FOMRHI Quarterly

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FELLOWSHIP OF MAKERS AND RESEARCHERS OF HISTORICAL INSTRUMENTS
Hon. Sec. J. Montagu, c/o Faculty of Music, St. Aldate's, Oxford OX1 1DB, U.K.
Once again it is time to renew your subscriptions. The rates are the same as last year: £5.50 for UK and anywhere in the world that you are content with delivery by rowing boat, snail-back, etc, etc; and an extra £2.50, making a total of £8.00, for those interested in our original idea of quick exchange of information and who would prefer air mail delivery both for elsewhere in Europe and for further afield.

Those who pay by cheques drawn on a bank in this country (your own bank or bank drafts) and by GIRO, either by giro-cheque to FoMRHI or by using our GIRO Account (no. 27 316 4406) just send either of those amounts. Those of you who pay in your own currency (and unlike fellow societies in America, we are happy to receive subscriptions in any currency you like to name) are asked to include an extra £1 to cover the cost of exchange; otherwise your fellow members are paying it for you, which isn't fair to them. And you are also asked to allow a bit over the odds (round up, not down) to allow for the fact that the pound sterling is whizzing up and down like a yo-yo at the moment; what it was worth at your end when you send the cheque may be rather different from what it will be at our end when it arrives.

May I remind you again, also, that we have members in countries which forbid the export of currency in any form. A number of you were very generous in helping to pay for them last year; your help would again be appreciated this year. You are of course welcome to designate a recipient who would like to get FoMRHIQ, especially if he or she is the sort who would pass it round friends and colleagues or even translate bits of it for local circulation.

Please send your renewals (there is a form tucked in this Q) to: Maggie Lyndon-Jones, Hon.Treasurer FoMRHI, 20 Queen Street, St.Albans AL3 4P. Cheques etc should be made out to FoMRHI (or the name in full if you prefer and have the energy), and they should arrive by 1st January or before. If they don't, you're likely to get a reminder instead of the January Q next year.

A few people wrote rather crossly last year - how could they pay by Jan.1st if they didn't get the Q till the end of December? Obviously those of you who pay for surface mail and live far away may not be able to (I don't know what the world is coming to; last day for posting Christmas parcels to the Far East, Australia & New Zealand was yesterday, 1st October; the clipper ships were faster than that, and with all modern technology, we're slower than them today; that's why I referred to rowing boats in the first paragraph). Just do your best please to get them in as soon as you can. If we have to send you a reminder, it costs quite a lump out of your subscription the way postage is now.

NEW TREASURER: As you will have seen above, we have a new Treasurer. By the end of this month she will be Maggie Lyndon-Jones because she will have married Graham by then. She is very brave to take on our work at the same time as a husband, and I hope that we will all send her our best wishes and greetings. She prefers to be called Maggie to Margaret, and for those of you who prefer being formal, she is, or will be, Mrs.

OLD TREASURER: Only the UK members heard in the last Q (because it was a last minute insert) that Margaret Crowe has had a bout of ill health and had found, on her doctor's orders, that she could no longer carry on as our Treasurer. I would like to thank her for all that she has done over the past three years. She lifted a considerable burden off me when I got this job, and she did it far better and far more methodically than I ever did. And in addition she took over the envelope addressing (there are several hundred envelopes to write every quarter) and filling and posting. Thank you, Margaret, and we wish you a speedy recovery.
HON.SECRETARY: I was re-elected for another 3 year term.

HON.EDITOR: Djilda has found that running NRI, Eph and the kids as well as putting FoMRHIQ together was getting a bit much, and you may have noticed that Eph has been doing the job for the last couple of Qs. The Fellows are in the middle of a discussion of just what we want as a FoMRHI editor, whether we want to keep the old idea of taking everything that comes in (or anyway almost everything; there have been a couple of refer-back in the past) and just putting it together and making sure it added up to a multiple of 4 pages (and it's a bigger and trickier job than that sounds), or whether we wanted a more formal editorship. Anyway, and for the moment, the majority have voted that Eph should become editor, but that the job should be done as in the past, taking whatever comes whether the editor agrees with it or not, and commenting in the next issue if necessary. Again we are very grateful to him for taking it on, and are very thankful to Djilda for all that she has done since we started in 1975 (and for anything that I'm sure she'll be doing in the future).

It should never be forgotten that FoMRHI was Eph Segerman's and Djilda Abbot's (as she was then, before she married Eph) idea in the first place. They saw the need for it, they saw the way it could run as a quick and cheap information exchange, and they talked me into becoming the Hon.Sec. I get more of the credit than I deserve, because I'm the front man with my name on the cover, at the end of this Bull, and elsewhere, and OK I do a fair amount of work keeping it going, but remember that it's Eph and Djilda that we owe the idea to, and had it not been for that idea, there never would have been a FoMRHI.

NEW FELLOW: Phillip T. Young has been elected. All wind people know that Phil compiled the second most useful book we've got: 2500 Historical Woodwind Instruments (he would be the first to agree that Langwill's Index of Wind Instrument Makers is the first), and many of you will have seen his catalogue of the Vancouver exhibition, The Look of Music.

LAYOUT: Uta Henning has made the point that while it is now much better having the Members' List Supplement in the middle, it is a nuisance if there is other material on the back of it; if you tear out the Supplement to put it in your Members' List, you lose that material. She is right, of course, and it's a nuisance that the Supplement does not run to a full four pages each quarter. However, I don't think that we would want to waste space with blank pages. The answer, I'd suggest, is to do what I do, and photocopy the new addresses (I don't usually bother with the organological and geographical indexes, but then I've got them written in to my copy anyway) and put the photocopy into the main list.

LAST Q: A lot of you had one or more blank sheets in the last Q. I apologise for this; it's carelessness at the printer of course, but it is not always easy to spot the sheet that has gone through with another so that only the top one got printed. I will ask Eph to pass on a rocket and to ask them to be more careful with this and future Qs. Meanwhile, please check if you haven't read right through, and I'll photocopy any missing sheets for you.

THIS Q: Looks like a bumper issue, with a lot of stuff in it. Thanks to all contributors, and please keep it up. You're going to have to send us your sub between now and the next one; why not send a Comm at the same time?

