casework in exotic woods marked the displays of many European manufacturers at the recent NAMM show in Chicago. For a full report, see the Technical Forum on page 10

The Piano Technicians Journal (ISSN 0031 9562) is the official publication of The Piano Technicians Guild, Inc., 9140 Ward Parkway, Kansas City, MO 64114. The Journal is published monthly, with two issues in December. Second class postage paid at Kansas City, MO., US ISSN 0031 9562 foreign and domestic. POSTMASTER: send address changes to: Piano Technicians Journal, 9140 Ward Parkway, Kansas City, MO 64114.

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President's Message

M.B. Hawkins
President

The Continuum Continues

"...I wish to project a long-range goal for this committee and the entire membership: by the year 2000, 95 percent of the American people will have heard of Piano Technicians Guild and 90 percent of the piano owners will use only PTG members to service their pianos."

The words above are words from one of our past presidents, Mr. Sidney O. Stone. He was speaking of the then public relations committee. We have since come to understand that public relations is really the responsiblity of the committee of the whole — our entire membership.

Just as those words fall into the continuum, there are many statements by not just presidents but many in our organization who have contributed to our organizational direction in the past and continue to contribute to our organizational direction. Since Sid made this long-range projection, we have tried to keep our focus in that direction. We are now beginning to see a glimmer of light at the end of the tunnel and it will grow even larger as our membership distributes the new brochure describing the RTT emblem as recently discussed in these pages. Let me bring this short piece to an end by quoting another past president. Not too many years ago, Ernie Preuitt said, "Each of us has our own visions, dreams, hopes. If we are realistic, we recognize these for what they are, visions, dreams, hopes. Does this mean we shall not act to bring about their fulfillment? No! For each time we are struck down and begin again, that new beginning brings us closer to our goal." These choice words also remind us that each association year we embark upon brings us closer to our goals. Remember, by the year 2000, 95 percent of the American people and many, many more around the world will have heard of the Piano Technicians Guild. Don't let a day pass without making your contribution. Distribute some brochures.

Allow me to take this opportunity to thank you, the membership, for your confidence in this new association year. Please continue to communicate and again I thank you from the bottom of my heart. ■

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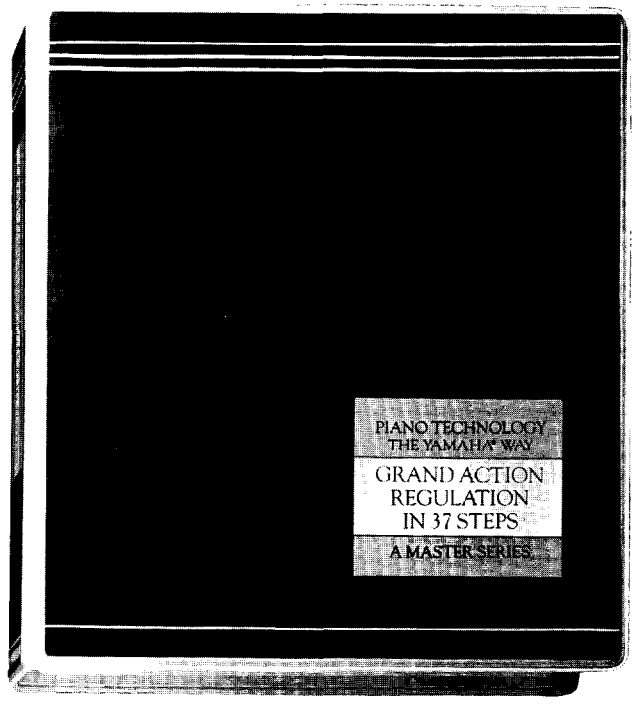


Through the medium of videotape, Yamaha now presents the first program in this series entitled *Grand Action Regulation in 37 Steps.* Included in the package are two videotapes (a total of 3 1/2 hours of instruction) and a printed copy of the entire text.

Future programs in this Master Series will include: *Aftertouch —the Secret of Ultimate Piano Performance, Vertical Action Regulation, Voicing, Grand Dampers* and other subjects.

To order this first program, call or write Yamaha Music Corporation, USA, Piano Service, P.O. Box 6600, Buena Park, CA 90622-6600, 1-800-854-1569.

From The Home Office

Larry Goldsmith
Executive Director

Storing Up Summer

When I was a kid, the steamy, sultry days of late July and August were known as the "dog days," not that the dogs dealt with it any better than the rest of us. It was a time of year when everything slid perspiringly to a halt, as everyone looked for a cool breeze, a bit of shade, a tall glass of icy lemonade. Vacation trips were past, existing only in snapshots, sunburn and memories. Nothing stirred until the back- to-school sales brought everything back to life again.

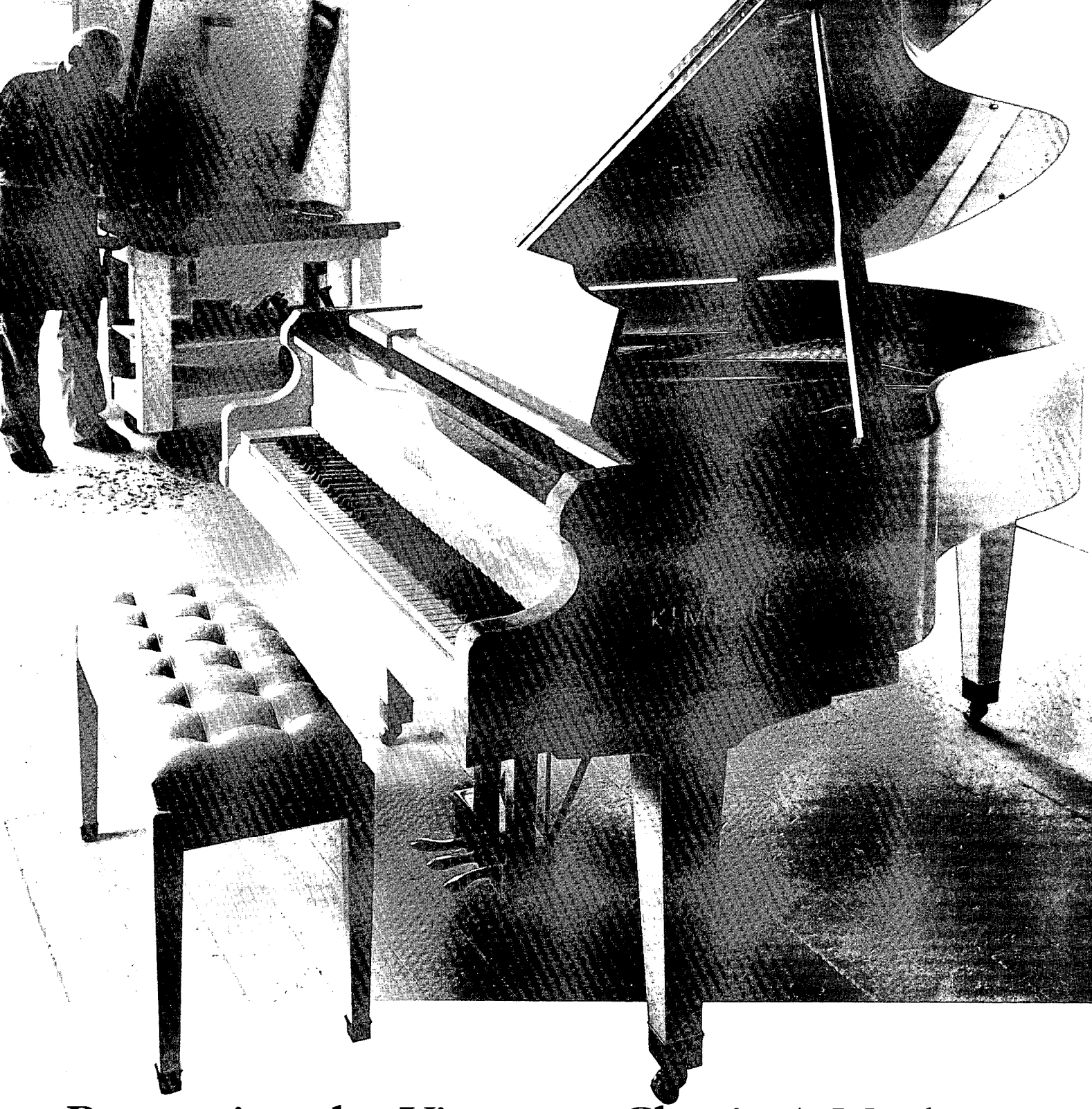
From a work standpoint, the summer doldrums aren't terribly productive, either. It's tough to make yourself go out into the heat to call on customers. Clients have other things on their minds, too, so the phone may not be ringing off the hook, anyway.

But summer need not be totally unproductive. For one thing, if you just returned from the Guild's 30th anniversary convention and technical institute in Toronto, you should definitely be pumped up and ready to dive back in. Maybe you are taking some time to go back over your notes and assimilate the knowledge you gathered. Maybe you are ordering some of the new tools or equipment that were featured. Maybe you're writing a business plan to take advantage of a new specialty you picked up in Toronto, something you never thought you could offer your customers that now seems not only possible, but relatively simple. Maybe you're getting back in touch with convention contacts, to follow up on a casual conversation between classes or in an elevator. The convention was a chance to shift gears, to take some time to look at your strengths and weaknesses, to evaluate your goals and to set new ones.

It's an important time for Guild chapters, too. Study the best, most active chapters around the country, and you'll see that they work from a plan. Some chapters already have their technical programs lined up for the next year. Regional and chapter seminars should be planned well in advance to allow the momentum to build. It's possible sometimes to pull off something at the last minute, but if you've ever done it that way, you probably remember thinking about how much better it could have been if there had only been a little more time.

It's an active time for the piano industry. As you can see from Jack Krefting's report on the National Association of Music Merchant's summer expo in Chicago in this issue, there's a lot going on. New pianos are coming on the market, some from unexpected sources. People are still working on ways to improve on the hundreds of years of experimentation that made the modern piano what it is. Jack reports on the complicated strategies that each manufacturer develops to sell a few more pianos in each price range. This is important knowledge. Even if you don't manufacture or sell pianos, you never know when it will be useful.

So there it is. Even if business is slow, it doesn't have to be a total loss. As the old saying goes, "Time spent in planning and organization is time well spent." If you attended the convention, I've no doubt that you have plenty to think about. If not, be sure to read the convention coverage in next month's issue and think about what could have been. There's always next year! ■



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The International Scene

Fred Odenheimer
Chairman, International Relations Committee

A Lesson

Some statistics came to our attention about import and export of musical instruments in 1986 as compared with the years of 1984 and 1985. Indeed, overall sales in 1986 to foreign countries increased to quite an extent; however, imports increased to an even larger amount so that when we compare figures over the three years we have roughly 230 million net imports over exports (334 million imports, 104 million exports) in the year 1984, $357 million in 1985 and $471 million in 1986.

When we look at pianos only, the picture looks even more distressing. In 1984, 46,262 units were imported at a total value of $79,514,516, in 1985 there were 56,822 units with a value of $94,333,453 and in 1986 we imported 70,746 units at a total value of $116,446,770. On the other side, the export side, we find 5,659 units at $6,194,404 in 1984, 3,813 units at $4,761,742 in 1985 and 3,455 units at $4,832,603 in 1986.

Is it price only that contributes to those greatly increased imports of pianos, is it lack of good quality control in our American factories that is to be blamed, or is a combination of the two a factor in the increased imports? We suspect it is the latter.

On our factory tour of Europe last year, our PTG group visited a good number of establishments. Wherever we went we were impressed with careful manufacture and quality control. As they told us over there, "We cannot compete on price. We have to compete in superior quality." This contributed to a fairly level amount of production as far as units are concerned. Could we here in the U.S. take a cue?

By the time this reaches print ▷

Economic Affairs

Walter Pearson
Economic Affairs Committee

The Piano Industry And The Technician

Where do we stand as technicians in the overall piano industry? My own feeling is that we pretty much stand passively on the sidelines. We complain about the manufacturers and the dealers and tend to forget that no one has a greater stake in the industry than does the technician. After 38 years as a technician and a dealer, operating two piano stores and a large repair shop, I know that of which I speak.

I think that the technician is very guilty of tuning and servicing a piano, getting his or her pay, and going home — that's it. What do we do to help promote sales of pianos? If the manufacturers can't move their inventory to the dealers and the dealers to the consumers, there is certainly going to be less business for the technician.

It is a known fact that when there is a slump in piano sales, the last to feel the effects is the technician. It will surely effect them sooner or later. When one attends a National Association Music Merchants convention in these times, the piano displays are lost in a sea of electronic gadgerty, and, with amplified sound on all sides, it is difficult to hear the quality of an acoustic piano.

I have often thought there ought to be some way that we could have a piano show in connection with our national convention where we could have the piano manufacturers represented as well as dealers. Of course, there would not be the crowds associated with NAMM, but on the other hand, everyone there would be interested in pianos. It would be a wonderful opportunity to tie in the three segments of the industry: manufacturers, dealers and technicians.

I don't believe that we are ready for this yet, but the time is coming when some changes will have to be made if we are to have a meaningful piano show. ■

Lesson . . .

a very successful convention will be history, and our international visitors will be safely home. There were IAPBT members and representatives from Japan, Korea, Taiwan, Australia, Germany and England, and also some members of PTG who traveled a long distance.

Once the "bug has bitten you" you cannot stay away from those yearly occurrences. It is the one time you can meet all your friends you made over the years, it is a time to learn, it is a time to socialize and you will have received tidbits of information from your instructors and colleagues, not necessarily in the classroom, that will make you a better technician and will mean thousands of dollars in additional earning power per year, far outstripping the expenses incurred in going to the convention. ■

Piano Technicians Guild Foundation Awards Teacher Scholarship

Janice Cook, a Columbus, OH, music teacher is the recipient of the second annual Piano Technicians Guild Foundation continuing education scholarship. The award was presented at the March1987 Music Teachers National Association National Convention in New York City. Cook is a nationally certified MTNA member who has taught piano for 23 years. She has served as a member of the Ohio Music Teachers Association state certification board, as district publicity chair, and as Central Eastern district chair. She also was selected to participate in a publicity panel discussion at the MTNA convention. Nationally certified since 1981, Cook plans to use the award to continue the regular weekly lessons she started in 1984 with instructor James Somerville.

Cook performs with The Early Interval, an ensemble specializing in the music of medieval and renaissance Europe. She plays viola da gamba, rebec, vielle, recorder, crumhorn and also sings. The Early Interval has performed throughout the country, not only in traditional concert settings, but also in festival, theatrical, choral and lecture-demonstration formats for the past 10 years. She also helps administer an "Early Music in Columbus" concert series.

"MTNA and the National Certification Board is extremely pleased to be a part of this award," wrote MTNA National Certification Chairman Harriet Green. "We are continuing to develop plans to publicize your generosity."

In addition to the Guild Foundation Scholarship, the Guild's Teacher Relations Committee staffed a booth in the MTNA exhibit hall and presented a showcase on professional piano care. ■

THE
TECHNICAL
FORUM

1987 NAMM Summer Expo

Jack Krefting
Technical Editor

Because of the enthusiastic response which greeted last year's coverage, Larry Goldsmith and I decided to travel once again to Chicago for the National Association of Music Merchants annual summer show. McCormick Place, a monstrous building big enough to house an exhibition of aircraft carriers, was packed with wares of musical instrument manufacturers from around the world.

The industry news this year is somewhat better than last summer, with most makers reporting sales gains in what could be a significant reversal of the downward spiral of the past seven years. The industry as a whole seems to be much more stable, with far fewer companies in danger of going bankrupt and a lot less job-hopping by company executives.

One exception to the above is Lowery, which has scaled back operations even further, and has gotten out of the piano business altogether. We will see no more Story & Clark or Lowery pianos, although the latter name will reportedly appear on various electronic keyboard instruments.

The Koreans were there in force, with at least eight makers represented, and the Germans had excellent representation as well. There were new makers from Canada, Austria, Czechoslovakia and Finland. The domestic makers looked stronger this year, too, for the most part, and we'll start with them.

Steinway wasn't officially there, but as usual they had a hotel suite nearby. The company reresentative to whom we talked was unaware of any new models or technical changes, so we were assuming that the same S, M, L, B and D grands are offered along with the 45″ and 52″ verticals.

Kimball was there in a big way, with some upgraded features on its better line of grands, which will now be called the Viennese Classic rather than the Viennese Edition as before. The major change is solid spruce soundboard in both 5′8″ and 6′7″ grands, and as of August 1, 1987, these models will get a Schwander-type Herrburger Brooks action to replace the "Clemson" (Baldwin-type) one previously used. Minor changes also include a beefier lyre — it now has a bottom and wooden lyre for greater rigidity — and a new, block-letter logo instead of the old, lower-case wiggly one.

Kimball also showcased a new line of pastel-colored polyester consoles built on their existing 42″ back. Called the Cosmopolitan, the piano is available in 10 unusual colors, and has a Schwander-type action. Also using the same scale but in a more traditional kind of cabinet is the Designer's Collection line which now has a solid spruce board, nine-ply maple block and is available in six styles.

At the lower end of the spectrum is the Jasper American line, which actually has three quality levels and several name brands. The bottom-line M series (made in Mexico) is the Schuerman, which has a laminated basswood board, S-2 action, 10- pound hammers and particleboard case core.

Also making a big splash at the show was Baldwin, with a piano assembled by Classic Players onto a Hamilton back. The Hamilton 743 scale, by the way, has just gotten a rework that involves scaling changes, a new soundboard and a full-width pinblock, along with some tooling changes that should improve quality and consistency.

Baldwin showed three new low-line grands; a 4′7″ and a 5′1″ made for them by Samick with the Howard label, and what appears to be a GH-1 Yamaha with "Baldwin" cast into the plate and "D.H. Baldwin" on the fallboard. The Conway-built Baldwin grands had new casters, but otherwise appeared pretty much as before.

It is interesting to note that, while some of the Korean pianos are starting to use laminated boards, more and more of the lower-line U.S. products are going toward solid spruce. Baldwin's 2000-series verticals, medium priced thin-backed consoles that have used a laminated board since their inception years ago, will now have solid spruce.

Baldwin also showed some Eurostyle verticals in shiny polyester, and announced an extended warranty (parts only) on their more expensive pianos.

Wurlitzer was there with its line of small verticals carrying the company name plus Rudolph and Chickering spinets, and some of the ubiquitous shiny imported grands. The big news from Wurlitzer is the impending move of the company headquarters to Dallas.

Sohmer showed its usual 5′0″ and 5′7″ grands in various styles and finishes, together with 42″ and 46″ verticals, all looking and sounding better than before primarily because of better quality control attention to detail. The big news from Ivoryton, though, was the vastly improved Mason & Hamlin line which is just now getting back into production after the move from East Rochester. Three of these instruments — a seven-foot and a smaller grand, plus a 50″ vertical — were shown to a most receptive group of technicians and dealers.

Charles Walter was there with his line of high-quality verticals, and Classic Players had its own display in addition to the aforementioned Baldwin.

Bosendorfer and Bechstein were there with their usual beautiful workmanship and almost fanatical attention to detail, although not much was new in either line. Schimmel had a large exhibit of 12 instruments, looking good as always and sounding better than last year. Feurich was there, too, with immaculate casework, and August Forster was represented by one grand which had been voiced too bright for our taste; although, in their defense, it should be said that many of the German instruments have been displayed that way in recent years merely so they can be heard above the surrounding noise in

Scenes from NAMM's Summer Expo (clockwise from top): the show was full of high tech music but a restored Bosendorfer drew its share of attention. Kimball showed a beefed-up lyre and a new line of pastel-colored consoles. Schimmel's display included this plexiglas piano. Baldwin showed its "D.H. Baldwin" and a player piano.

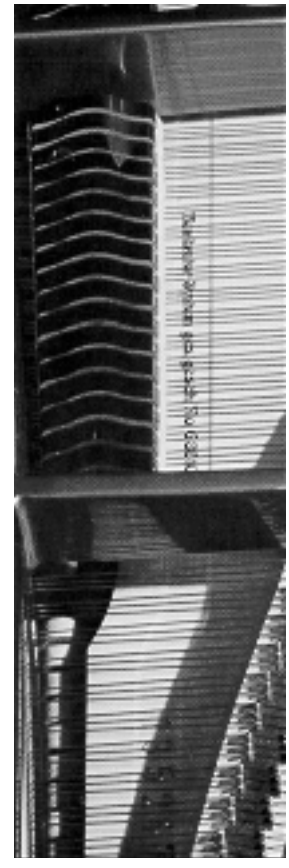
the hall. It really isn't fair to judge tone quality in such circumstances, but we have to report on what we see and hear.

Seiler is one company that shuns chemical hardening, preferring instead to use hard-pressed Renner hammers that are needled before and after they are installed, and the tone quality of their 5'11", 6'9" and 7'9" grands is very nice indeed. Seiler is touting a new feature which also may have something to do with the tone, a different soundboard treatment. In addition to normal thinning of the edges, they have cut a shallow groove into the board, about a half inch from the edge all the way around. It wasn't possible to tell whether the tonal improvement was primarily due to the new board or the voice changes, although experience suggests the latter.

Dollar for dollar, the Petrof from Czechoslovakia may represent the best value of all, having quality features like all-beech-wood rims in the grands and half-agraffes all the way to 88 in verticals. The Petrof uses a Delignit block and is nicely finished except for the voicing, which was rather uneven on those we examined.

Fazer was there from Finland with a line of inexpensive 43" verticals in various case styles and finishes. The soundboards were, surprisingly, of 4-ply beech with horizontally-laminated bridges. The base model had a photo finish that looks more durable than attractive, although the usual shiny polyester is also available at extra cost, and the particleboard case core showed no signs of telegraphing. The Fazer sports a Langer 80 action on a aluminum rail, an extra-thick plate and extra-thin back.

Poland was represented by the Calisia and the Legnica, both established makes at home but new to our market. We couldn't examine any of the Legnicas because they had somehow gotten hung up in Customs, but the Calisias were there to see. The verticals have half-agraffes all the way up, laminated boards and laminated action rails. Calisia grands have Delignit blocks and solid spruce boards, and are made 5'5" and 7'3" scales. Wage rates in Poland average less than the equivalent of $1/hr., according to the Calisia rep, so these pianos can compete directly with their Korean counterparts.

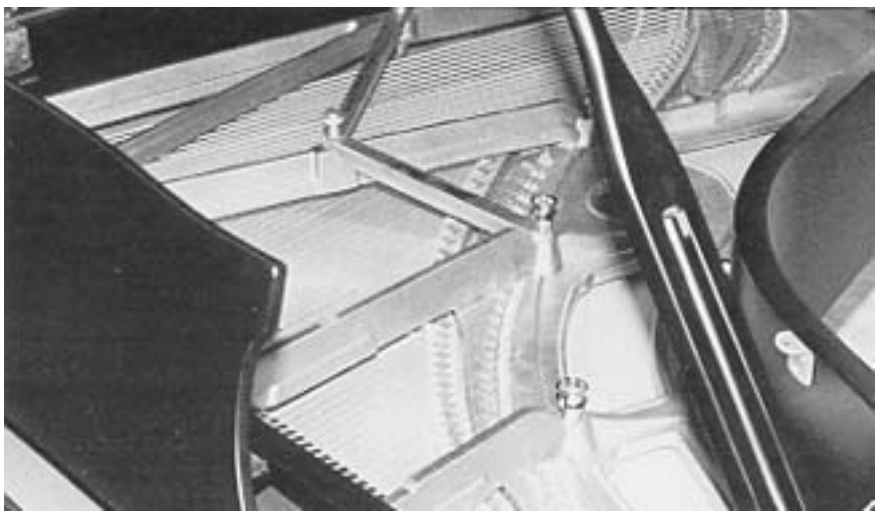


European pianos displayed included (this page clockwise from top left) the August Forster and a Schimmel upright with bumpers, heavy-duty hardware and a steel-mesh- covered back. Seiler's soundboard was grooved. The Finnish Fazer piano, shown here tilted onto its back, uses a Langer 80 action. (Opposite page, clockwise from top) The Petrof, from Czechoslovakia and Sherlock-Manning's upright. One of the most revolutionary designs was a Sojin grand by Lothar Schell. The Polish Calisia.

Sherlock-Manning, a Canadian firm that makes a thousand pianos a year, showed one vertical scale in several case styles. The scale was drawn by Alfred Knight, and employs a solid spruce board, Pratt-Win action and Imadegawa hammers. In an effort to improve quality, Sherlock-Manning has retrained virtually every employee within the past year or two, and the company is pleased with the results.

The big news at Kawai is an all-new 6'9" grand scale, called the KG6E. This is their medium-quality line with a relatively low tension scale, butterfly wippen, and no duplex. They also announced a new, lower-priced series of uprights called the CX Series which will compete at the low end, and they have changed to a solid spruce soundboard in their 803-804 verticals. Kawai also has increased selection of finishes available on grands, including satin walnut, white, and ivory.

Yamaha also introduced a new grand at a lower price, the 5'7"



GH-2. This will join Yamaha's smaller GH-1 as the price leaders of their grand line. Also all new is the 45" scale, now called the P-116, featuring a perimeter plate. With this redesign, Yamaha has completed their program to rescale their entire line, an effort that began four years ago.

The Everett 42-1/2" and 45" verticals are still being made by Baldwin at their Truman, AR, factory, and were shown in the Yamaha booth. As we reported last year, this is a hybrid instrument, using a Baldwin back and case with Yamaha keys, action, plate and bridges.

Yamaha's plant in Thomaston, Georgia, is now producing the M400-series consoles in three case styles, as well as studio pianos on the 45" scale.

Young Chang showed a new studio scale called the 15-ply maple pinblock. They are beginning to use lacquer on more and more of their pianos instead of polyester, including the American Walnut and American Oak grands.

Weber, which is marketed as a separate company but seems more like a division of Young Chang, showed two new grand scales, 5'1" and 5'7", both with full sostenuto, and a 46-1/2" school piano. They also displayed two console series, one with laminated boards and the other with solid spruce. Both, however, had MDF (medium-density fiberboard) case cores.

According to the Weber representative, the reason for this dual marketing stems from Korean concern that the U.S. may at some point limit imports to current levels, and that the Young Chang name is not, by itself, growing in sales volume enough to meet their target goals before that restriction would take place. In any event, there is undoubtedly a certain market resistance to a strange-sounding name, and the Weber name solves that problem nicely.

Sojin showed the most radical design in the entire show, a new 7'1" scale by Lothar Schell of Germany. According to Schell himself, the design features a flexible plate which moves up and down with the crown in the board by means of nosebolts which are pushed up and down by "tone bars" under the board. Although his argument strains credulity a bit, Schell insists that his measurements show significant outward twisting of the rim when the soundboard grows, and that his "bell" — similar to the larger Steinway treble nosebolt support — then buckles inward and upward, pushing the plate up to match the movement of the bridge. The piano supposedly has excellent tuning stability despite — or because of — all this flexing, but time will tell. Only the prototype was available for inspection, but if the scale proves successful we will try to do an in-depth study of its many unusual features.

Samick displayed its new 4'7" grand called the SG-140, together with new European-looking fancy inlaid cases on some verticals and grands. They showed their "Classic" 5'1" and 6'1" grands with round empire-style legs, and a stunning red mahogany grand in shiny polyester. They are using a urethane finish on their SU-118 verticals, which is rich-looking without the dipped- in-plastic look of polyester, and it is easily repairable with ordinary touchup techniques.

Samick also announced the availability of a built-in Pianocorder unit on the 5'7" grand and the 42" console.

Tadashi had several Korean-made verticals in 44", 48" and 52" sizes, with Delignit blocks and Japanese Schwander-type actions. Hyundai and Han Dok were there, too, with 17 and 4 pianos respectively.

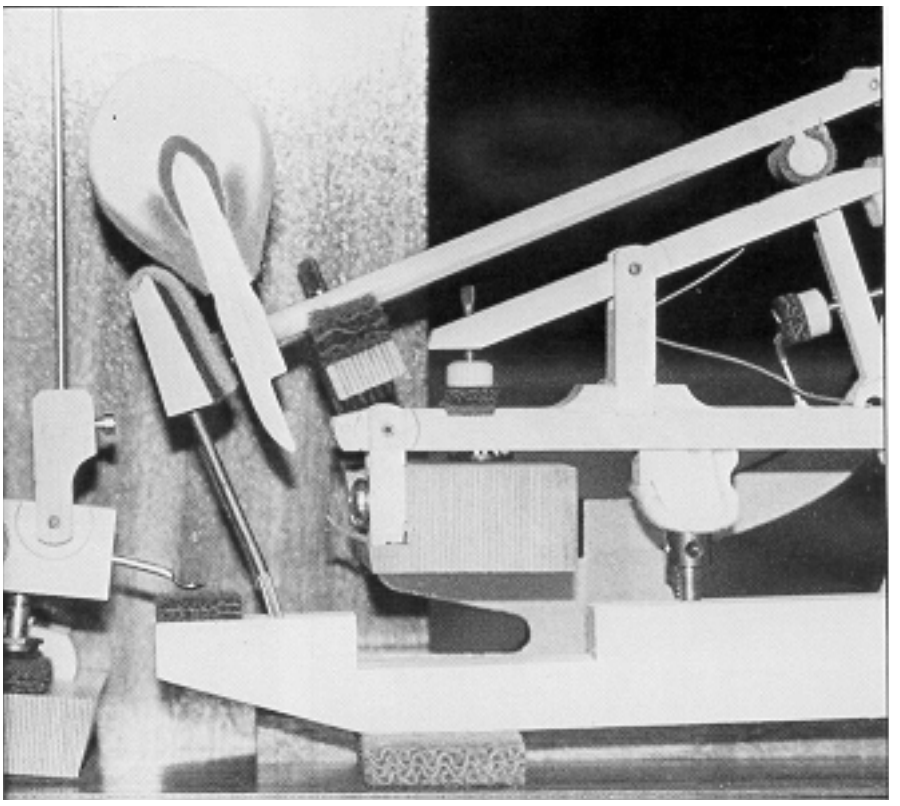
Renner was part of the West German exhibit as usual, and showed their excellent-quality parts. They are using laminated beech for action rails more and more, with self-tapping screws that will cut into this tough material. They feel that this gives better regulating stability and improved screw-holding ability, compared with solid wooden rails. Their action parts are made of white beech, not hornbeam as many had supposed, incidentally.

The Renner representative resolved a nagging issue for us also, involving the direction of the knuckle nap. In these pages for the past several years, we have maintained that a fine regulation cannot be achieved unless the knuckles are installed so the nap feels smooth toward the hammer and rough toward the flange. Some U.S. companies have disputed that in recent years, saying that it makes no difference which way the nap goes, and pointing to some Renner-made parts with random nap as proof. When we brought this to Renner's attention, their representative stated categorically that the nap must always be smooth toward the hammer, and that some piano companies order knuckles and shanks separately so they can assemble them in their own factories. This is beyond Renner's control, although Renner does take the trouble to mark every knuckle for nap direction and can only hope that the parts will be assembled correctly.

Kluge, the German maker of the piano and harpsichord keyboards, showed why they are so highly regarded in the industry. They will reportedly recover a set of piano keys in one-piece ivory for $1,200.00 if you send them your keys on the keyframe.

Overall, our feeling was that the industry is on the upswing and that optimism was more apparent than any time in the past five years. The market is changing, though, and those manufacturers who aren't making what is selling had better change, fast. The traditional home organ market, except in a few areas with high concentrations of elderly buyers, is virtually dead. Its replacement among younger buyers might be the "lap- organs" or small, portable keyboard instruments; but the days of the high-volume, high-profit spinet organ business appear to be about over.

Most of the larger piano companies introduced some sort of MIDI unit installed in a regular acoustic grand piano, and some of the affluent youth market will no doubt go for that package because it offers possibly the best of both worlds. Traditional buyers, however, don't think electronic gizmos belong in an acoustic piano, and will insist on the unadorned instrument.