INDEX: Either in, or better with (Eph will choose) this Q you will find an Index to cover everything (not quite; see later) from the beginning to the end of 1985. Rod Jenkins put the whole thing on his computer. He doesn't say how long that job took, but it must have been quite a labour; it took five hours for the computer to sort it and print it out, and then another five hours after Rod had found and corrected
"yet another mistake'. He goes on: 'I'm afraid that you will find that Montagu J, Segerman D and Segerman E are all missing from the index. The computer, or rather my programme) couldn't cope with all the entries, but I don't think that they wouldbe of much practical use, it would be easier to look in all the Qs.' Since I waste a fair amount of my own time trying to find which Q I had that Comm in, that put me off a bit, but I've checked and as long as you know the title or subject of any of my, Djilda's and Eph's Comms, you should be able to find them (if you ever want them, that is); serves us right for overdoing it, doesn't it! Rod says that he will send the index for 84 in time for the January Q. Anyway, a hearty vote of thanks to Rod for doing the job.

FURTHER TO: Comm.529 and 536, Bob Marvin writes:

Angelo Zanoli (Comm. 529) is too hard on the Illoughty Questionaire, which did not suggest that its considerations were not interrelated, and which did ask for comments not fitting the specific questions. Yes, it was simplistic, but a good basis for refections and further efforts to share experience. Per se it is a useful guide for beginners, and the variety of questions and responses can stimulate experienced voiceers. To deny any independent effect of voicing variables is an erroneous as saying there is no interaction or that remnants cautioned interrelation to give a healthy respect for voicing's complexity. Regarding the notion of a "perfectly voiced recorder", I suggest that perfection comes from seeking imperfections. Excellence in musical instruments comes from a balance of compromises which suit the music. As for factory production, I've found the more I work like a machine, the better my instruments are, and that there's nothing I do that couldn't be done cheaply and quickly in a factory. Except maybe decide what suits the music.

Due to David Crook's (Comm. 536), I can only say, "Dixeris egregie notum ei callida verbum reddiderit iunctura novum. De nihilum nihilum, in nihilum nil posse reverti."

Comm.545: Ian Gould comes back on my comment suggesting a damp pad, and says that it wouldn't help because the underside of the skin stays wet anyway; it's the edges that dry out. He adds that it's not a serious problem - you can always slosh some more water on. He has now made several successful drums, and anybody who wants one, well he's in business. A couple of members have said how useful they found that Comm.

LUTE STRINGS: Bernd Deja writes on the authenticity of lute strings:

"Banchetto Musicale used mainly to play in churches, often two concerts in one day (eg 4 and 8 pm). There are wide differences of temperature and humidity. One example may illustrate:

March 10th 1984 4pm, children's asylum 20°C, humidity low
8pm, Gütrow Cathedral 15°C high
11th 7.30pm Schwerin church 12°C high
12th 7.30pm Cultural Club 23°C low
(by the way, we'll never play at 12°C again)
"As you can see, the conditions vary in a wide range and we performed all these concerts with moderate tuning times and satisfactorily in tune (eg at 12°C confirmed by a professional violinist). I can't imagine that using gut strings on our two renaissance lutes playing continuo and lute duets under such conditions a concert would be possible at all. (Anyway, there are no satisfactory gut strings for our instruments available here to try it)."

LUTE AND VIOLONC ELONG FINDS: Garry Crighton writes: "In May I played in a concert at the Neukloster in Wiener Neustadt, Austria. They are involved in spring-cleaning the accumulations of several centuries. Amongst a great variety of interesting bric-à-brac - they used to run a school, I believe - are substantial portions of two lute bodies, ie bowls and necks. One has a Maler label. Somebody both knowledgeable and responsible about lutes should go and have a look, measure up, take some photos, and write a brief article, before they get shut up in some museum case. I have no idea how 'original' they are. My contact was the painting restorer and amateur gamba player, Margarita Kaltenböck (speaks both English and Viennese), address: Herminengasse 8/12, A-1020 Wien, Austria; telephone: 0222/55 39 733. I also collect overhearing part of a conversation about finding an old violone."

JM adds: Can somebody go fairly smartly, and please will they send a preliminary report to us, even if the material is important enough to write up in GSJ etc when a full report is done?

18TH CENTURY ELECTRONICS: John Rawson sent me the following catalogue item from Michael Phelps, Antiquarian Books, 19 Chelverton Road, London SW15 1RN. Neither he nor I had a spare £200 lying around, and probably none of you have either, but we thought that someone might be interested to dig out a copy from a library and investigate. As in the previous item, a report in FOMRHTO would be interesting:

WITH AN EARLY DESIGN FOR AN ELECTRIC HARPSCORD


Gastrell 365.

The entire text of this rare work is in verse and embodies a philosophical appreciation of the nature and uses of electricity. It discussed the work and achievements of such contemporaries as Franklin and Boscovich. An appendix contains S. Aloysio Gonzaga's Carminum Litterarum (pp. 257-288), which is also in verse. Pages 33-34 contain a very interesting reference to an electric telegraph by means of sparks from a Leyden Jar. A totally independent and separate work by Mazzolari (Commentarii) is bound in at the end.

£200

QUERIES AND REQUESTS: Does anybody know of any instruments by Robert Wyne (Wijne) of Nijmegen or his sons apart from a treble recorder in the Hague, another in the Ede, traversi in the Hague (2), in Ede, in Nijmegen, in the Stolk collection, and in Zeeland, a descant recorder in Frans Brüggen's Collection, oboes in Alkmaar and Yale and a tenor oboe and a bassoon in the Hague, and a racket in Berlin? If so, would they please write to: M.C.J.Bouterse, Mendelssohnstraat 5, NL-7204 NV Zutphen, Netherlands, who is trying to organise an exhibition of the Wijne's works. He would also like to know copies of Wijne instruments, particularly if they could be borrowed for a concert, and also of any plans, drawings, photographs etc, especially if they could be reproduced in an exhibition catalogue. And don't be surprised if you write to him and don't get an answer; he has not replied to my letter of a bout a month ago about ours.

Garry Crighton (in main Members' List) asks: "Who is making professional quality citoles please? (Laurence Wright terminology)."

And I am hunting for deer tallow (Hirschtalg). I used to get it in sticks (like shaving soap or deodorant) in plastic containers from a mountaineering shop in London, but they've gone out of business and
nobody else that I've tried has ever heard of it, nor could Ken find any in Switzerland. I know that it is used in Austria, and perhaps also in Bavaria. It is terrific for your feet when walking long distances (round museums for instance, as well as on mountains), and it is highly recommended as a lubricant when working on metal instruments. It's also a good cork grease. If anybody in those parts is coming this way and could bring me any, I'd be very grateful; either a handful of sticks or a box of them (I imagine they come a dozen or twenty or whatever in a box), and I'll pay you when you come. I don't think it would be very practicable to post them; the customs might start taking them apart to look for heroin or diamonds, but any one coming to England with room in their suitcase, as I say I'd be very grateful.

OFFERS: Kevin Smale has been making an octave mandola and needed the sort of screw tuning pegs that you find on Portuguese guitarras (set vertically in the head in a fan shape). He has found someone to make them, and could now get them made for anyone else who needs such pegs. A set of eight in brass would cost £28.50 including post and packing. If you're interested, get in touch with him at his new address in this Supplement herewith.

A new member, also in this Supplement, M.J.Minns, is a timber dealer with quite a lot of useful woods available. He has sent me a list, which I've sent up to Eph, but in case there isn't room for it in this Q, write to him (Minns, not Eph) for a copy. One example: European boxwood logs cost £1.60 a kilo, but he doesn't give the size. An offer that I've accepted on your behalf was to be on a mailing list. A firm called IBIS who operate "a free information service about new specialist books and journals to individuals and institutions all over the world" asked for a copy of our membership list. I thought that you wouldn't mind hearing about publications in our field, so I sent them a copy.

NEW APPOINTMENT: One of our members, Cathy Folkers, has been appointed Curator of the Dayton Miller Collection at the Library of Congress in Washington. She starts there next week (give her a chance to settle in before you deluge her with questions and requests), and the best of luck to her. Nice to have a flute specialist in charge of that collection. She will also have further cause for congratulation between now and our next Q - she is getting married to Ardal Powell at the end of December. For the moment her old address still stands; she hasn't found a new home, and when she does, Sand Dalton will be moving over from Lopez and will forward letters (if you want to write to Sand, I don't know when he's moving; he hasn't told me).

EXHIBITION: The Royal Academy in London has an exhibition on of Dutch paintings by Vermeer, de Hooch and other 17th century artists. Lots of the pictures have instruments, and many are detailed enough to be useful. It's on till 18th November and well worth going to see. The Catalogue is also worth having at £7.95, with colour reproductions (pretty ropey ones I'm afraid) of all the pictures, including a few that aren't in the exhibition because they didn't get out of Germany. There are over a hundred pictures and it's well worth the £2 to see it.

BATE NEWS: You know about our Oboe Weekend, November 24th & 25th, with David Reichenberg, Lorraine Wood and Dick Earle sharing the playing, making and reed-making sessions between them, and a concert by the London Oboe Band on the Sunday.

The next one is February 2nd & 3rd, a Clarinet Weekend, with Eric Hoeprich, winding up with a concert for soprano, clarinet and fortepiano. Eric Hoeprich will cover both playing and making (I imagine that you know his articles in GSJ and Early Music).

There may be another one in March, on Tunings and Temperaments, run in
collaboration with the European Baroque Orchestra, which is being set up here in Oxford as a project to train young players (directed by Andrew Parrott). So far, nothing has been fixed and there's time to tell you about it in the next Q, but anyone particularly interested can write and I'll tell you anything there is to tell as soon as it's fixed (or not, as the case may be).

Nothing fixed for a Weekend in the summer term yet, but a strong possibility is Baroque/Classical violin.

Next November, I hope that there'll be a Recorder Weekend with Alec Loretto; the date, only pencilled so far, is 2nd and 3rd November.

I put on a Special Exhibition each term (and leave it up through the following vacation). This term, running from now till the 31st December, is Oboes of the World, over 40 shawms from all areas, drawn from the Bate, Baines and Montagu Collections. Next term it will be Clarinets of the World, from 7th January to 12th April. Catalogues of both will, as usual with our small exhibitions, cost 20p (4 A4 pages reduced on to one sheet). Also, throughout 1985, everything contemporary with Schütz, Bach and Handel will be specially labelled and marked, perhaps with a special catalogue. (Unfortunately, we've nothing appropriate for Scarlatti).

I've gone a bit commercial, and we now have Bate Badges, ballpoint pens and giant paper clips. Nice souvenirs (especially for children) and they help to raise funds. We also have postcards, photo-reductions of our plans. They came out so well in FoMRFHQ that I've printed the same thing on card one size smaller. They cost 20p each.

And we have a number of new plans; list elsewhere in this Q and perhaps small samples as well if there's room. Two of them are bassoons, and Ken's drawings are so clear that we're offering a half size drawing as alternative to the full size.

REQUEST FOR ARTICLES: (no, not me nagging again). I've had a letter from Debra Wittenberg, Associate Editor of Popular Woodworker, "a well-respected bimonthly woodworking magazine". They want to expand into musical instruments and would be interested in articles on making and marketing instruments made of wood. If anyone would like to write for them, get in touch with her (I assume its a female name) at: 1300 Galaxy Way, Concord, CA 94520, USA; tel (415) 671-9852. She does not say what rates they pay; yes she does, $35 per published page, which strikes me as low.

INVITATION: Hubert Keller has moved (see the Supplement in this Q) and is now a few km from Heidelberg; he would welcome any visitors.

As always, so would I.

CODETTA: That's it so far. I'll keep this open while I do the Members' List Supplement etc, for any late comers.

Remember to send Maggie your renewal.

Nothing has come in; in fact, since it was a short Bulletin, the whole job has gone faster than usual.

DEADLINE FOR NEXT Q: January 2nd (I would say 1st, but we get no post that day). Come to think of it, that gives you an extra day to get your renewals in, too, doesn't it. A bit early to say it (though shops have been full of rubbish for over a month): Merry Xmas.

Jeremy Montagu
Bulletin Supplement

Jeremy has sent a one-page specialist timber price list from Minns (Oxford) Limited, Unit 10 Block B, 7 West Way, Oxford OX2 OJD, phone: (0865) 247840. I was tempted to include it, but decided that this would morally obligate me in the future to include catalogs of the many other timber merchants, and that would be too much. The list includes most instrument-making woods, but no sycamore selected for figure or bow woods.

Charles Johnston of 23 Manor Road, Wrea Green, Kirkham, Nr Preston, phone: Kirkham 584110, a former member, is now becoming a former violin maker. His specialist tools (many made himself), wood and bow hair are for sale. No ridiculous give-away prices, but if he has what you really want, there is good value.

George Stoppani writes:

“My drawing of the Andrea Amati (1574) Charles IX violin in Carlisle is now available. This drawing is very detailed, particularly in respect to plate archings and thicknesses. There are considerable differences in outline and arching as compared to the one in Oxford. This drawing is being distributed at cost. Please send cheque/PO (payable to Carlisle City Council) for the UK £5, for overseas £10, to Carlisle Museum and Art Gallery, Castle Street, Carlisle CA3 8TP, Great Britain.”