Renner, part of the West German exhibit, showed an action which included laminated beech action rails (top) and self-tapping screws (left) in its construction. Among the companies bringing forward new hybrid electronic/acoustic instruments was Seiler. Opposite, clockwise from top: The Han Dok, Calisia's upright, a Bosendorfer plate, Baldwin's Howard grand, and Hyundai.

Interestingly, grand sales are up significantly for almost every maker, and we are seeing more and more of the tiny 4'7" grands. It is possible that these little grands will finish off the ailing spinet market, especially if the retail price can be kept under $4,000. Even the consoles seem to be suffering in the competition with small grands and taller verticals, raising the possibility that, in a few years, the smallest vertical will be 44" - 45" in height.

The trends we think we are seeing, based on this NAMM show and general observations, are that the Koreans are trying to push upmarket into the area previously dominated by the Japanese — the high-volume, medium-priced pianos that most people can afford. They are also keeping the Chinese at bay by retaining their price-leader instruments and by making stencil pianos in vast quanties, very cheaply, for anyone who will buy a containerload or more.

The Japanese are fighting back with new, less-costly pianos in their lines, while at the same time trying to increase their market penetration upward. The American companies are trying to compete at the low end as well, but with wage rates averaging nearly 10 times those of Korea and other countries like Poland, the U.S. makers cannot effectively do so except with imported stencil pianos. We are seeing companies like Baldwin and Kimball putting solid spruce boards in models that always had been built with less costly laminated ones in an effort to go upscale.

With such high labor costs, it seems obvious that countries such as Germany and the U.S. are going to have to concentrate on the high end of the market and leave the low end to those countries that can afford to build cheap pianos. This seems to be the way things are going and must inevitably go.

Where does this leave the Japanese? With rising labor and materials costs, eventually they will have to go after a greater share of the high-end U.S. market than they have had, especially considering the low-end inroads made by Korea recently. As long as the esoteric European pianos are so high-priced — some are probably overpriced, high quality or not — they are leaving a significant market share for someone else, and right now it's a race between domestic and Japanese makers for dominance in the high and upper middle segements of our market.

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Letters: Inharmonic Equal Temperament, The Solid Unison, The Torture Test and More

Rick Baldassin
Assistant Technical Editor

Our first letter comes from Jerry Anderson, of Paris, France. Jerry writes:

Let me begin by offering you my hearty congratulations on your new role as Assistant Technical Editor of the Journal. *Your prodigious analytical skills combined with your talent for clear and systematic explanation make you an ideal person for the job. The many of us who have benefitted from your "On Pitch" series as well as your convention classes thank you for the contribution you already have made and look forward to your future commentaries.*

There have been a number of times in the past when I have been tempted to respond to certain ideas presented or to questions posed in the pages of the Journal. *There has been so much excellent material published that the possibilities for discussion are virtually endless. One of my principal hesitations to writing before has been that, because I live (and work) in France, my issues of the* Journal *arrive only after three to six weeks of postal delays. By the time I might be able to get a letter in the mail in response to an article, at least one if not two issues have already gone to press, rendering my own commentaries more or less anachronistic.*

Be that as it may, as a respectful admirer of your work, I cannot resist this opportunity to address to you certain thoughts, some of which I hope may be of interest to you or to your readers.

Inharmonic Equal Temperament

One of several interesting ideas that you bring up in your March 1987 column is that "it is impossible to tune the piano in equal temperament." You demonstrate quite clearly that it is not possible to apply the theoretical ratio of $1:2^{1/12}$ to obtain half-step intervals because of the effects of inharmonicity. If we are talking about the entire piano, it is quite true that there is no single ratio available to us which we can use to calculate the ideal frequency for every note in the piano. If, however, we are willing to limit ourselves to a discussion of the middle octaves of good-quality instruments, it is possible to derive a ratio that takes into account the inharmonicity of any given piano, and gives a very accurate indication of just what the pitches of an excellent tuning might be.

In order to illustrate the method for finding this ratio, let us refer to the very interesting data gathered by Dr. Albert Sanderson and first printed in the *Journal* issue of June 1978 on pages 14 and 16.

In tuning a temperament, many of us begin by choosing an octave, let us say for example, F3-F4. Then the first thing we must do is decide what kind of temperament octave suits the piano best by applying the various tests which were so wonderfully described in the "On Pitch" series. Generally we will find that this octave will be of the 4:2 or 6:3 variety, or even slightly larger. In examining Figure B of the actual frequencies in a well-tuned piano, and comparing the partials of F3 and F4, we can see that the partials are most nearly matched at 6:3, where the sixth partial of F3 is 1049.2 Hz, and the third partial of F4 is 1049.3 Hz. In

A. THEORETICAL FREQUENCIES OF PIANO STRINGS WITHOUT INHARMONICITY

	PARTIAL NUMBER						
NOTE	ONE	TWO	THREE	FOUR	FIVE	SIX	EIGHT
C3	130.8	261.6	392.4	523.3	654.1	784.9	1046.5
C#3	138.6	277.2	415.8	554.4	693.0	831.5	1108.7
D3	146.8	293.7	440.5	587.3	734.2	881.0	1174.7
D#3	155.6	311.1	466.7	622.3	777.8	933.4	1244.5
E3	164.8	329.6	494.4	659.3	824.1	988.9	1318.5
F3	174.6	349.2	523.8	698.5	873.1	1047.7	1396.9
F#3	185.0	370.0	555.0	740.0	925.0	1110.0	1480.0
G3	196.0	392.0	588.0	784.0	980.0	1176.0	1568.0
G#3	207.7	415.3	623.0	830.6	1038.3	1245.9	1661.2
A3	220.0	440.0	660.0	880.0	1100.0	1320.0	1760.0
A#3	233.1	466.2	699.2	932.3	1165.4	1398.5	1864.7
B3	246.9	493.9	740.8	987.8	1234.7	1481.6	1975.5
C4	261.6	523.3	784.9	1046.5	1308.1	1569.8	2093.0
C#4	277.2	554.4	831.5	1108.7	1385.9	1663.1	2217.5
D4	293.7	587.3	881.0	1174.7	1468.3	1762.0	2349.3
D#4	311.1	622.3	933.4	1244.5	1555.6	1866.8	2489.0
E4	329.6	659.3	988.9	1318.5	1648.1	1977.8	2637.0
F4	349.2	698.5	1047.7	1396.9	1746.1	2095.4	2793.8
F#4	370.0	740.0	1110.0	1480.0	1850.0	2220.0	2960.0
G4	392.0	784.0	1176.0	1568.0	1960.0	2352.0	3136.0
G#4	415.3	830.6	1245.9	1661.2	2076.5	2491.8	3322.4
A4	440.0	880.0	1320.0	1760.0	2200.0	2640.0	3520.0
A#4	466.2	932.3	1398.5	1864.7	2330.8	2797.0	3729.3
B4	493.9	987.8	1481.6	1975.5	2469.4	2963.3	3951.1
C5	523.3	1046.5	1569.8	2093.0	2616.3	3139.5	4186.0

B. ACTUAL FREQUENCIES OF PIANO STRINGS ON A WELL-TUNED GRAND PIANO.

	PARTIAL NUMBER						
NOTE	ONE	TWO	THREE	FOUR	FIVE	SIX	EIGHT
C3	130.5	261.0	391.6	522.4	653.4	784.6	1048.1
C#3	138.3	276.6	415.0	553.6	692.4	831.6	1110.9
D3	146.5	293.1	439.7	586.6	733.8	881.3	1177.6
D#3	155.2	310.5	466.0	621.7	777.7	934.0	1248.3
E3	164.5	329.0	493.8	658.8	824.1	989.9	1323.2
F3	174.3	348.7	523.2	698.1	873.4	1049.2	1402.8
F#3	184.7	369.4	554.4	739.8	925.6	1112.1	1487.1
G3	195.7	391.5	587.5	784.0	981.0	1178.7	1576.7
G#3	207.3	414.8	622.6	830.8	1039.7	1249.4	1671.7
A3	219.7	439.5	659.7	880.5	1101.9	1324.3	1772.5
A#3	232.8	465.7	699.1	933.1	1167.9	1403.8	1879.5
B3	246.6	493.5	740.8	988.9	1237.9	1487.9	1993.1
C4	261.3	522.9	785.1	1048.0	1312.1	1577.5	2113.7
C#4	276.9	554.1	831.9	1110.7	1390.8	1672.4	2241.8
D4	293.4	587.1	881.6	1177.2	1474.2	1773.1	2377.8
D#4	310.9	622.2	934.3	1247.7	1562.7	1879.9	2522.3
E4	329.4	659.3	990.1	1322.4	1656.7	1993.3	2675.9
F4	349.0	698.6	1049.3	1401.7	1756.3	2113.7	2839.2
F#4	369.8	740.3	1112.1	1485.7	1862.0	2241.5	3012.8
G4	391.9	784.5	1178.5	1574.9	1974.2	2377.2	3197.4
G#4	415.2	831.3	1249.1	1669.5	2093.2	2521.3	3393.9
A4	440.0	881.0	1323.9	1769.8	2219.6	2674.4	3602.9
A#4	466.2	933.6	1403.2	1876.2	2353.8	2837.0	3825.5
B4	494.0	989.4	1487.3	1989.1	2496.2	3009.9	4062.5
C5	523.5	1048.5	1576.5	2109.0	2647.5	3193.6	4315.1

C. THEORETICAL BEAT RATES OF PIANO STRINGS WITHOUT INHARMONICITY

ROOT NOTE	MINOR THIRD 5-6	MAJOR THIRD 4-5	FOURTH 3-4	FOURTH 6-8	FIFTH 2-3	FIFTH 4-6	SIXTH 3-5	OCTAVE 1-2	OCTAVE 2-4	OCTAVE 3-6	OCTAVE 4-8	TENTH 2-5
C3	-7.1	5.2	.6	1.2	-.4	-.9	5.9	0	0	0	0	5.2
C#3	-7.5	5.5	.6	1.3	-.5	-.9	6.3	0	0	0	0	5.5
D3	-7.9	5.8	.7	1.3	-.5	-1.0	6.8	0	0	0	0	5.8
D#3	-8.4	6.1	.7	1.4	-.5	-1.0	7.1	0	0	0	0	6.1
E3	-8.9	6.3	.7	1.5	-.5	-1.1	7.5	0	0	0	0	6.3
F3	-9.4	6.9	.8	1.6	-.6	-1.2	7.9	0	0	0	0	6.9
F#3	-10.0	7.3	.8	1.7	-.6	-1.2	8.4	0	0	0	0	7.3
G3	-10.6	7.8	.9	1.8	-.7	-1.3	8.9	0	0	0	0	7.8
G#3	-11.2	8.3	.9	1.9	-.7	-1.4	9.4	0	0	0	0	8.3
A3	-11.9	8.7	1.0	2.0	-.7	-1.5	10.0	0	0	0	0	
A#3	-12.6	9.3	1.1	2.1	-.8	-1.6	10.6	0	0	0	0	
B3	-13.3	9.8	1.1	2.3	-.8	-1.7	11.2	0	0	0	0	
C4	-14.1	10.4	1.2	2.4	-.9	-1.8	11.9	0	0	0	0	
C#4	-15.0	11.0	1.3	2.5	-.9	-1.9	12.6					
D4	-15.9	11.6	1.3	2.7	-1.0	-2.0	13.3					
D#4	-16.8	12.3	1.4	2.8	-1.1	-2.1	14.1					
E4	-17.8	13.1	1.5	3.0	-1.1	-2.2						
F4	-18.8	13.9	1.6	3.2	-1.2	-2.4						
F#4	-20.0	14.7	1.7	3.3								
G4	-21.2	15.6	1.8	3.5								
G#4	-22.4	16.5										
A4	-23.7											

D. ACTUAL BEAT RATES ON A WELL-TUNED GRAND PIANO

ROOT NOTE	MINOR THIRD 5-6	MAJOR THIRD 4-5	FOURTH 3-4	FOURTH 6-8	FIFTH 2-3	FIFTH 4-6	SIXTH 3-5	OCTAVE 1-2	OCTAVE 2-4	OCTAVE 3-6	OCTAVE 4-8	TENTH 2-5
C3	-6.9	5.4	.8	1.2	-.1	-.6	6.3	.3	.5	.5	-.1	5.9
C#3	-7.5	5.7	.8	1.2	-.2	-.8	6.7	.3	.5	.4	-.2	6.2
D3	-7.9	6.0	.9	1.1	-.2	-.8	7.0	.3	.5	.3	-.4	6.5
D#3	-8.4	6.3	.9	1.1	-.3	-.9	7.4	.4	.5	.3	-.6	6.8
E3	-8.9	6.7	.9	1.1	-.3	-1.0	7.8	.4	.5	.2	-.8	7.2
F3	-9.5	7.1	1.0	1.0	-.3	-1.2	8.2	.4	.5	.1	-1.1	7.6
F#3	-10.4	7.5	1.0	.9	-.3	-1.4	8.7	.4	.5	-.1	-1.4	8.0
G3	-10.8	7.9	1.1	.8	-.4	-1.5	9.1	.4	.5	-.2	-1.8	8.4
G#3	-11.5	8.3	1.1	.7	-.4	-1.7	9.6	.4	.5	-.3	-2.2	8.8
A3	-12.2	8.8	1.1	.6	-.4	-1.9	10.2	.5	.5	-.4	-2.7	
A#3	-13.0	9.3	1.2	.4	-.5	-2.1	10.6	.5	.5	-.5	-3.3	
B3	-13.7	9.8	1.2	.2	-.5	-2.2	11.2	.5	.5	-.7	-4.0	
C4	-14.8	10.3	1.3	0	-.6	-2.6	11.8	.6	.5	-1.0	-4.7	
C#4	-15.7	10.9	1.3	-.3	-.6	-2.9	12.4					
D4	-16.8	11.5	1.4	-.6	-.6	-3.3	13.1					
D#4	-17.9	12.2	1.4	-1.0	-.7	-3.7	13.8					
E4	-19.1	12.8	1.5	-1.5	-.7	-4.2						
F4	-20.5	13.5	1.5	-2.1	-.8	-4.7						
F#4	-21.9	14.2	1.6	-2.9								
G4	-23.4	14.9	1.6	-3.8								
G#4	-25.1	15.8										
A4	-26.9											

"Baldassineese" this would be described as a 6:3+ octave. F4 was placed so that its third partial was just slightly sharper than the sixth partial of F3. *(Actually, the octave was tuned as a 4:2 + 0.5 beats per second (BPS). The fourth partial of F3 = 698.1, and the second partial of F4 = 698.6. In this case, the octave is also .1 BPS wide at the 6:3 level. This would not be the case in every piano. Ed.)* The fundamental frequency of F4, thus tuned, yielded in this case 349.0 Hz. F3 as it was tuned yielded a fundamental of 174.3 Hz. It is easy to see that F4 vibrates at more than twice the frequency of F3 at their respective

E. Ratio: Partial / Fundamental

Note	partial 2	partial 3	partial 4	partial 5	partial 6	partial 8
C 3	2.000	3.001	4.003	5.006	6.012	8.031
C#3	2.000	3.001	4.003	5.007	6.013	8.033
D 3	2.001	3.001	4.004	5.009	6.016	8.038
D#3	2.001	3.003	4.006	5.011	6.018	8.043
E 3	2.000	3.002	4.005	5.010	6.018	8.044
F 3	2.001	3.002	4.005	5.011	6.020	8.048
F#3	2.000	3.002	4.005	5.011	6.021	8.051
G 3	2.001	3.002	4.006	5.013	6.023	8.057
G#3	2.001	3.003	4.008	5.015	6.027	8.064
A 3	2.000	3.003	4.008	5.015	6.028	8.068
A#3	2.000	3.003	4.008	5.017	6.030	8.073
B 3	2.001	3.004	4.010	5.020	6.034	8.082
C 4	2.001	3.005	4.011	5.021	6.037	8.089
C#4	2.001	3.004	4.011	5.023	6.040	8.096
D 4	2.001	3.005	4.012	5.025	6.043	8.104
D#4	2.001	3.005	4.013	5.026	6.047	8.113
E 4	2.002	3.006	4.015	5.029	6.051	8.124
F 4	2.002	3.007	4.016	5.032	6.056	8.135
F#4	2.002	3.007	4.018	5.035	6.061	8.147
G 4	2.002	3.007	4.019	5.038	6.066	8.158
G#4	2.002	3.008	4.021	5.041	6.072	8.174
A 4	2.002	3.009	4.022	5.045	6.078	8.188
A#4	2.003	3.010	4.024	5.048	6.085	8.205
B 4	2.003	3.011	4.026	5.053	6.092	8.223
C 5	2.003	3.011	4.029	5.057	6.100	8.243

fundamentals, so we have confirmed one thing we suspected, that we are not dealing with a perfectly harmonic system. Since our frequencies do not double every octave, we also know that our theoretical proportion of $1:2^{1/12}$ cannot be employed to tell us at what frequency each note in the temperament will vibrate. What ratio will? Since the proportion of F4 to F3 is not 2/1, but rather 349/174.3, the ratio of each half-step is not $1:(2/1)^{1/12}$, but $1:(349/174.3)^{1/12}$, which equals $1:(2.0023)^{1/12}$, or 1:1.0595643.