Comm 567 was submitted in double space typescript. I was able to just fit it in as it is; if I couldn’t have, it would have been returned for retyping. Also, authors (including Jeremy) are not observing the margins the printers had suggested. They haven’t complained, but I do see look tidier with proper margins. Please read the checklist on the back of the Index and try to take it more seriously.

The Bulletin contains comments from anyone, and that shouldn’t exclude me. It would be silly to send them to Jeremy for him only to send them back, so those arising from the last O follow:

David Way’s contributions to the history of the harpsichord revival in Comm 539 are most welcome, but they are occasionally also somewhat misleading. There are reasons to expect tensile-strength problems existed with harpsichord wires, and I intend to write a Comm on this. As for the other factors, the only one that would not be controlled by competent wire drawers is roundness. Has anyone any real experience with how much difference this makes? As for soundboard thicknessing, my starting in Comm 529 at his second phase is not getting things upside down. That phase, following Hubbard’s book, is still largely what modern makers are in. If one compares what Hubbard wrote about Ruckers soundboard thicknesses with measurements now available, one will notice that he (and his followers) have things upside down. Finally, I don’t share Way’s confidence that the ears of a modern maker are reliable guides towards achieving that purpose of the antique builders which was to produce the sounds the old composers wrote for. Incidentally, an account of the evolution of the Zuckerman harpsichord would be most welcome (I own a pre-kit example).

Concerning Comm 546, point 3, I never claimed that one can tune anywhere in any piece of music. Early 16th century players had special pieces (with fairly amorphous musical structure and loads of fermatas) whose name “Tastar de corde” seems to imply they were used for tuning. Baroque preludes could easily have served the same function. I agree with point 2 and my Comm 547, Fig 1, was to illustrate its (ii). My Fig 3 was to illustrate a (iii)-like alternative to (iv) (which could have been called (v)), which is a late baroque possibility. As for point 1, if players graced more, being sure to shake their exposed bad notes, it would not sound so bad. This is Roger North’s advice.

I am thrilled by Cary’s findings in Comm 548. It would be absolutely fantastic if one could find a connection between Jobst Mueler of Nuremberg (see Comms 439 and 440) and Johann Gerdes of Altena.
Finally, since I was reviewing Lindley's book "Lutes, Viols & Temperaments" for Early Music, I passed the copy Jeremy sent me on to Martyn Hodgson (see his review in Comm 556). My EM review was of necessity rather superficial, and if there is interest in more detailed discussion of it, I would be glad to pitch in.

FoMRHI Book News: Jeremy Montagu

Three things that ought to be reviewed in this Q but aren't going to be because not only have I not had time to write reviews, I've not had time to read them yet:


Kunitachi College of Music Research Institute, Plucked Stringed-Instruments with Neck. All the other information (author's name, date, etc) is in Japanese. A lot of interesting pictures.

Martin-Christian Schmidt, ed., Tagungsbericht zum Thema "Konservierung und Restaurierung, Nachbau und ausführungspraktische Nutzung von Holzblasinstrumenten", the report of a seminar in Berlin in March 1983 with papers by all the top boys (and one girl) in the field, a number of them our members: Klaus Gernhardt, Friedemann Hellwig, Cary Karp, Rainer Weber, Eszter Fontana, Dagobert Liers, Herbert Heyde, Günter Angerhöfer, Cornelius Frömmel, and Peter Spohr. No price stated; if you want a copy, I've got two, so one is spare, or else write to Martin-Christian (in Members' List).

Reviews next time. Also perhaps reviews from some people who've been sitting on them for too long.

Contents of Bouwbrieven Nr 33 (May 1984) and Nr 34 (Aug. 1984)

Paul Gretton

33.9.1 Tuning a baroque traverso, part 2. Jan Bouterse. (Illustrates various useful home-made tools for undercutting fingerholes.)

34.9.1 Seven pages on lute geometry. Geert Bos.

34.9.2 Comments on Jan Bouterse's article on tuning a traverso. René Sanders.

34.9.6 Building the Huismuziek hurdy-gurdy, part 2. Ed van Weerd.

(Not much of interest to FoMRHI members in these two issues!)
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These prices include postage (inland and surface abroad) for despatch flat, folded to A4 size; if you require rolled, please send your own tube and add sufficient postage to cover its weight.

Cheques should be made payable to The Bate Collection, Oxford, and must be in pounds sterling. Eurocheques cannot be accepted by the University nor can cheques in other currencies, due to the excessive cost of converting and clearing them.

Drawings and measurements are Bate Collection Copyright.

Orders should be addressed to: Jeremy Montagu, Curator Bate Collection of Historical Instruments at the above address.
TOP JOINT

MIDDLE JOINT

BELL

KEYSPRINGS: BRASS, END FOR 3 OREDIN IN KEYWELL
FREE LENGTH 0 13 Z 2 4
WSTING 0 19 Z 2 4
GAUGE 0 18 0 2

MATERIAL: MAPLE
PITCH A 4/7

FOR MORE DIMENSIONS SEE DIAG NO 201A
DIMENSIONS ORI 3.384

UNIVERSITY
BATE COLLECTION OF HISTORICAL
OF OXFORD
INSTRUMENTS
Faculty of Music, St. Aldates, Oxford, OX1 1DB

BIZEY OBOE
(First Half 18Th C.)
(Morley-Pegge Gift)

SCHUMANN 8.5/40

Dimensions

Scale: 1/2 Z"
HENRY POTTER & BRIDGE 3 WEST LONDON

WINDWAY B:1 x 0:05 (SIDES) & 1/8 (CENTRE)
AT ENTRY; 7:3 x 0:8 AT EXIT
ROOF HOLLOWED 1:1 IN
LENGTH MAX AT HALF WAY

STAINED BIRCHWOOD, IVORY SOCKET

Henry Potter TABOR PIPE x01 (1841-1857) Pitch D (A482)
SHARES CAT NO WITH TABOR x01b & BEATER x01a. [Ex Galpin Collection]

Rudall Carte & Co. TABOR PIPE x02 (mid 19th c.) Pitch D (A485)
FOR MORE DIMENSIONS SEE CAT NO x02/2A DIMENSIONS IN mm ©1994

Henry Potter & Rudall Carte & Co. TABOR PIPES
(MID 19TH C.)
(Anthony Baines Loan)
MOUTHPIECE
The mouthpiece associated with the instrument is considered to be not original.