To see if it works, try multiplying this "tempered ratio" by the frequency of F3, 174.3, to find values for the frequencies of each of the temperament notes. You will see that, rounding to the nearest 0.1 Hz, it yields exactly the frequencies used for this octave in the Sanderson data (Figure B).

If we had started with either a smaller or larger temperament octave, our ratio could have been adjusted accordingly, by using the generalized half-step proportion:

(frequency F4/frequency F3)$^{1/12}$

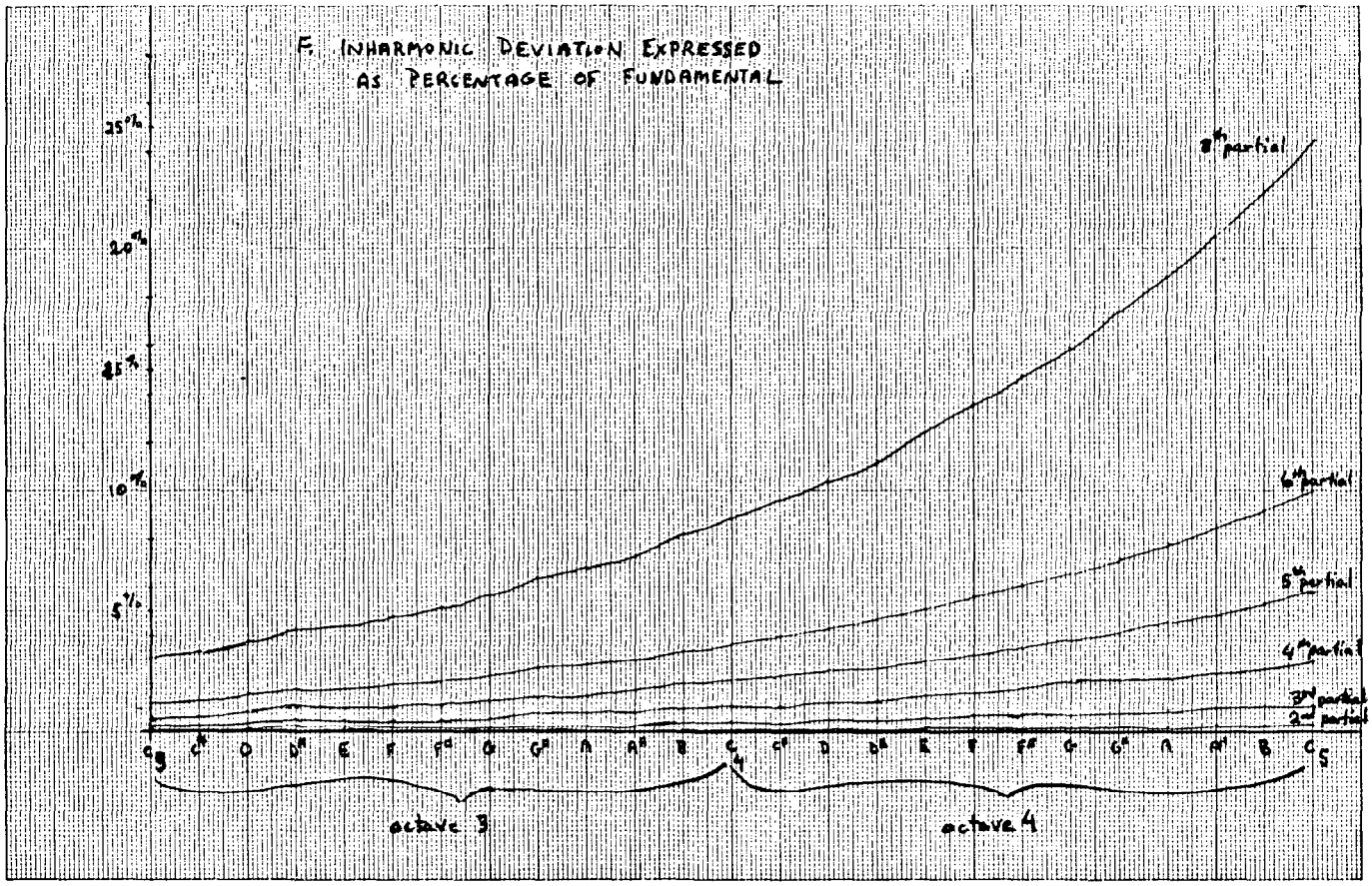
This method for calculating half-steps would be valid for any piano in which the inharmonicity changes slowly and evenly from note to note. The objection could be made that as long as there is any change in inharmonicity at all, there will be inaccuracies. This is true. All I have really done here is to propose a closer approximation of the real ratios between half-steps. With more sophisticated mathematics we could certainly be even more precise, but I think we have already reached the point here where we can calculate more precisely than we can actually tune.

Continuing to consider Figure B, if we proceed to calculate the values of notes outside of the F3-F4 octave, we find that the same ratio (1:1.0595643) accurately predicts notes down to C3 (the lowest note measured) but works upwards only as high as note F♯4, beyond which calculated results become progressively flatter in relation to the actual tune frequencies. We can conclude that either these notes are tuned too sharp, or the ratio between half-steps has become larger as we go up. Examining Figure D, we see how nicely all interval relationships have been kept under control, so we can eliminate the possibility of a poor tuning. We know theoretically (as well as intuitively from our tuning experience) that inharmonicity increases more and more rapidly as we go higher in a scale, so we might assume reasonably that this is the reason for the change in the ratio between notes. The data supplied to us by Dr. Sanderson offers us an excellent opportunity to examine the phenomena.

In Figure E, I have calculated the ratio of each partial to its fundamental for each note given in Figure B, from C3 to C5. In Figure F, I have graphed the results to help us visualize more clearly what is occuring. Several important ideas are confirmed by this data:

1. Inharmonicity, as we expected, increases more and more rapidly as we go from the middle towards the treble of the piano.

2. As Rick Baldassin explained in his March 1987 column, the



inharmonicity increases (roughly exponentially) as the number partial. That is, the third partial of each note is significantly more inharmonic than its second partial, the fourth more than the third, etc.

3. Apparently, as we continue up into the high treble, the inharmonicity will become so great that only lowest partials will have any value for tuning. We see how very inharmonic the sixth and eighth partials have already become at C5 on the graph, with three more octaves still to go. We learned in the "On Pitch" series (May 1984) that the higher number partials are not present in the tonal spectra of the notes in the highest octaves. This, of course, is not accident. *(Amen. — Ed.)* If these increasingly inharmonic partials were distinctly audible we would certainly want to voice them out (or at least reduce them). Their presence in any great amplitude would, in most cases, cause considerable problems for tuning.

4. Another important conclusion of the "On Pitch" series is confirmed by this data: the octave type we use gradually "decreases" (i.e. has lower corresponding partials) as we go from the bass toward the treble of the piano. Even in the limited two- octave region for which we are given data, we see that the lowest octave recorded (C3-C4) is an 8:4- octave, while the uppermost octave (C4-C5) is a 4:2+. We will recall that the F3-F4 octave we looked at earlier was a 6:3+, which is not surprising since it lies between the other two just named.

(By the way, here is a question for the Flat Earth Society: which octave is more stretched, the C3-C4 octave at 8:4- and with an octave ratio of 261.3/130.5 = 2.0023; or the C4-C5 octave at 4:2+ with a ratio of 523.5/261.3 = 2.0034? In this case, the most stretched seems to be the smaller of the two ratios, and something tells me this may be the case in general).

These charts, don't you agree, are quite interesting, and I hope they have helped us consolidate our ideas about how real pianos behave.

Our thanks to Jerry for his contribution and very-well- presented material. My comment regarding the impossibility of tuning Equal Temperament on the piano goes deeper than the progression of the funamentals. While I must admit I tell my customers I tune in Equal Temperament, the fact is that on the piano there is *nothing* equal about it at all. If we were to make a chart of the *cent widths* of all the intervals listed in Figure C, the theoretical beat rates of equal temperament, we would find that although the beat rates are changing, progressing in the ratio of

$$\left(\sqrt[12]{2:1}\right)$$

the cent widths for each type of interval (m3, P4, etc.) are *Equal!*. Looking more closely, we would find that all of the minor thirds would have a cent width of -15.7 cents, the Major Thirds would have a width of 13.7 cents, both coincidences of the Fourths would have widths of 2.0 cents, both coincidences of the Fifths would have widths of -2.0 cents, the Major Sixths would have a width of 15.7 cents, all the coincidences of the octave would have widths of 0.0 cents, and the Major Tenths would have a width of 13.7 cents. This is a very orderly and equal system, indeed. From Dr. Sanderson's data listed in Figure B, I calculated the actual cent widths on his well-tuned grand piano. Looking at the

beat rates listed in Figure D leaves no room for doubt about how well the piano was really tuned. The cent widths are listed in Figure G.

Looking at Figure G closely reveals that although Dr. Sanderson had a very nice progression of beat rates occuring in Figure D, the cent widths were not equal. In general, as you go up the scale, the expanded intervals decrease in width, while the contracted intervals increase in width. Does this change in width mean, for instance, that the beat rates of the expanded intervals slow down as we go up the scale, or that they speed up as we go down the scale? In relation to equal temperament, yes, but in reality, no.

The beat rates still speed up as we go into the treble, but at a slower rate than in equal temperament. As we go down into the bass, the beat rates still slow down, but again at a slower rate than in equal temperament. Below are listed graphs which show the cent widths from Figure G. and compare them to the theoretical cent widths.

From the above, it is clear that what we tune on the piano is not Equal Temperament, even though we call it that. I am sure that this will stimulate much good conversation.

G. INTERVAL WIDTHS IN CENTS

Root	m3	M3	4th	4th	5th	5th	M6	Oct	Oct	Oct	Oct	M10
Note	6:5	5:4	4:3	8:6	3:2	6:4	5:3	2:1	4:2	6:3	8:4	5:2
Theo	-15.7	13.7	2.0	2.0	-2.0	-2.0	15.7	0.0	0.0	0.0	0.0	13.7
C 3	-15.3	14.3	2.7	1.8	-0.4	-1.3	16.6	2.0	1.7	1.1	-0.2	15.6
C#3	-15.7	14.2	2.5	1.9	-0.8	-1.7	16.7	1.9	1.6	0.6	-0.3	15.4
D 3	-15.6	14.1	2.7	1.6	-0.8	-1.6	16.4	1.8	1.5	0.6	-0.6	15.3
D#3	-15.6	14.0	2.5	1.5	-1.1	-1.7	16.4	2.2	1.4	0.6	-0.8	15.1
E 3	-15.6	14.0	2.4	1.4	-1.1	-1.7	16.3	2.1	1.3	0.3	-1.0	15.1
F 3	-15.7	14.0	2.5	1.2	-1.0	-2.0	16.2	1.5	1.2	0.2	-1.4	15.0
F#3	-16.0	14.0	2.3	0.9	-0.9	-2.2	16.2	1.9	1.2	0.0	-1.6	14.9
G 3	-15.9	13.9	2.4	0.5	-1.2	-2.2	16.0	1.8	1.1	-0.3	-2.0	14.8
G#3	-16.0	13.8	2.3	0.7	-1.1	-2.4	15.9	1.7	1.0	-0.4	-2.3	14.6
A 3	-16.0	13.8	2.2	0.6	-1.1	-2.5	16.0	2.0	1.0	-0.5	-2.6	
A#3	-16.1	13.7	2.2	0.4	-1.2	-2.6	15.6	1.9	0.9	-0.7	-3.0	
B 3	-16.0	13.7	2.1	0.2	-1.2	-2.6	15.6	1.8	0.9	-0.7	-3.5	
C 4	-16.3	13.5	2.1	0.0	-1.3	-2.9	15.5	2.0	0.8	-1.1	-3.9	
C#4	-16.3	13.5	2.2	-0.2	-1.2	-3.0	15.4					
D 4	-16.5	13.5	1.9	-0.4	-1.2	-3.2	15.3					
D#4	-16.6	13.5	1.9	-0.7	-1.3	-3.4	15.2					
E 4	-16.7	13.3	2.0	-1.0	-1.2	-3.7						
F 4	-16.9	13.3	1.9	-1.3	-1.3	-3.9						
F#4	-17.0	13.2	1.9	-1.7								
G 4	-17.1	13.0	1.8	-2.1								
G#4	-17.3	13.0										
A 4	-17.5											

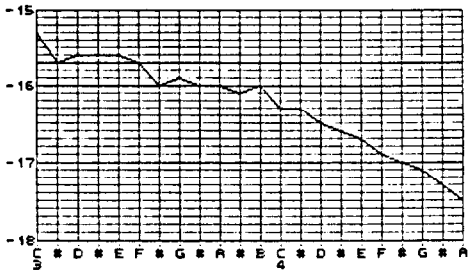


Figure H compares the actual and theoretical cent widths for the minor thirds. Minor thirds are theoretically — 15.7 cents wide. In the piano, the major thirds increase in width (albeit negative) as we go up the scale. This means the beat rates will increase at a faster rate than in equal temperament.

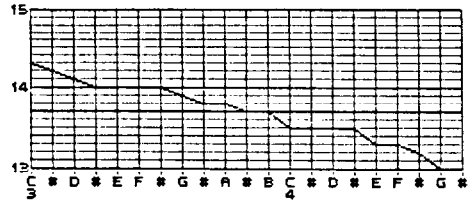


Figure I compares the actual and theoretical cent widths for the Major Thirds. Major thirds are theoretically 13.7 cents wide. In the piano, the Major Thirds decreates in width as we go up the scale. This means the beat rates will increase at a slower rate than in equal temperament.

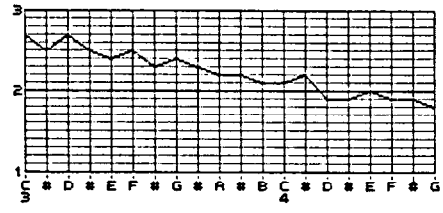


Figure J compares the actual and theoretical cent widths for the 4:3 coincidence of the Fourth. Fourths are theoretically 2.0 cents wide. In the piano, the 4:3 coincidence of the Fourths decreases in width as we go up the scale. This means the beat rates will increase at a slower rate than in equal temperament.

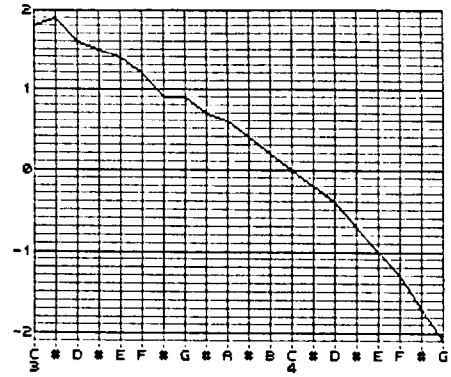


Figure K compares the actual and theoretical cent widths for the 8:6 coincidence of the Fourth. Fourths are theoretically 2.0 cents wide. In the piano, the 8:6 coincidence of the Fourths decreases in width until it becomes pure, then increases in with (albeit negative) as we go up the scale. The beat rates actually slow down, become pure, then speed up again, which is quite contrary to equal temperament.