MIDDLE BODY

LOWER BODY
MATERIAL: BOXWOOD
DIMENSIONS: mm.

FOR BORE DIMENSIONS & KEY DETAILS SEE DWG. 406 A.

© 1966

MOUSETTER CLARINET
(c. 1780)

UNIVERSITY OF OXFORD
BATE COLLECTION OF HISTORICAL INSTRUMENTS
Faculty of Music St. Aldates Oxford OX1 1HD

J O I N T D E T A I L S

SCALE/ SIZE
DME 406
Books on the Lute or Viol are so very rare that, for the most part, such works tend to be acclaimed, irrespective of any real merit. However, whilst Mr. Lindley's new book is certainly a rarity, in that it deals mainly with the tempering of Lute and Viol frets, it is also a work of genuine distinction. Indeed, my own reaction on first reading this most interesting book was one of enormous enthusiasm; at last a work of real scholarship in this important, but frequently neglected, field. On further reflection, this initial impression was unfortunately marred by one important omission, by doubts about some rather subjective aspects of Lindley's methodology and by a few errors which, perhaps unfairly, reflect on the general level of the work as a whole. Nevertheless, it cannot be denied that this is the first modern book to attempt a comprehensive and rigorous analysis in this area and is, for that matter, one of the very few books which deal with any aspect of the Lute and Viol in a scholarly manner. It thus presents a welcome contrast to the rather more romantic works, which not infrequently concern themselves with these instruments, and represents a standard against which other books should be measured.

Lindley addresses himself to the problem of imperfect intonation resulting from having fixed (or temporarily fixed) fret positions, as found on the Lute and Viol. He examines a number of original written sources (many quoted at length with a parallel translation in English), musical examples (in tablature and in transcription where appropriate) and illustrations of the instruments to determine what temperament and fretting system are inferred. His ultimate criterion for choosing one temperament over any other is how the actual music sounds in practice and he hopes for 'a well-informed concensus to confirm our perceptions'.

The book has a useful introduction, which outlines the problem, and is then divided up into seven chapters with four appendices and a bibliography of the works cited. The first chapter sets out to classify the various temperaments and the following four cover Pythagorean temperament, Equal temperament, Meantone temperament and the elusive Just intonation. Chapter 6 describes some other possible schemes (e.g. the dreadful fretting system proposed by John Dowland in the 'Varietie of lute lessons'). Finally, in chapter 7, Lindley concludes by allowing equal temperament for all the Lute and Viol repertoire, but admitting some form of meantone temperament for select early 16th C. composers (e.g. Luis Milan) and for the high-baroque Basse de Viole when in concert with the harpsichord.

'The only real test is the sound' states Mr. Lindley on page 3 of his introduction. Well, as it stands, there's very little arguing with that, but he does rather miss the essential rider; the identity of the judge. It is clear that Lindley recognises there may be a
problem about subjective judgements of aural perfection, but he dismisses the objections rather to lightly by casting doubt on the perception of those, who may not agree with his own conclusions. The lack of a proper scientifically conducted statistical survey into the degree of acceptability of various temperaments cannot fail to cast doubt on some of the judgements made in the book. Even something along the lines of '80 out of 100 people sampled at random from the "well-informed" population preferred temperament X to temperament Y' would add much more weight to the conclusions. It is certainly true that the blurb on the book jacket mentions 'a tape cassette illustrating some of the musical examples (in various temperaments)', but since this does not appear to come with the book, we are still left in doubt as to Mr. Lindley's own perception of aural beauty.

By far the most serious omission in the book is the lack of any reference to the 'baroque' Lute and music in the new tunings (in particular the A d f a d' f' tuning), which became pretty much the norm (excepting Italy) by the early decades of the 17th C. It is, perhaps, slightly understandable that an instrument tuned mainly in fourths should be considered a suitable candidate for equal temperament, but an instrument, where thirds are a major feature of its tuning and where much of its repertoire does not exhibit large modulations, may well be better served by some meantone temperament. It is clear that, by the early 18th C., the use of the entire fingerboard, remote keys and extreme modulations by Weiss and later composers (Hagen, Kohaut, et alis) indicates equal temperament, or something very close. However, the rather less adventurous 17th C. French School of Lutenists (epitomised by Denis Gaultier), who tended to restrict themselves to less daring modulations and fewer keys, often sound better, I believe, in a meantone temperament. It is therefore particularly unfortunate that Lindley did not choose to explore this huge area of the Lute's repertoire.

A couple of obvious errors should be noted:

On page 21 it is claimed that the change in theoretical string length to give the true octave, caused by the increased string tension due to depressing the string, is 'comparable to the width of a double fret'. This is then used to justify the employment of the 18:17 method as giving superior results to the theoretically calculated equal tempered intervals. In fact, the modulus of elasticity of gut (and nylon for that matter) is so very low that the difference due to this effect is only about 0.3mm for a mean Lute (as Jahnel, who is cited, clearly implies). There is indeed an adjustment to be made to the theoretical figures, but this is due to the position of the stationary node close to the bridge, which effectively decreases the open string length.

On page 70 the evidence of Bartolus (1614) is dismissed through a complete misunderstanding of one of his illustrations. This shows a comparison between French and Italian tablature and should be read quite simply as the intabulation of a scale and not as inferring that Bartolus was so very ignorant as to believe that tablature letter 'a' (or '0') was fret 1, 4 or 6.
The appendices are generally useful additions to the main body of the work: an explanation of tablature notation; a bit of relevant vocal and harpsichord music; early devices for geometrical constructions which could be used to mark fret positions; and one distinct oddity, which seems rather less relevant. This consists of an appendix written, not by Mark Lindley, but by Gerhard C. Söhne entitled 'Lute design and the art of proportion'. In essence, this is another exposition of the, by now, well-known geometric method of approximating to the outline of a Lute belly by scribing various tangential arcs. It is a very great pity that Söhne fails to recognise many of the earlier contributions in this field and that, when a footnote does slip in, he dismisses this original work as being 'any old geometrical device'. He repeats the suggestion of using elliptical arcs for the more intransigent shapes, but I'm not at all convinced that the accuracy is significantly improved, especially since he gives no indication of a measure of goodness of fit. In any event, he still has to select his instruments with care so that they are suitable for the method. The justification for this intriguing procedure is that 'the other instruments are too poorly preserved, or were conceived in so complicated a fashion that several interpretations are possible, or were designed without any mathematical method'. Although he says that the method has been applied to a number of Lutes, in the book only two extant instruments are subjected to the full extent of Söhne's constructions: a Lute in Vienna, Sammlung alter Musikinstrumente, C 36 labelled 'In Padova Venezia/de Leonardo Tiefenbrucker/1582'; and a liuto attiorbato with some unusual features, said to be by Matteo Sellas c. 1640 and presumably in private hands. This latter instrument is of particular interest since, Söhne points out, many dimensions are precise integrals of the Venetian inch (he gives 1 Venetian inch = 28.95 - 28.98mm). Moreover, the short length of the fingered strings (17¾ Venetian inches = 506mm) and the unusual feature, remarkable for a theorboed Lute, of its neck and body being in the same alignment make this instrument quite unique and therefore not a very good example to illustrate a general method. Having said all this, it is highly unlikely that early Lute makers employed no system at all in designing their instruments, but I feel that Söhne's contribution does not significantly advance our knowledge of such a system. A much wider sample and acceptable measures of accuracy are required before such a system can be recognised. In any event, surely any such construction would be aimed at designing the mould rather than the finished external shape and if the thickness and extent of the end clasp is taken into account the change in the geometrical construction is by no means negligible.