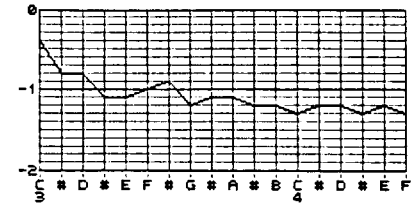


Figure L compares the actual and theoretical cent widths for the 3:2 coincidence of the Fifth. Fifths are theoretically -2.0 cents wide. In the piano, the 3:2 coincidence of the Fifth increases in width (albeit negative) as we go up the scale. This means the 6:4 coincidence speeds up at a faster rate than in equal temperament.

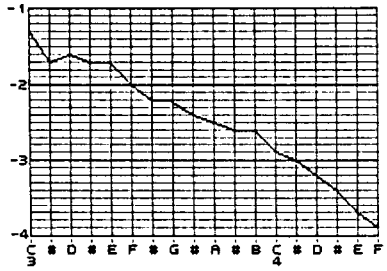


Figure M compares the actual and theoretical cent widths for the 6:4 coincidence of the fifth. Fifths are theoretically −2.0 cents wide. In the piano the 6:4 coincidence of the fifth increases in width (albeit negative) as we go up the scale. This means the 6:4 coincidence speeds up at a faster rate than in equal temperament.

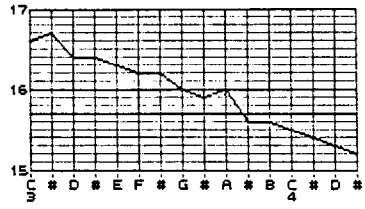


Figure N compares the actual and theoretical cent widths for the Major Sixths. Major Sixths are theoretically 15.7 cents wide. In the piano, the Major Sixths start out wider, but decrease in width as we go up the scale. This means the sixths speed up at a slower rate than in equal temperament, although the speeds start out faster.

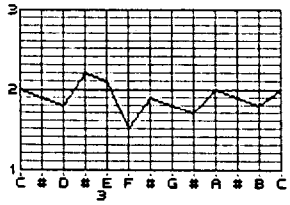


Figure O compares the actual and theoretical cent widths for the 2:1 coincidence of the octaves. Octaves are theoretically 0.0 cents wide (pure). In the piano, the 2:1 coincidence of the octave seems somewhat unstable as to width, but always stays wide of pure.

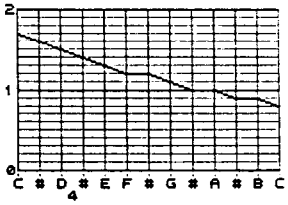


Figure P compares the actual and theoretical cent widths for the 4:2 coincidence of the octaves. 4:2 octaves were tuned in these examples, which is evidenced by the smoothness of the curve. The 4:2 coincidence decreases in width as we go up the scale.

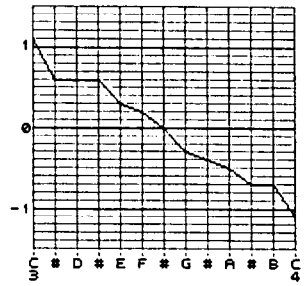


Figure Q compares the actual and theoretical cent widths for the 6:3 coincidence of the octaves. The 6:3 coincidence becomes pure in the lower midrange, increasing in width as we go up (negative) and down (positive) the scale.

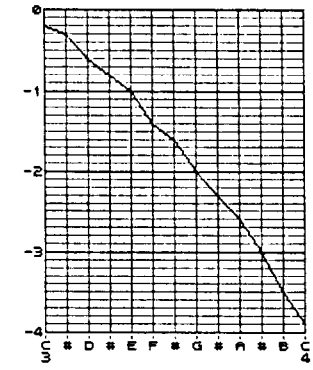


Figure R compares the actual and theoretical cent widths for the 8:4 coincidence of the octaves. The 8:4 coincidence becomes pure in bass, increasing in width as we go up (negative) and down (positive) the scale. From the graph it would appear within the next couple of notes down from C3, 8:4 octaves would be tuned.

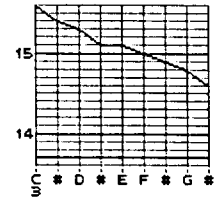


Figure S compares the actual and theoretical cent widths for the Major Tenths. The Major Tenths are theoretically 13.7 cents wide (the same as Major Thirds). In the piano, the Major Tenths decrease in width as we go up the scale (just as the Major Thirds) but are wider to begin with because of Octave expansion (Major Third + Octave = Major Tenth.

The Solid Unison

Our next letter comes from Richard Davenport of the Los Angeles Chapter. Richard writes:

I enjoy reading your new column (when I'm fresh) very much. I must admit, however, a certain aversion to mathematical formulas and thinking too hard about tuning the fourth partial of a note two octaves below. Living with these concepts has helped me to become a better tuner, but it still hurts my brain.

Now that I have a little more experience, I feel driven to write regarding an oversight in most of the tuning articles I have read. Whatever happened to "the solid unison?"

When I first learned to tune, my most vivid memories are associated with tuning a perfectly tempered octave. I would spend hours on my inexpensive spinet striving for the perfect temperament. After three months of intense practice, I had not only mastered the temperament, but was a world-class tuner in the treble and bass. I'd worked hard and my tuning time was down to about three hours. The piano was perfect!

It was on a nice autumn day that the whole picture changed. I had just competed another "perfect" piano tuning for a local dealer. My teacher, Fred Odenheimer, was in the store, and I decided that he should have the pleasure of listen-

ing to my latest creation.

"That's very nice, Richard," he said as he delicately checked my intervals. Then, without warning, Wham! Wham! Wham! Wham! In 15 seconds, he had totally destroyed my work of art. "It's no good if it doesn't stay" was the message I received. Upon careful examination, it wasn't the octaves. It wasn't the thirds, fourths, fifths or sixths. It was the unisons that bothered me most. The unisons are not only the most difficult intervals to tune, but are the most important.

About five years later, I was tuning a seven-foot grand for a professional musician. Freddy had hurt his back, and I was helping him out by tuning for his important customer. Freddy was there as an observer. I have to admit, I was glad he was. I had learned my lessons well and was the finest tuner I knew. My temperament was perfect. My octaves had just the right amount of beat. My thirds, sixths and tenths progressed smoothly up and down. I could do it all.

After completing the job, I asked for Freddy's approval. He sat down and quietly played for a few seconds. "That's nice, Richard, but what about the unisons?" The unisons? Didn't he hear how perfect my fifths were? The unisons? He's got to be kidding.

Freddy had brought me back to earth. (He still has a way of doing this!). My unisons were good and, at last, solid. They were not great.

For the past four or five years, I have been fortunate to work on some fine concert instruments and follow some fine concert tuners (few were technicians). The one common denominator is solid unisons. There is one local man who stretches the treble to the point where C8 is at the pitch of D♯. Yet, he is very successful because he tunes clean solid unisons. I'm convinced that solid unisons throughout the piano are the standard by which good tunings are judged.

I feel that technicians are kidding themselves if they feel a good score on the unison portion of the Tuning Exam is indicative of good unisons throughout the piano. Any tuning student could improve his or her skill level dramatically by practicing unisons in the last octave while the ear is fresh. I have used this exercise with advanced students and have seen appreciable impovement. This began as a thank-you note, Rick. Thanks again for your thought-provoking column. We need new blood and fresh ideas if PTG is to prosper.

The solid, stable unison does indeed seem to be the standard by which the public judges good tuning. The unisons are the first aspect in which the public detects out-of-tuneness. I feel sure that a customer would be more happy with a fair temperament, acceptable octaves and rock-solid unisons, than with a superb temperament and octaves, and unisons which were out of tune in a few days. I can assure you that spending an extra 10 minutes going over the unisons one more pass will buy you more than an extra hour on the temperament. Am I downplaying the importance of temperament and octaves in fine-quality piano tuning? Certainly not. My father always taught me, "Rick, you have to learn to do first things first." In tuning, the solid unison must most certainly come first.

The Torture Test

Our next letter comes from Jim DeRocher of Spotsylvania, VA. Jim writes:

I would like to write concerning a technique I use to settle the piano very firmly after the initial pitch-raise. I do this by depressing the damper pedal and playing fortissimo octaves in each hand all the way up and down the keyboard several times. This really gets the soundboard shaking and the piano hopping up and down. (In fact, if the customer isn't around, instead of octaves, I use both forearms to really shake things up.) This ensures that all tensions are equalized across the soundboard and that there is no roll left in the bridge. This technique has been so successful for me that now after each regular tuning, I give the piano this "torture test" in order to reveal any unisons that haven't been perfectly settled. It is my thinking that in this way I give my customer as rock-solid a tuning as I possibly can. I figure that if my banging doesn't cause much drift, little Susie's delicate pinkies won't knock the piano out of tune either.

I know that to some of you this sounds most cruel, but besides Susie's pinkies, there are a lot of "Popeye arms" out there, too. I remember going to a recording studio with Norm Neblett some time ago. He spent most of his time tuning the unisons (of course, the piano gets tuned nearly every day). After tuning unisons for awhile, he stopped. I figured he was done. Then he took his hands (each one covers about a twelfth) and proceded to "slap" up and down the keyboard. I figured he was crazy. When he was done carrying on, he listened to the unisons again carefully, even more carefully than before, fixed a few, and we left. I learned one of the most important lessons of my career. Thanks to Jim for his confession about the forearm smash.

Past Pres Reaching Saturation

Our final letter comes from Charlie Huether, our Immediate Past President. Charlie writes:

I wish to comment on your series on tuning. It is a welcome addition to the Journal. *However — the first article struck me as great — the message I got was that theory and practice are not the same, calculated beat rates are reliable references insofar as they demonstrate a "trend" or progression. As absolute numbers they are not reliable. But then came the disappointment...*

Charlie went on to express that articles on tuning are overloaded with tests and beat rates with little practical exposition on how one manages to achieve perfection in a very imnperfect environment. Several problems and questions were raised which will be addressed in the future. Charlie concluded by expressing that his letter was not intended for publication, nor to criticize unfairly. I assumed by this he meant it was alright to print his compliment and leave the critical stuff out.

Until next time, first things first! Please send tuning related material to:

Rick Baldassin
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Provo, UT 84601

AT
LARGE

Romantic Or Transitional?
The Mid-19th-Century Grand Piano
Part II

George Egerton
Vancouver, BC, Chapter

If as was argued in last month's article, it is principally the dynamic range which marks off the Romantic piano from its Classical predecessor, what distinguishes it from the modern concert piano, which of course is also possessed of a full dynamic range? Here one can point to the technical difference with some objectivity and suggest, more subjectively, the resulting performance and musical differences which result.[1] First, the modern action (all versions being essentially modifications of the double-escapement repetition system developed by Erard), combines the facility of the Viennese action with the power of the English model. The single-escapement English action of Broadwoods, Clementis, Pleyels and many others feels very different from a modern action. The notes, except when repeated very quickly, must be fully released before repetition is possible; and the touch during release communicates vibrations from the returning hammer and jack more directly than in modern actions. It is, on first impression at least, a more cumbersome touch. But, as in the case of Chopin, as you became used to this action, it is the Erard model and its subsequent variations which feels different; and the claim can be made that the English action, without the modern action's mediating wippen and repetition lever, can give a more immediate sense of control over the artist's "attack" on the strings.

Damping in the British and North European Romantic pianos is very different from modern grands. It is manifestly less efficient, less careful about avoiding "nodal points," and consequently there is much ringing through of incompletely-damped fundamentals and partials. This seeming liability or defect which, in the hands of a novice can result in mere muddiness of tonal clashing, was exploited to great effect by the Romantic composers and performers. Not only was the resonance of these pianos enhanced by the sympathetic vibration of unstruck notes, but musicologists are now rediscovering the very different pedal techniques appropriate to the Romantic piano.[2] Both the una-corda and sustaining pedals were used not merely to enhance dynamic range, and for sustained legato, but also to express atmospheric or "aural" effects, impressionistic "washes" of sound, while still retaining an essential clarity of definition which would be impossible on an undamped modern instrument.

This latter clarity of definition, even with use of multiple chording in high bass and low tenor, can be attributed in part to the fact that the bass register in Romantic pianos remained straight-strung until late in the 19th century, some, indeed as with Erard, into the 20th century. It was Steinway in the United States which pioneered, in the 1860s, the space-saving device of over-stringing the bass register of grand pianos above the tenor strings. This was accompanied by a different shape of sound board, location of bridges, and scaling of strings. The enhancement of dynamic range and projection achieved spectacularly by Steinway, was only realized at the cost of a significant loss in bass and tenor clarity, and the required increase in damping efficiency

"

. . . the claim can be made that the English action, without the modern action's mediating wippen and repetition lever, can give a more immediate sense of control over the artist's 'attack' on the strings.

"

meant, concurrently, the loss of "romantic glow" admired by Romantic performers.

Addressing the very problematic area of tone differentiation, where words are admittedly but poor instruments of description one can say that the tonal range, as distinct from the dynamic range, is vastly greater in the Romantic piano than the modern grand. This is true as among different makes of Romantic piano; but it is equally true with regard to tonal variation along the bass, tenor, and treble registers of the same piano. In modern piano technology, the goal aimed for and usually achieved is evenness of tonal expression, with no obvious "breaks" between registers, especially the upper bass and lower treble which are on different bridges. Not so on Romantic pianos where there is less concern for tonal breaks and, it seems in many cases, a positive enhancement of tonal variation between registers. The different scaling hammer configuration and material, damping technique, striking points, bridge construction, and straight-stringing, each contribute to major tonal variation. Especially in the upper bass and lower treble, the British and North European pianos have a richness and mellowness that cannot be found in any modern instruments. Playing Chopin on his chosen instrument, a Pleyel, can evoke tonal effects in the high bass and tenor registers which are totally impossible on a modern Steinway.

A final feature common to Romantic pianos and distinguishing them from the modern grand has little to do with tone — the casework. Modern performance grands are almost always black, varying only in their degree of gloss or flatness. Without a very practiced eye it's hard to tell a Steinway, Bosendorfer or Yamaha apart from a distance — hence the increasing use of large identifying decals on the piano cheek facing the audience. Romantic pianos, by contrast, exemplified the passion of the Romantic age for individualized craftsmanship in design, materials, woodwork, and finishing. The Romantic piano was intended to please the eye as well as the ear. In the higher price ranges the craftsmanship of the mid-19th century produced piano casework of truly monumental artistry; the top range of Romantic cases command very high prices in today's international auction markets. But even the mass production models of 19th-century piano makers were impressive in the quality and range of woods used, the intricacy of veneering, inlay, and carving, the use of metal ornamentation, and the distinctiveness and variation of styles.

Much of this article is admittedly speculative and necessarily subjective. Who would dare to speak a definitive last word on such subjects as musical tone, performance technique, or stylistic aesthetics? Indeed, with the Romantic piano we are only at the stage of first words; it is a subject in its initial phase of interest and investigation. Much work remains to be done cooperatively by musicologists, historians of piano technology, piano technicians, and performers, if we are to recapture something of the potential of the Romantic piano and its repetoire in the same way that the Classical piano has been rediscovered. Above all piano technicians must rebuild and restore more of the instruments to concert standards of performance. For too many pianists, their only acquaintance with 19th century grand pianos derives from brief and understandably negative encounter with old rusty, buzzy, and dead instruments. The Romantic piano lends itself beautifully to restoration and rebuilding, perhaps more so than the Classical piano where the ravages of time have created decay and damage which only the most professional, devoted, and expensive care can reverse. Malcolm Bilson and most devotees of the Classical piano prefer the route of replication of pianos from design, using new material, rather than restoration of historical instruments. With the Romantic piano, there is no shortage of candidates for restoration and rebuilding. What is in short supply is the requisite skill, patience, and market cultivation on the part of technicians. It is likely, despite the understandable aversion of many technicians when confronted with the challenge of repairing or rebuilding pre-modern pianos, that their value will increase dramatically in future years, given the irreplaceable beauty and quality of their casework. The electronic revolution upon us may also add some interesting twists to the musical life of these pianos, as they can easily be "retro-fitted" with MIDI (Musical Instrument Digital Interface), and speak many new voices thereafter.

Finally, pianists must take the lead in cultivating a popular interest for performance on these instruments. Indeed, what is needed is an artist with the seductive power of Malcolm Bilson to perform, tour, record, lecture, and propagate on behalf of the unique qualities of the Romantic piano.

Vancouver is a city blessed with a surprising number of historically important pianos — ranging from a Christofori action to a plethora of "Romantic" pianos which have accompanied the waves of British and European migrations to this port city. Glen Gould's formative piano, a late 19th-century Chickering, is also currently resident in the city. The prevailing climate has been kind to these pianos, and there exists a fine group of technicians engaged in restoration and maintenance of these instruments. This past year several pianos were rebuilt to performance standards for a series of concerts organized by the Vancouver Society for Early Music to mark the Centennial of the city's incorporation in 1886 — a good year for pianos. The author would be happy to correspond with others sharing an interest in early pianos.

Notes

1. The distinct performance and musical qualities of 19th-century pianos are discussed in Edmund M. Frederick, "Performers and Instruments: the "Romantic" Sound in Four Pianos of Chopin's Era," 19th Century Music, III, 2 (November, 1979), pp.150-153; Paul Badura-Skoda, "Playing the Early Piano," Early Music, XII, 2 (November, 1984), pp. 477-80; Richard Burnett, "English Pianos at Finchcocks," Early Music, XIII, 1 (February, 1985), pp. 45-51; Linda Nicholson, "Playing the Early Piano," Early Music, XIII, 1 (February, 1985), pp. 52-58.

2. Cf. Charles Rosin, "The Romantic Pedal," in Dominic Gill, ed., *The Book of the Piano* (Oxford, Phaidon, 1981), pp. 106-113.

Further Reading And Listening

Edwin M. Good, *Giraffes, Black Dragons, and Other Pianos: A Technological History from Cristofori to the Modern Concert Grand* (Stanford University Press, 1982) provides an excellent survey of the subject and includes a comprehensive bibliography. Dominic Gill, ed., *The Book of the Piano* (Oxford, Phardon, 1981) is lavishly illustrated and also contains a helpful bibliography. *The Early Piano* by C.F. Colt and Antony Miall (London,Stainer and Bell, 1981) contains breath-takingly beautiful photographs of pianos from the famous Colt collection and fine commentary. Two recent volumes of *Early Music* (November 1984 and February 1985) are devoted primarily to the pre-modern piano, with excellent articles on piano-making and performance on these instruments. Every pianophile should read Arthur Loesser's wonderful *Men, Women and Pianos: A Social History* (Simon and Schuster, 1954).

High-quality recordings using authentic pianos are becoming increasingly available. Robert Winters gives a selected discography in *19th Century Music* (November, 1977) pp. 174-75. Malcolm Bilson's performance of Mozart's Piano Concerto No. 9, K. 271 and No. 11, K.413 on a reproduction Walter piano (Archive 410:905-2 compact disc) gives a convincing demonstration of the unique and beautiful result to be obtained on an authentic instrument. Bilson also makes an excellent case for the use of authentic instruments in reviewing two recent recordings of Beethoven's last five piano sonatas (Malcolm Binns, Florileqium D185D3 and Paul Badura-Skoda, Astree, AS909), in Early Music (October, 1982), pp.517-19. Richard Burnett can be heard on early pianos in "The Romantic Fortepiano" (Amon RA, SAR7). A superb recording of the two Mendelssohn Cello Sonatas with Anner Bylsma, cello, and Stanley Hoogland on a Broadwood piano, (Philips/Harlekijn 9500 953) makes a convincing argument for the performance of these works on period instruments. Finally, Geoffrey Madge skillfully illustrates the qualities of a Pleyel (c.1847) performing 19th century Dutch music (Marcato, Haags Gemeentemuseum, Mr 08502). ■

TESTS

An Encyclopedia Of Tests For Equal Temperament Part 2

Michael A. Kimbell
San Francisco Chapter

Part one of this series presented a brief theoretical consideration of the aesthetics of equal temperament, together with eight tests for gauging octaves and octave stretch in the midrange. Fourth, fifth and contiguous interval tests (shown in Figures 1, 2 and 3) are under consideration this month. As in last month's examples, tuned notes are shown in boldface, untuned "test notes" in normal print. Due to inharmonicity, all beat rates and ratios are approximate.

Should thirds be favored over fourths and fifths, or vice- versa, in equal temperament? The answer, in general, is neither. The key harmonic intervals in music, the third and the fifth, both need to have evenly accelerating beat speeds if music is to sound at its best. Thirds, tempered as they are 13.7 cents with a concomitant tendency toward the harsh side in equal temperament, should not be allowed to progress unevenly for two reasons: one, consistency of harmonic color in music depends most heavily on the thirds, and two, unevenly-tempered thirds mathematically guarantee uneven fourths and fifths (but not necessarily vice- versa). Fourths and fifths, which are tempered only two cents in equal temperament, would seem to offer more leeway. Although theoretically it is possible to set up a temperament with evenly progressing major thirds but with uneven fourths, fifths and sixths, musically it is just as important to have even fifths as it is to have even thirds. The fifths, being close to pure in equal temperament, add some resonance and clarity to chords, thereby counterbalancing to a certain extent the moderate dissonance of the thirds, but fourths and fifths over-tempered by only a cent or two create muddy, unsettling harmonies with a jumble of conflicting beat rates. In addition, any fourth (or fifth) which beats too slowly results in at least one other which will beat too fast, regardless of whether the thirds are evenly tempered or not. While compromises are inevitable in any tuning, usually they can be minimized in the temperament to the the point where any discrepancy of more than one cent in interval width is directly traceable to marked jumps of inharmonicity in the scaling of a small piano.

Tests seven and eight, which are repeated this month in Figure 1, are useful aids for testing not only the octave (using an untuned "test note" in the middle), but also (assuming a good octave has already been established) the division of the octave into its component fourth and fifth, as can be seen in the examples. If the octave is clean, with sufficient stretch, a correctly tempered fourth inverts to a good fifth, just as an overly tempered fourth inverts to an overly tempered fifth; in the latter case, the poor fifth is apt to be more noticeable. Whether the fourth and fifth are both good or both bad, the beat rates in test seven (where the fifth is uppermost) will be identical, or will be in a 2:1 ratio in test eight (where the fourth is uppermost). However, if the octave has

FIGURE 1:

Tests for 4ths and 5ths:	Test 7	Test 8	Test 9	Test 10	Test 11	Test 12	Test 13
Comments:	**4th-5th** (5th not noisier)	**5th-4th**	**3rd-6th** (tests 4th)	**6th-3rd** (tests 4th)	**Combination of tests 9 & 10** (tests 4th)	**3rd-m3rd** (tests 5th)	**10th-6th** (tests 5th)
Upper note:	**D42 A49**	**E44 A49**	**A37 D42**	F#46 F#46	**A37 D42** F#46 F#46	**E32** C28	**E44 A37**
Lower note:	**A37 D42**	**A37 E44**	F33 F33	**A37 D42**	F33 F33 **A37 D42**	C28 **A25**	C28 C28
Beats/sec.:	1 1	¾ 1½	7 8	10 11½	7 8 10 11½	5 6-	5+ 6
Beat ratio:		1:2	7:8	6:7	7:8 6:7	7:8	7:8
Increase by %:			+14%--→	+16%--→	+14%----------→	+14%--→	+14%--→
in b./s.:			+1 ---→	+1 ---→	+1 ----------→	+1 ---→	+1 ---→

FIGURE 2:

Contiguous interval tests:	Test 14	Test 15	Test 16	Test 17
Comments:	Thirds	Minor thirds	Fourths (2 series link notes from Test 14)	Fifths
Upper note:	C♯29 F33 A37 C♯41 F45 A49	C28 E♭31 F♯34 A37	D30 G35 C40 F45 F♯34 B39 E44 A49	D42 A49
Lower note:	A25 D♭29 F33 A37 D♭41 F45	A25 C28 D♯31 F♯34	A25 D30 G35 C40 C♯29 F♯34 B39 E44	G35 D42
Beats/sec.:	4½ 5½ 7 9 11 14	6 7 8½ 10	½ 9/10 3/5 1½	⅔ 1
Beat ratio:	4:5 4:5 4:5 4:5 4:5	5:6 5:6 5:6	3:4 3:4 3:4 3:4 3:4 3:4	2:3
Increase by %:	+25%----------→	+20%----------→	+33%----------→	+50%--→

FIGURE 3:

Tests related to continguous tests:	Test 18	Test 19	Test 20	Test 21	Test 22
Comments:	10ths by 3rds	3rds-10ths (smooth stretch shift if possible)	Octaves & double 8ve (all clean)	5th-4th	4th-5th
Upper note:	C♯41 F45 A49	C♯29 C♯41 F33 F45 A37 A49	A37 C♯41 F45 A49 A49	E44 D42	E44 E44
Lower note:	A25 D♭29 F33	A25 A25 D♭29 D♭29 F33 F33	A25 C♯29 F33 A37 A25	A37 A37	A37 B39
Beats/sec.:	5 6 7¼	4½ 5 5½ 6 7 7		¾ 1	¾ 1⅛
Beat ratio:	4:5 4:5			3:4	2:3
Increase by %:	+25%--------→			+33%--→	+50%--→

been stretched generously (so that the higher triple octaves will be as clean as possible on a large grand), the fourth will beat very slightly faster than the fifth in test seven or slightly more than twice as fast in test eight. (If the octave does not have enough stretch, the fifth will beat faster than the fourth in test seven.) The stretch of all octaves in the temperament area should of course be checked, either directly with the third-tenth test, or indirectly with progressing tenths and sixths.

Comparative fourth/fifth tests are not without hazards: because fourths and fifths in general beat so slowly that it is difficult to gauge their beat speeds accurately, intervals that beat too slowly yet seem acceptable can lead to problems later in the tuning sequence. Moreover, in the case of fifths, the principal beat at the lowest common partial of the two notes is often obscured by an audible, faster, conflicting beat at a higher partial. For these reasons, the most reliable tests for fourths and fifths are tests nine, 11 (from Tom Gorley), and 13 in Figure 1, all of which in effect measure an individual fourth or fifth by means of faster-beating, easily gauged thirds, sixths and tenths; comparisons of beat speeds are between untuned test intervals and involve neither octaves nor the fourth or fifth itself. These tests are especially useful in setting the first few fourths and fifths in any tuning sequence. In test 11, tests nine and 10 are combined in such a way that they form a check on each other; the correctness of the fourth is assured when the beat speed increases in the two tests are about equal. If the increase is too little in test nine, it will be too great in test 10; if too great in test nine, it will be too little in test 10. The upper test note in test 10 and 11 needs to be reasonably close to its eventual correct pitch, otherwise test 10 (whose test intervals do not beat at the same pitch) will give false results.

The most versatile of all tests are those shown in Figure 2. "Contiguous" (or "conjunctive") means that the upper note of one interval is the same as the lower note of the next. These tests are invaluable diagnostic aids for curing a temperament which has proved resistant to other attempts at making it even. For instance, if a particular interval beats too rapidly or too slowly, but it is unclear whether either one or both of its notes are at fault, treat first the upper note as the common note between two contiguous intervals (thirds, then fourths, then fifths, omitting any intervals not yet tuned), then do the same with the lower note. Nothing is changed until the entire situation has been analyzed and the faulty note or notes identified. Figure 4 illustrates this procedure, using the suspect third B♭38-D42 as an example. Usually several tests concur, isolating a note and showing how it needs to be corrected, but sometimes a problem is eventually solved only by tuning an entire series of contiguous thirds up or down very slightly, or by doing the same to a group of notes related by fourths and fifths.

It also is possible to build a very good temperament based entirely on contiguous intervals. Contiguous thirds in particular make an excellent temperament foundation. Dividing an octave into contiguous thirds is much easier if at least one additional third is tuned outside the octave. For example, if C♯29 and F33 are being set in relation to A25 and A37, C♯41 should also be tuned at the same time. If both octaves A25-A37 and C♯29-C♯41 are good, and if all pairs of contiguous thirds between A25 and C♯41 beat in a 4:5 ratio, then the division has been successful. If F45 is similarly included, the result is a full two-octave spread of contiguous thirds, which in turn can be checked with test 18,19 and 20. Test 18 is analogous to test 14, using tenths instead of thirds, except that the 4:5 ratio is more approximate in test 18. The third-tenth test (test 19) checks each octave; a gradual change of octave stretch is desirable on a large

piano. If the octaves and contiguous thirds have been set and checked carefully, tuning the rest of the temperament is usually very easy.

The two series of contiguous fourths shown in Figure 2, which link the lowest and highest thirds of the two-octave series of thirds just described, are particularly useful for finding and correcting small errors, and can also be used in their own right as part of a temperament-building sequence. In both tests 16 and 17, the actual increases in beat speeds are much less than the theoretical percentages given in the examples; in fact, due to inharmonicity, there is often very little increase at all.

FIGURE 4:

Error analysis by contiguous intervals:

Suspect notes:	Bb38	and	D42				
Test intervals above:	F♯46	G47	A49	D42	Eb43	F45
	D42	D42	D42	Bb38	Bb38	Bb38
Test intervals below:	D42	D42	D42	Bb38	Bb38	Bb38
	Bb38	A37	G35	Gb34	F33	Eb31

Tests 21 and 22 can be considered as contiguous fourths or fifths in disguise, with one of the notes brought down or up an octave. Since the speed relationship between fourths and fifths with a common note is difficult to judge, these two tests are less reliable than the other tests based on fourths or fifths.

Next month the Encyclopedia will be continued with whole- step tests, chromatic tests and third-sixth cross checks. ■

Stein's Pupils; The Pedal Piano

Jack Greenfield
Chicago Chapter

Stein's Influence

Johann Andreas Stein ranks as one of the great piano makers in the history of the instrument for a number of reasons:

1. The introduction of the Stein escapement action in 1773 paved the way for rapid acceptance of the piano as the basic keyboard instrument displacing the harpsichord after centuries of dominance.

2. Soon afterward, most Viennese and many German builders made pianos which were copies or modified versions of Stein's pianos.

3. The musical public of Stein's time placed a high value on his instruments — his pianos were sold at prices from 10 to 50 percent higher than most of his competitors'.

4. Stein was an outstanding teacher of students in piano making. Some of the leading builders in the industry later had been trained by Stein.

Foremost among Stein's students were his daughter Nanette and his son Andre. Nanette and her husband, Johann Andreas Streicher, and Andre became prominent soon after moving to Vienna from Augsburg in 1794. The three remained in partnership until 1802 when Andre left to establish his own business. Other Stein apprentices who became successful builders included Johann David Schiedmayer, Johann George Schenck, Matthaus Heilman and Johann Schmidt.

The Schiedmayer Establishment

The name Schiedmayer is the oldest still in use for keyboard stringed instruments. The father of Johann David Schiedmayer (1753-1805), Balthasar, was building clavichords in Erlangen, in northern Bavaria, as early as 1735. After initial training by his father, Johann Andreas started as an apprentice in the Stein shop in Augsburg. Then when he had completed his apprenticeship, he left and spent several years wandering around. He returned to work as an assistant to Stein during 1778-1781.

Schiedmayer left Stein to establish his own business in his hometown, Erlangen. His pianos were soon recognized as excellent in quality. The 1792 Gerber lexicon of the music industry published in Leipzig rated Schiedmayer pianos even higher than those of Stein. In 1797, Schiedmayer moved to Nurnberg where he was given the title, "Instrument Maker To The Electoral Court."