Nonwithstanding Mr. Söhne's contribution and some of the reservations expressed earlier, I must emphasise that this is one of the very few modern books, which all players of the Lute and Viol (and other fretted instruments) should read. It must not be regarded as the last word on this subject, but rather as the first major work of real scholarship in this field.
It is of course a truism that no two pieces of the same type of wood are identical, and that ageing processes introduce another set of variables, making it effectively impossible to recreate the exact historic sound of the viol, or at least of one particular viol. Without claiming any expertise as a maker whatever, I would nevertheless like to raise two points, both arising from some experiments done on a bass viol of no historic value dating from the earlier stages in the viol revival.

One concerns the thinning of the belly. Being interested in Toon Moonen’s suggestions on viol belly design (FoMRHI Comm.381), I removed the belly on this instrument (which does not have a hollowed edge and only a single purfling). Using a home-made caliper accurate to at least + 0.25mm, and a disc sander applied with great care (ill.), I thinned the belly to 4.5mm in the middle tapering to 2.5mm round the edges, and replaced the bass bar. It was interesting to note that, although the thickness of the belly had in some areas been as much as halved (it really was heavy originally!), the tone of the re-assembled instrument was basically the same — only, it had naturally lost much of its ‘stiffness’ and some of its scratch. Does this mean that the design and thinning of the belly, crucial for flexibility of response and subtlety, has less effect on the basic kind of sustained sound than the shape of the resonance chamber as a whole? If so, historic instruments that no longer have their original fronts may still give at least some clue to the aesthetic aim of their maker.

The second point was, to me at least, more of a revelation. Having been surprised that the drastic thinning of the belly made so relatively minor, if significant, difference to the tone quality, I noticed the two-part article by Alan Tull in The Strad, vol.93/1109 and 93/1111 (Sept. & Nov. 1982), which outlined experiments done on violin bridges. One of his main points, concerning the function of the bridge as a filter, determined especially by the flexibility of the ‘waist’ and by the weight of the part above the cut-outs, made me re-examine the Mersenne-type of bridge hitherto on my viol (ill.1). A quick search brought up a bewildering range of designs, with many more variations readily at hand:


Nos. 2 (on the large ornate bass in the Ashmolean attributed to John Rose) and 4 (on the Tielke bass in Copenhagen Musikhistorisk Museum) both look as if they could be original, and are certainly old. For the sake of comparison, however, I scaled up an elegant modern-type bridge on my wife’s tenor viol (ill. 5) and fitted it to the bass, experimenting with its location and the position of the soundpost. The change in both response and tone quality was astounding, and it was particularly interesting that the bass viol had now acquired a number of the tenor’s characteristics, very different from those of the bass originally. A modern-type bridge is clearly not good for authenticity, but the implications are nonetheless rather worrying; if we can change the whole nature of an instrument merely by substituting a different bridge, how much can we really make of an old instrument whose design is recognised by many makers,
but seems to have attracted less attention in FoMRFHI or elsewhere than it deserves. It suggests that a search for authentic illustrations and reliable original bridges might be one of the most important parts of the search for the historic viol sound.
A young lady with a lute sitting on a bench in a garden with a stag kneeling in front of her — this curious couple may be seen in the picture reproduced with this article. The suave, soothing effect of music has been symbolized in iconography since the Middle Ages by a young female, "Frau Musica" or St. Cecilia. Many early depictions show her holding or playing a harp, lute or organ. The posture of the lady and the scenery in the picture very much reflect this age-old tradition. In early iconography the stag symbolizes a young man in full possession of his generative power who is confronted with the perils of this world and has to exert self-discipline. In several cultures stag's horns mean the tree of life.

It is interesting that the lute-player in the picture can be identified. She is Lini Wetzler, wife of the musician Hermann Hans Wetzler (1870 - 1943). Even better is the fact that the lute in the picture is the work of Gottfried II Tielke, according to Kinsky (p. 607) who wrote in 1922 that Wetzler, then conductor and composer in Cologne, owned the instrument. Wetzler was the grandson of the painter Hans Thoma (1839 - 1924) — hence the portrait by the latter. It is a small sensation that an individual instrument in a picture can be pinned down — and what is more that it is still extant. Similar cases in musical iconography are very rare indeed. Some years ago a late-19th-century painting portraying a particular viol by Joachim Tielke formerly in the Heyer Collection cropped up at an auction in Stuttgart (information kindly submitted by Friedemann Hellwig, Nuremberg).

The lute in question was made in Königsberg in 1670 by Joachim Tielke's elder brother Gottfried II (1639 - ?). There is a printed label inside the instrument which reads: "GOTTFRID TIELKE/In Königsberg 1670". The last two digits of the year are handwritten. Below this is a handwritten note documenting the "repair" in 1820: "Repr. v. H. Rügiger/in Frankfurt a/N 1820". According to standard practice Rügiger adapted it to modern requirements. The bent-back lute pegbox was transformed into a guitar head; the neck was narrowed, and the fingerboard was shortened and supplied with metal frets.