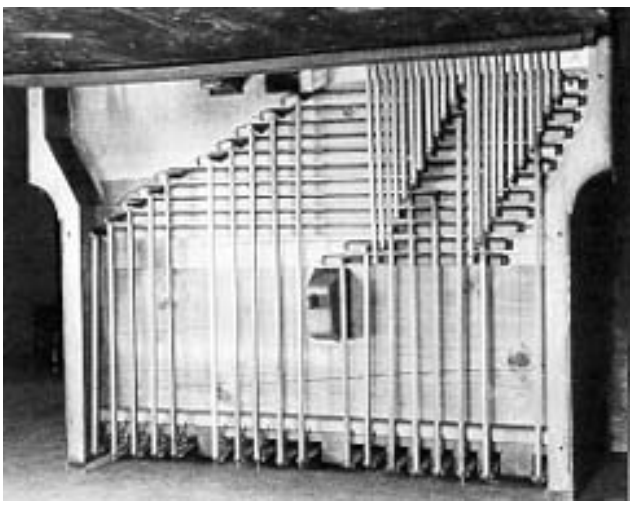
Nurnberg was then a largely Protestant independent city. Schiedmayer operated a small shop with little assistance except for the work of his sons. His small production output fell behind the demand for his instruments. According to a later Gerber report, in 1800 Schiedmayer had enough orders on hand to keep working for eight years.

When Schiedmayer died in 1805, the eldest of the four sons in the family, Johann Lorenz (1786-1860), left Erlangen to spend several years acquiring more piano building experience in Vienna. At the end of his stay in Vienna, the Schiedmayers moved their business to Stuttgart where they founded the well-known *Schiedmayer Soehne Hofpianofortefabrik* still in existence today. Two of the younger sons did not remain in the firm and left to establish a competitive business, also in Stuttgart.

The Early Piano by C. F. Colt describing instruments in the Colt Clavier Collection in Bethersden, a small village in Kent County south of London, presents details of a piano built by John David Schiedmayer about 1780-1785. The instrument, restored to playing condition, has been used in recorded performances. Its dimensions are roughly 71 inches long by 37 inches wide by 10 inches deep. The divided damper lift-mechanism is knee-operated. The five-octave keyboard is in reverse coloration with ebony naturals and bonecapped beech sharps. The hammers are hollow, similar to some used by Cristofori except for Schiedmasyer's leather padded bamboo rolls instead of parchment. The action is a *Prellmechanik* or bumping action with the Stein escapement without backchecks, commonly known as the German action. The hammers are held in wooden kapsels or flanges. Brass kapsels were developed later.

As typical of German and Viennese actions, the action rests on a sledge held in place by the pressure of a wide keyslip or board at the front of the keyboard. For withdrawal of the action, the keyslip is

This Johann Schmidt piano in the Metropolitan Museum of Art Collection is believed to be the oldest playable pedal piano still in essentially original form. The inset shows details of the pedal action. — The Metropolitan Museum of Art, The Crosby Brown Collection, 1889. (89.4.3182)



removed and the sledge is pulled out from under to allow the action to drop to the keybed. This gives more space to pull the action out without damage to hammers.

Stein's Student And Competitor Heilman

Stein's pupil Matthaus Heilman built pianos in Mainz, a city on the Rhine, beginning in the 1770s. In April 1788, he was appointed tuner-technician to the court. For an annual salary of 100 florins, he was expected to tune the court instruments and repair them as necessary. This salary was equivalent to about one-half the average price for his new grand pianos. Colt's *The Early Piano* contains an amusing letter written by Heilman in 1787 to a prospective customer, which illustrates the sharp rivalry between piano makers that existed even in the early days of the the instrument:

You want to buy from me a pianoforte like Stein's, whose pianos I know only too well as I have already earned much money by repairing them. I should be sorry if my instruments should need such frequent repair...

It will not be necessary for me to go into the quality of ...my products...You yourself will have heard them praised and references to them from near and far, wherever they have been sent must have reached all ears...

Heilman's letter also gives prices and other details. Instruments in walnut or mahogany cost about 50 percent more than instruments in oak. Different references give the year of Heilman's death as 1798 or 1817. His business was continued by his son Joseph Heilman.

Colt considers the Heilman grand he owns, built about 1775, one of the best early pianos in his collection. The dimensions of the instrument are 84 inches long by 37 1/2 inches wide. The five-octave keyboard, F1-F6, has reverse coloration. The action is a Viennese type, with buff leather-covered wood hammer heads. The instrument has been restored and has been for a number of recordings of compositions by Mozart and other composers of the period.

The Schmidt Piano At The Smithsonian Institution

Johann Schmidt received his training working as an apprentice for Stein. Schmidt's shop was in Salzburg. A friend of the Mozart family, he was appointed court organ builder in 1785 upon the recommendation of Leopold Mozart.

A Schmidt piano at the Smithsonian Institution, Washington, D.C., restored to playing condition, is an excellent example of a typical late 18th century German or Austrian piano. Good's *Giraffes, Black Dragons and Other Pianos* gives some details of the instrument:

Case: Walnut veneered 85 3/8 inches long by 38 3/4 inches wide. Action: "Bumping" type with escapement but without backchecks. Hammers: Leather-covered wooden hammer heads. Damperlift: Knee-lever operated for all or treble alone. String sizes: F1 to G2 - double strung brass, not wound; the remaining strings are iron, double strung from G♯2 to D6 and remaining notes D♯6-F6 triple strung. String length: F1-74 1/8", C2-11 1/8", F6-4 3/4". Good describes the sound of the piano as

small but clear. The sound of the unwound brass strings is thin with a clarity of tone nasal in character but lacking the rolling fullness of the bass in modern pianos.

The Introduction Of Pedalboard Pianos

Schmidt's instruments of unusual interest are the pedal keyboard pianos he built. The origin of such pianos is vague. Originating during the late 18th century, pianos with additional bass notes, played from a pedalboard similar to the organ pedalboard, were built to permit pianists to play transcriptions of organ or orchestral music. Several different types of pedalboard pianos were developed. In one type, the pedals were linked by a tracker system to a separate set of hammers. The pedalboard compass began an octave or less lower than the manual compass. In the range where the upper pedalboard notes and lower manual keyboard notes overlapped, the strings could be struck by either of the hammers. Marcuse (*A Survey of Musical Instruments)* states that Johann Andreas Stein made such a piano in 1778. Several decades later, pedalboard mechanism was simplified and the pedals were merely linked to the keys by a pull-down attachment. This eliminated the need for the extra pedal action and hammers except for the lower pedal notes.

In the preceding arrangements, the pedalboard was built into the piano. A third type that appeared consisted of an independent pedal piano unit that could be combined with any standard grand piano. The pedalboard, action, strings and soundboard were enclosed in a sturdy flat-top boxlike legless case in the shape of a grand piano. The pedalboard piano with the pedals placed for convenient access served as a platform directly under the grand piano. Independent pedalboard pianos became more common during the first half of the 19th century.

Mozart family correspondence discusses a special pedal attachment built for Mozart's piano in 1785. The writing does not clearly indicate whether the pedals were replacements for the knee-levers used to operate the damper lifts, mute, lute and other stops or were the pedals of a pedal keyboard. Some music historians believe that a pedalboard attachment, now lost, had been built by Walter when Mozart owned the piano now in the Mozart Museum, Salzburg. Mozart's Piano Concerto in D minor, K466 composed in 1785 with some bass notes that fall below the standard manual compass of the period indicate his probable use of a pedalboard attachment.

The Metropolitan Museum Schmidt Pedalboard Piano

The instrument collections of the Metropolitan Museum of Art, New York and the *Germanishes Nationalmuseum,* Nurnberg, Germany, each contain pedal grand pianos believed to be the work of Schmidt. While the pianos lack positive identification, they have the characteristics of Schmidt's authenticated instruments. Authorities believe the label with the name "Jean Andre Stein of Augsburg" in the Metropolitan Museum piano is false. There are also some other questionable markings — the name W. A. Mozart and the initials W. A. M. scratched on the front panel.

The Metropolitan piano is probably the oldest playable pedal piano still in existence in its essentially original form. The manual compass is F1-F6. The 18-note pedalboard compass drops to C1. The bottom octave is a "short" octave with some accidentals omitted, B♯1 pedal sounds E1, F♯1 pedal sounds D1, and E1 pedal sounds C1. The rest of the pedals are linked to independent hammers that strike the same strings as the manual hammers of the lower end of the manual compass.

The lowest eight pedals are also coupled to engage hammers an octave higher to reinforce the tone. Damper and mute stops are controlled by knee-levers.

The piano has been restored to playable condition. A museum catalog states the keyboard "has a light sensitive touch capable of fast repetition. Efficient dampers provide crisp articulation." The piano has been used for the following Pleiades Records recordings:

P104 - played by Malcolm Bilson and violinist Sonya Monosoff in several Mozart violin sonotas.

P105 - played by James Bonn in works of C.P.E. Bach.

Calendar Of Coming Events

Date	*Event*
Sept. 19, 1987	**Connecticut One-Day Seminar** Sohmer Piano Co., Ivoryton, CT Vivian Brooks, 376 Shore Road, Old Lyme, CT 06371 (203) 434-0287
Oct. 2-4, 1987	**Florida State Assembly of the Piano Technicians Guild** Orlando, FL David G. Taylor; 1909 Mae St.; Orlando, FL 32806; (305) 898-9266
Oct. 9-11, 1987	**Ohio State Conference** Greater Cincinnati area Jack Krefting; P.O. Box 16066; Ludlow, KY 41016; (606) 261-1643
Oct. 16-18, 1987	**Texas State Seminar** Hilton Hotel, Wichita Falls, TX Jimmy Gold; 2101 Walnut; Duncan, OK 73533; (405) 255-5804
Nov. 6-8, 1987	**North Carolina Conference** Black Mountain, NC Jeff Owens; P.O. Box 903; Shelby, NC 28150; (704) 482-7119
July 18-22, 1988	**31st Annual Piano Technician Guild Convention & Institute** Adams Mark Hotel, St. Louis, MO Home Office: 9140 Ward Parkway, Kansas City, MO 64114, (816) 444-3500.

Industry News

Kimball Introduces New Products

Representatives of 128 U.S. and Canadian Kimball dealers saw new products, learned about new programs, met for working seminars and enjoyed presentations by noted personalities, including basketball All-American Steve Alford and ABC sports commentator Jim McKay.

New products shown included the new "Cosmopolitan" pianos, a revised series of "Designers' Collection" consoles and the brand- new "Viennese Classic" grands.

Both the Designers' Collection and Viennese Classic grands now offer solid Sitka Spruce soundboards, while the grands also feature corner block construction and full-length spruce ribs notched into the inner rim. The new Designers' Collection now uses 15-pound Herrburger Brooks hammers, replacing the 14-pound hammers used previously.

Kimball also announced that its 5'2" grands, now called "Artist Grands" will utilize a Herrburger Brooks Schwander action just as the 5'8" and 6'7" Viennese Classics do.

A number of other refinements throughout Kimball's vertical grand lines were introduced, including a highly accurate crowning procedure for soundboards. With the use of computer assisted planing and routing machines, the ribs, bridges, and rim (or back frame) are precisely machined to creat the exact height and angles for a perfect spherical crown, the company said.

In addition to new products, Kimball also announced a series of technical seminars to be scheduled in major cities throughout the U.S. this fall. The seminars will be held in conjunction with dealer sales seminars and will be open to all piano technicians interested in learning more about Kimball's new products and manufacturing processes.

Steinway Names New Manufacturing VP

Steinway & Sons recently announced the appointment of Daniel Koenig as vice president of manufacturing.

New Members During June 1987

REGION 1

Boston, MA — 021

Christopher Pleim
55 Franklin Street
Watertown, MA 02172

New Hampshire — 031

Edmund Downing
Box 79
Henniker, NH 03242

Maine — 041

Mark Kaufman
70 Court Street, #2
Bangor, ME 04401

New York City, NY — 101

Jesse Gitnik
1017 Dahill Road
Brooklyn, NY 11204

LI-Nassau, NY — 111

Robert McMorrow
2 Riverside Ave.
Baldwin, NY 11510

REGION 2

Baltimore, MD — 212

Scott Bannar
36 South Prospect Ave.
Baltimore, MD 21228

Northern Virginia — 223

Arlene Follmer
759 Barbara Lynn Place
Herndon, VA 22070

Daytona Beach, FL — 330

Dick Broyles
42 Ocean Palm Drive, So.
Flagler Beach, FL 32036

Northeast Florida — 322

Loyd Nisewaner
1139 Scotten Road
Jacksonville, FL 32205

Nashville, TN — 372

Eliot Roberts, Jr.
PO Box 307
Pleasant Hill, TN 38578

Knoxville, TN — 379

Jorge Marin
PO Box 1024
Collegedale, TN 37315

Pamela Robertson
4629 Beaver Ridge Road
Knoxville, TN 37913

REGION 3

Tulsa, OK — 741

Paul Miller
507 S. Thompson
Vinita, OK 74301

Dallas, TX — 752

Peter Collora
8403 Midway Road
Dallas, TX 75209

Houston, TX — 771

Norma J. Reed
4302 Piney Creek Lane
Spring, TX 77388

REGION 4

Waukegan, IL — 600

Anne Pyterek
1451 Plymouth, apt. 2E
Glenview, IL 60025

Chicago, IL — 601

Gala Webb
11914 Greenwood Ave.
Woodstock, IL 60098

REGION 5

Siouxland, IA — 511

John Duda
830 Hall Street
Bettendorf, IA 52722

Minn.-No. Iowa — 551

Mildred Mehrkens
406 South 4th Street
Goodhue, MN 55027

Twin Cities, MN 553

Phil Kjos
4941 Ewing Ave. So.
Minneapolis, MN 55410

Jonathan Webb
3945 Lancaster Lane, #324
Plymouth, MN 55441

Kansas City, MO — 641

Gary Jarrett
220 North 17th
St. Joseph, MO 64501

Nebraska — 683

Gary Clemmer
1445 N. Somers
Fremont, NE 68025

Boulder, CO — 803

William Magnusson
2201 14th Ave., 1-301
Longmont, CO 80501

REGION 6

BC Coast/Inland — 013

Gerald Creelman
401 31st Street
Vernon, BC V1T 5JT
Canada

Salt Lake City, UT — 841

Samuel Swasey
Box 304
Millville, UT 84326

Phoenix, AZ — 851

Larry Messerly
8411 N. 58th Drive
Glendale, AZ 85302

Los Angeles, CA — 901

Paul Nazlikian
5991 Carpenter, #3
No. Hollywood,CA 91607

Pomona, CA — 917

Mary Dahm
8887 Manzanita Drive
Alta Loma, CA 91701

San Diego, CA — 921

Lawrence Sinz
2345 Miridor
Vista, CA 92084

Fresno, CA — 936

Jack Cashion
857 W. Pico
Clouis, CA 93612

Monterey Bay, CA — 950

Lillie Hultgren
2 School Way
Watsonville, CA 95076

Puget Sound — 985

Greg Mills
3708 Steilacoom Blvd., SW
Tacoma, WA 98499

1986-87 Booster Club

These members were honored at the Guild convention in Toronto for their efforts in recruiting new members between July 1, 1986, and June 3, 1987