Thus it would seem that the only original part in the instrument is the body with its 11 maple ribs and a corpus length of 53 cm. We may assume that the table with its double inlay (possibly made after the original) dates from the early 19th century. The string-holder gives room for 6 strings (now in a modern guitar tuning E A d g b e') ending in Rügiger's time in a flat head with posterior pegs. This is the state in which Hans Thoma knew the instrument and subsequently painted it. After 1895 the instrument was supplied with lateral guitar machinery and has come down to us in this state.
As far as we can see there are 3 known versions of the Thoma picture:

1. Painting (1895) owned by the Kunsthais in Zürich (inv.no. 753). Reprod. in Thode, p. 391.

In his recent Tielke book, Günther Hellwig mentions the lute (p. 25) as in the possession of Gerhard Hase, Stuttgart. In the meantime the instrument and its case have been sold to the Tielke collection of the Museum für Kunst und Gewerbe in Hamburg (inv. nos. 1983.264 a, b). The case has 13 ribs, is made of pasteboard, lined with red linen, and the exterior has been pasted with marble-imitation paper. The neck and head of the case were also adapted when the instrument was modernized in 1820. The original section of the case with the bent-back neck is no longer extant.

The present writer, who arranged the purchase of the lute and its case, hopes that the instrument will be on permanent display in Hamburg together with its full iconographical documentation. Whether the instrument will be restored to a lute is an open question.

Literature:


Partial Response to Comm. 442, 490, 491 (and a host of previous ones on pitch-standards) - Garry Crighton, West Germany

It seems I never will find the time to produce the article I want to write on pitch-relationships between various 16th and 17th-century instruments, so let me just now and then dash off a few words to try and tidy up small details. This time, back to Praetorius on English viol-playing.

I believe Eph Segerman had the last word, but fortunately he admits that languages are not his strong point. Nicolas Meeus' translation of the relevant passage is closer to the meaning, I think (cf. Q30 p.37 for Eph's, Q33 p.29 for Nicolas', p.32 for Eph again, and De Organographia p.44 for Praetorius'). Several expressions seem to cause misunderstanding: "also/daß", "vors...halten", "Stimmwerck", "Halten vor..." (nowadays "halten für...") has nothing to do with tuning; it is a standard idiom meaning "think, consider, imagine, have an opinion", etc. "Rechnen" earlier in the sentence can mean the same thing — and does in this context, I suspect. "Also" has not its modern meaning of "therefore", but rather "as if" (= als ob), or perhaps "for example". I'm not going to attempt yet another shaky translation of the paragraph. Instead let me talk over the sense of what Praetorius is trying to say.

Praetorius has not misunderstood the key of the English treble viol, as we know it — he doesn't even believe it exists! As far as he is concerned, the smallest existing six-string viol, which he calls "Cant" and also "Violetta picciola", is tuned in A in Cammerthon and has a string-length of about 40.5 - 42.5 cm. (depending on the measurer of his diagrams). His 6-string Tenor-Alt is in D (at 57 - 58.6 cm.) and his Klein Baß is in GG or AA (at 73.7 - 75.6 cm.), both in Cammerthon. *

We'll never learn whether Praetorius really knew what went on in England, or whether he just assumed it was the same as in Germany, although there were a number of good English string-players running around North Germany at the time to consult, e.g. Brade, Simpson, Dowland; however, what he says is, when English play otherwise (= Da sonsten) than in a group of viols, they tune the same as the Germans, and gives as an example (= Als nemlich...) the GG,D,A "Stimmwerck", i.e. a set of instruments (cf. De Organographia, pp. 12-13). However, when they play viols alone, he reports, they imagine they are playing on instruments in D,A, and e, which has the

* By the way, I fully agree with Herb Myers (Early Music, Aug. 1984, pp. 369-71) that Praetorius' Cammerthon/Chorthon was around a semitone above A=440. I've played several 16th and 17th-century sackbuts. Also one should consider the extant 16th-century recorders at this pitch-standard, e.g. the Italian ones in Vienna and the North German ones in Salzburg and München (cf. Bob Marvin's article in Galpin Soc. Jour., vol. 25). I'm sure other builders can add to the high-pitch list from the shawm and curtal departments, for example.
result in sound of transposing the piece down a fifth, since they are still in fact actually using the same large viols. Very practical, especially if your group doesn't have any treble viols — and I don't think they were very common, either in England or in Germany in 1619. (I suspect the tendency then was generally to use violins on top, or else to transpose down.)

What about his other transposition of a fourth? I should not worry much about it, since the whole thing is not a question of pitch-standard, but rather one either of fitting all the high notes onto low instruments, or of putting the piece where it sounds best on the particular instruments at hand — rather like the old transposing - chivavette question, isn't it? Singers nowadays do this all the time, you know; so do perceptive recorder, crumhorn, shawm and sackbut groups. ("Yes, yes, just play treble with tenor-fingerings!") Praetorius talks about this a lot too. He's really a very practical man — as you might expect after his recommendation (p. 34) to have 2-piece recorders built in order to follow the organ's straying of a quarter-tone between summer and winter. After all, the reason for his books was not to explain music ca. 1600 comprehensively to us 365 years later, but to inform his fellow Lutheran church-musicians how to deal with the tricky problem of combining voices and instruments in the new Italianate style of concerted anthems, motets, and chorales.

A glance at other Italian and German commentators on the viol, e.g. Gerle, Agricola, Lanfranco, Ortiz, Ganassi, Zacconi, Virgiliiano, Ceresa, Banchieri and Cerone, convinces that the 3 viol sizes were tuned to one another in variable relationships of a fourth or a fifth, so Praetorius' loose "sometimes a fourth, sometimes a fifth lower" doesn't surprise or bother me. It's adequate for these instruments. He goes into more detail over transposition for wind instruments which have greater limitations, e.g. the crumhorn. (A quick English-speaking summary is in Boydell's The Crumhorn ..., p. 83 ff.)

And the connexion of all the Italian information to England? There were already 2 viol-players at Henry VIII's court in 1526, but the 5 Bassano brothers also arrived from Venice around 1540, as famous players of viols, recorders, sackbuts, and as instrument-makers, bringing with them their instruments, and probably their high Venetian pitch (approximately equivalent to Praetorius' high-pitch Cammerthon). They, and other Italians who followed, apparently dominated English court-music for the next century.

SUMMARY: Praetorius says there were in England, as in Germany, 3 basic sizes of viol, relatively large by modern standards, tuned in Cammerthon GG (or AA), D, A, which played either at notated pitch with other instruments (i.e. highish in the viol's range), or transposed down a fourth or a fifth if only with other viols in order to take advantage of the more beautiful quality of sound thus produced.