Allen, Eugene B.	1	Draine, Pat	1	Kane, Richard	1	Reichert, Wm. J.	1
Anderson, Rich	1	Drost, Michael	1	Kean, Kerry	1	Reidel, Paul	1
Ashmore, Yvonne	1	Duffy, Earl	1	Keil, Mitch	1	Reimer, Hugo	1
Atherton, Olan M.	3	Eaton, Wendell	3	Kistler, Sharla	5	Renstrom, Bradley C.	1
Bailey, Benjamin N.	3	Ello, Mike	1	Kostelecky, Rohnn	1	Robertson, W. Barry Jr.	1
Baligian, Arnooni C.	1	Erwin, Dale S.	1	Lafuze, Joseph N.	1	Robinson, Christopher S.	1
Banner, Harold Jr.	1	Essex, Nevin E.	1	Langlois, Edmund J.	1	Schmitt, Jake	1
Barbe, Allan	1	Evans, Eliot	1	Leary, Kevin M.	4	Schmidt, Karin	1
Barr, David M.	1	Evola, Jim	1	Leffingwell, Brian J.	1	Sciortino, Joe	1
Benedict, Herb	1	Fandrich, Delwin D.	1	Lemon, Sonja E.	1	Scott, Dennis	1
Berry, Ron	1	Fanger, Rose R.	1	Lillico, John	4	Seitz, Al	1
Bessette, Roland	1	Faris, Jim	1	Lindemann, Doug	1	Severance, David	1
Betts, David	1	Floyd, R. Errol	1	Longworth, Jon	2	Shallenberg, Robert	1
Birch, Jim	1	Funk, Peter J.	4	Love, Norman	1	Slater, Kenneth C.	1
Bittinger, Richard E.	1	Gardner, Dave	1	Lovgren, Christine	3	Sloan, Michael	3
Blees, Willem	1	Garrett, Joseph A.	1	Lukowitsch, Arnold	1	Sloffer, Phil	1
Bourdon, Donald W.	1	Gardetter, Oscar H.	1	Lurie, Mordecai	2	Smith, Arthur	1
Bradenburg, R.L. Sr.	1	Geiger, James	5	Mannino, Donald E.	2	Smith, Mary	2
Brady, Stephen	1	Geoghegan, Steve	2	Marten, Gilbert	1	Smith, Wm. J.	1
Briant, Peter C.	1	Gill, Michael C.	1	Massey, Neil	1	Spears, Brian	1
Brooks, Walter Jr.	1	Goyette, Marc	1	Mayhew, Dennis	1	Stebbins, John	1
Brown, Chris	1	Grenning, Al	1	McGowan, Keith	2	Stephenson, Robert L.	3
Brown, Larry M.	2	Griffith, Benjamin	1	McMorrow, Ed	2	Stickney, Jeff	2
Brown, Russell	1	Griffith, Laverne	1	Mehaffey, Frances	1	Stone, Sid	6
Bruner, JoAnn	1	Groot, Gerald	1	Merando, Joseph A.	1	Strick, Kenneth	1
Bryant, James G.	1	Grutzmacher, John D.	1	Mestman, Mark E.	1	Stutters, H.E.	1
Bugos, John	1	Gugala, Gary	1	Metz, Al	1	Sullivan, M.R.	1
Bullock, Wilbur W.	2	Gustafson, David	1	Meyer, Carl	1	Sullivan, Wycliffe	1
Burow, Burt	1	Harding, Claude	1	Miles, Gary B.	3	Swendsen, C. Mike	1
Buscio, J.R.	1	Harmon, Clayton C.	6	Miller, Ernest N.	2	Taylor, David G.	1
Butler, Alfred	1	Hatch, Jerald	2	Miller, Rolland M.	1	Teel, Carl	4
Carter, Eugenia	1	Hawkins, Marshall B.	1	Mizell, Wade L.	1	Teeter, Chris	2
Carver, Roger J.	1	Hazzard, Nancy	2	Moreland, Robert W.	1	Townsend, Steve	1
Caunter, Gerry	1	Hedrick, Ralph S.	1	Morgan, David H.	2	Travis, Michael R.	2
Charles, Norman	2	Hess, James N.	1	Mott, Brian R.	8	Tremper, Fred W.	14
Coates, Timothy C.	2	Higgans, Michael	3	Musser, Robert E.	1	Turner, Jeffrey R.	1
Cobble, Tom	1	Hines, David M.	1	Neal, Doug	1	Vogt, Lawrence T.	2
Coleman, James Jr.	1	Hiorns, Dick	1	Nicholson, Kerry P.	2	Valley, Donald S.	3
Collis, Alastair	1	Hofstetter-Taylor, Diane	2	Odenheimer, Fred	2	Van Walthausen, Rolf	1
Conrad, Robert	2	Hohf, Robert W.	2	Olner, Edgar T.	1	Vanderlip, Dave	1
Cottrell, Diane	1	Hollingsworth, Francis	1	Olson, Eric D.	1	Wathan, Michael J.	1
Cox, Merrill W.	2	Hornberger, Paul R.	1	Onesti, Ralph	3	Weintraub, Ron	1
Crabb, Larry B.	5	Howard, Terald	1	Pelick, Jr., John	1	Welton, T. Scott	4
Craven, Scott	1	Howell, W. Dean	1	Pennington, David L.	2	Wilken, Candice	1
Craw, Dewey	1	Hoy, Tim	1	Perkins, Robert K.	1	Williams, Benny	1
Crinage, Francis	1	Hunt, Newton J.	2	Phillips, John	1	Wilson, Richard D.	1
Culbreth, Cecil	2	Jackson, Stephen	1	Pointer, Ferdinand	1	Wisenbaker, Marvin	1
Cunningham, Steve	1	Jacobson, Charles E.	1	Pool, Nick	1	Wisner, Peter	1
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The Auxiliary Exchange

PRESIDENT'S MESSAGE

There is an old Indian saying "Never judge a man until you have walked a mile in his shoes." That is what I have done this past year. I have tried to walk in the shoes of some excellent past presidents. This has been difficult to do; however, I hope I have served you all well.

I thank you all for placing your confidence in me once more, in allowing me to serve another term. I have learned many invaluable things this past year and hope I am capable of implementing them in the year ahead.

To give credit where credit is due, I have had a most cooperative Board, excellent input from some of the past presidents and many of the members. Martin Fromm and Associates, especially Larry Goldsmith and Rosemary Hall, have kept me on the straight and narrow and therefore eliminated many errors I might have had. It's been a joy to work with all of you.

We celebrated Christmas in July 1986...Now we will celebrate New Years in August. May 1987/88 be happy, successful and productive.

—Ginger Bryant

New Officers For 1987

We think our Nominating Committee performed a great service for the Auxiliary in returning the same team of Officers to the Board, with the exception of Rebecca Heneberry, who asked to be excused from a second term because of added responsibility at work and at home and Helena Thomas who asked to be excused because of other commitments. Our thanks to Rebecca and Helena for their time served and we warmly welcome Bert Sierota and Judy White to the Board.

In our September issue we hope to have a complete report on our successful convention in Toronto. Of course there will be many photos of the participants and the activities which took place.

— Editor

Musical Facts And Figures

According to the American Music Conference, there are 57 million people in the United States who play one or more musical instruments.

Of that number, 20.6 million play the piano, making it the most popular musical instrument! Steinway & Sons has been making pianos since 1853 and has sold more than 499,000, all serially numbered. Records are kept of all original owners

— Editor

Suncatchers Still Available

We are happy to report that at the annual banquet of the New Jersey Chapter of the Piano Technicians Guild the following Registered Tuner Technicians purchased and are now the owners of Auxiliary Sun Catchers as of June 19th 1987: **Ernie Miller, Sal Longo, Doug Phillips, Bud Willis** and **Roger Endress.** How proud they must be to see their names on the P.T.G. Auxiliary page!

— Editor

Recommended Reads

Some cool summer reading:

"Avalanche Express" by Colin Forbes

"Boone Island" by Kenneth Roberts

"The Endeavor" Shackleton's South Polar Exploration

Obscure Origins

August can be a mercilessly warm month with its humid and breezeless days, creating a stase of ennui in all of us. But with the first little cool-snap in mid- or late August, when the department stores, malls, discount houses and all the fashion magazines feature displays and photos of fall clothes, we perk up with anticipation of what lies ahead.

The primary grade pupil will give some attention to considering a new book-bag, and/or a new lunch box while his mother assesses back-to-school clothing. The college-bound or secondary school student in all likelihood will consider carefully what's "In" and focus on the colors of

saffron, rust, emerald green that best blend or enhance individual skin and hair color. The careerist, too, gives fastidious consideration to a fall wardrobe. We are all pretty tired of summer apparel after eight or 10 weeks, and long for the crisp, cool, energizing days of fall. This at least is what happens to those of us in the northeast, the midwest and northwest. We will wait to hear from you residents of the south and west.

In considering wearing apparel, we thought of how many articles in our wardrobe have been named for individuals who first wore them, or designed them, or promoted the fashion.

Recall the *Nehru* jacket with its stand-up collar, center closing and mid-thigh length. Its straight cut wore well over slacks and in a silk or satin fabric was ideal formal wear. Then there was the *Mao* jacket with a rather similar collar, side-front closing and of hip length. Both jackets were named after leaders in their countries of India and China.

The popular *cardigan* jacket was named for the British soldier, James Thomas Brudenell, the Seventh Earl of Cardigan. According to an historical source, he needed an extra layer of warmth over his uniform when fighting in the Crimean War of 1854. Since that time all collarless sweaters, jackets and similar apparel have been named for him and the fashion he inspired.

From that same war came the woolen knitted helmet, so popular today with down-hill skiers, the *balaklava*. It was worn first by British soldiers in the Crimea and heralds one of their victories at Balaklava.

Of course the *chesterfield* coat with its black velour collar, single or double-breasted closing and fitted cut, was first made and worn by the debonair, urbane and elegant Philip Dormer Stanhope, the 18th century Fourth Earl of Chesterfield. While the chesterfield is rarely seen in this era of car coats, ruanas and ponchos, it may still be seen at formal affairs and state dinners.

Then there was the double-breasted frock with its large-sized pockets, named for and worn by *Prince Albert,* consort of Queen Victoria. It became popular in the United States early in this century and may be seen in the Norman Rockwell illustrations of the country doctor who was seldom seen without his frock coat.

Denim, the strong, coarse, washable cotton fabric first used for overalls and now popular for jeans, vests, jackets and other garmets did not come from the wild and wooly west but from de Nimes, a town in France where it was first made.

The state of New Jersey can not claim title to the fabric that bears its name. *Jersey*, a plain-knitted, very elastic, ribbed textile originated in the Isle of Jersey in the English Channel, where it was used for fisherman's clothes.

That item important to many women which is neither a textile nor an item of apparel is cologne/perfume. The liquid composed of alcohol scented with aromatic oils and combined with fixative was first made at *Cologne,* Germany in 1709!

The list of named clothing and accessories goes on and on: the ascot, the Iverness cape, south-westers, *Mary Jane* shoes, items known to most of us but their orginators may be obscure. It can be cooling and diverting to think about them in the days of August.

— Agnes Huether

New Members

Catherine Boettcher (Emil)
3233 Camelot Drive
Dallas, TX 75229

Mary Cooke (Benjamin)
1107 Victory Drive
Minden, LA 71055

Ginger Eddy (Larry)
2926 Weil Drive
Sulphur, LA 70663

Wintress Gentry (Kenneth)
329 Dalzell Street
Shreveport, LA 71104

Theresa McCleskey (Gerald)
9607 Birdwell Lane
Shreveport, LA 71118

Winnie Raggio (Charles)
321 Harrison Street
Jonesboro, LA 71251

Exchange Editor:

AGNES HUETHER
34 Jacklin Court
Clifton, New Jersey 07012

Piano Technicians Guild Foundation

The PianoTechnicians Guild Foundation is a separate, non-profit entity with its own board of directors. Contributions to the Foundation's Steve Jellen Memorial Fund for Research and Education are used to promote the piano and the professional technician. Most recently, the Foundation endowed a $500 annual scholarship for advanced piano study for a certified member of the Music Teachers National Association.

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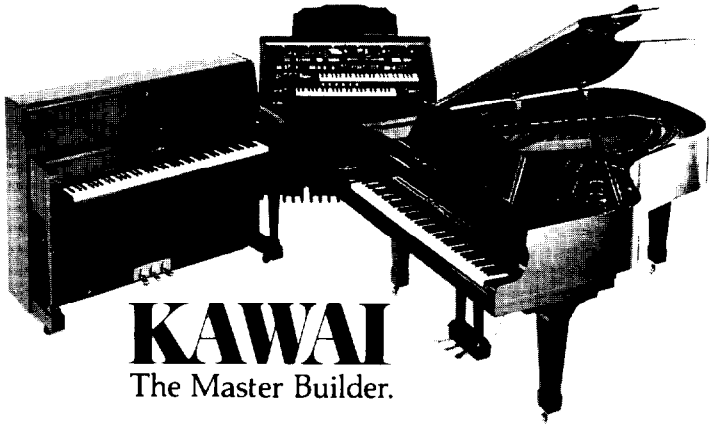

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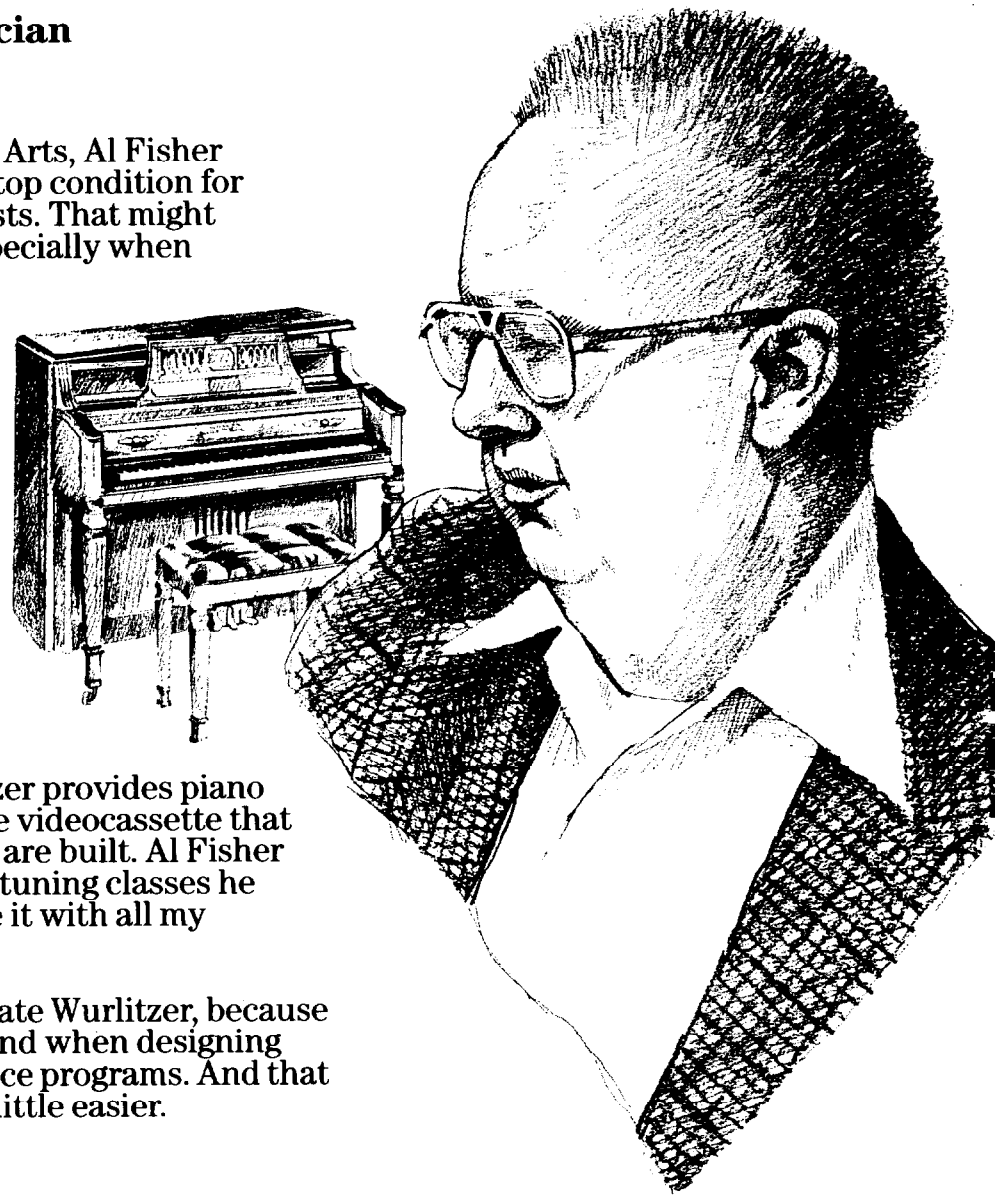

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