A tiny harp made from bog oak

The Downhill harp of 1702, made by Cormac O'Kelly, is remarkable as having been fashioned from bog wood. A long legend inscribed on the harp's soundbox bespeaks the provenance of its timber. Joan Rimmer quotes the legend in The Irish Harp (Cork, 1977), p. 76, as follows:

In the time of Noah I was green
Since his flood I had not been seen
Until seventeen hundred and two I was found
By Cormac O'Kelly underground
He raised me up to that degree
The Queen of Musicke you may call me.

Since I first heard of this harp I have been fascinated by the idea of making instruments from bog wood. When a colleague recently gave me some freshly unearthed scraps of bog oak I resolved that somehow I was going to make them into a harp. I had very little usable wood to play around with: four pieces about 16" by 2½" by 1", and several yards of 1" by 1" lath. After gluing-and-screwing the four large pieces together to make a soundbox, I built up a quadrilaminar neck and forepillar from sections of the lath. (For the neck I laid a double layer of oak on each side of a 1/16" steel plate.) Then I drilled holes for the strings and tuning-pins, shaped, sanded and varnished the instrument, made a set of brass tuning-pins, and fitted fifteen strings. The finished harp — in form a small early medieval clairseach — works and sounds as well as any similar-sized instrument that I have ever heard.

My point in writing is to commend bog wood as a material for instrument-makers (especially harp-makers) in an age when well-seasoned timber is becoming almost unobtainable. I made my clairseach from tiny scraps, but bog oak can often be found in the form of large logs — more than large enough for one-piece harp soundboxes. It is grieving to realize that in Ulster alone many tons of the irreplaceable stuff are being burned every year as firewood. For every Cormac O'Kelly there are a thousand Philistines.

David Z. Crookes
I hope to have the sequel to my Observations (comm. 508) ready for publication in the next quarterly; in the meantime, here's a photograph of my first attempt at a reconstruction. It differs in several respects from the kitharas of comm. 508, and should be construed as nothing more than stage 1 in a process of trying to apprehend the ancient instrument.

I'm grateful to E.S. for inserting his figures at such short notice (my comms. must have arrived either on or after the deadline date). His Fig. 1 tallies with my 2.(ii), and to the extent that it can be relied on so does his Fig. 2. It is difficult to take the spike of Fig. 2 seriously — a perfect cone of base diameter c. 3"?

All I meant to say in comm. 546.2 was that the baroque solo cello was most often gripped between the legs senza spike-o, and that the modern spike is all wrong for baroque music.

Now to Fig. 3. Of course you can tune during rests or while playing open strings only, and it's perfectly valid to adduce Flesch in support (even though he's writing two centuries after Baron about an instrument other than the lute). But what are you meant to do when the music, e.g. Bach's C minor Gavotte I, allows you no such opportunity? Use your teeth? Perhaps E.S. will be kind enough to retract.

Anyhow, we're both missing the point. It is not the inability to retune while playing that makes people prefer nylon to gut: it is the high cost and impermanence of the natural material. But this is rather a dead horse to be flogged again.

* * * * * * * * * * * *

David Z. Crookes
The authentic sound is not the issue here. Musicians want quality as they perceive it and many are willing to go to an awful lot of trouble and expense to get it. Some years ago, with the help of David Rubio, we did a market survey of professional modern guitarists, comparing nylon and gutlon (gutlon is a plastic material we developed as a gut substitute but haven’t had the resources to produce and market commercially). The results clearly showed that the lower the inharmonicity in the string, the more it was preferred.

Inharmonicity is the degree to which the higher harmonics of the tone of the string are in tune with the fundamental. The more inharmonicity a string has, the fewer higher harmonics can be heard, and the higher ones that can be heard are weaker. One can separate the equation for inharmonicity into the product of an instrumental factor (which involves pitch, tension and string stop) and a string-material factor which is the elastic modulus divided by the square of the density. This latter factor (times $10^5$ in Nm$^2$/Kg$^2$) listed for common string materials in sequence of increasing inharmonicity is silver 0.7, brass 1.2, copper 1.4, gut 2.1, nylon 2.7, iron or steel 3.1 and aluminium 9.6.

So, with other quality factors the same, gut treble strings should sound better than nylon or steel, a point that discerning musicians already know.

If one wonders for a moment why we don’t use silver, brass or copper for trebles on our lutes and fiddles, the answer is that they break. The highest pitch a string can be taken to depends on the tensile strength divided by the density. The results can be seen on the String Calculator of Comm 162. Gut treble strings have the best combination of low inharmonicity and ability to take the pitch.

* These figures are from modern data, and (particularly with brass and copper) vary from source to source. Early string materials and modern ones in hand may differ somewhat, but relative position in this sequence (except for perhaps brass and copper) would most probably be the same. The general stringing principle is to have a high ratio of tensile strength to density to get the pitch in the treble, and then change string type to weaker but less inharmonic alternatives as one goes down to lower-pitched strings. Harpsichord stringing practices seem only to make sense if early brass was more inharmonic than early copper.


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From my collection of attitudes held by musicians and makers

1. Since complete authenticity is impossible and everyone claims it, the word is meaningless and should be dropped.
2. Since more authenticity leads to more beauty, the more beautiful alternative must surely be the more authentic (when there is no clear historical guidance).
3. Since beauty in any art can only come from the artist’s creativity, the only real contribution authenticity can make is one of atmosphere.
4. Since higher quality is always preferred, any quality improvement we make over an authentic original would have been welcomed in the old days, and so cannot be unauthentic.
I've been looking at the data on the two pikes' head (ie baroque) bows published by Watchorn in JAAMIM, Vol 1, No 1 (1932). He gave the up-down and side-side thicknesses at 5 cm intervals along the bow shafts. I plotted the up-down thicknesses and tried to fit ellipses to the curves, as had worked on the Tourte bow (I described this in Comm 379). It didn't work, largely because the shaft thickness decreased much more rapidly in the butt (or frog) end of the stick than any of my constructions in that Comm would allow.

The plot of the thickness against length of the Sydney H9338-1 bow that Watchorn measured seemed to be mostly two straight lines with some sort of rounding over an eighth of the shaft length centred on where the lines join at about 3/8 the shaft length (measured from the thinnest point at the head end). This led me to consider whether the thicknessing profile of any bow can be generated by working a series of flats on the original square-cross-section blank without the need for continuously monitoring thickness as one works the shaft to shape. I tried it on the logarithmic curve of the Tourte bow and, on paper at least, three flats (plus some of the blank left at the butt end) with a bit of rounding at the corners (up to .1 mm) should match the logarithmic curve to better than .05 mm (2 thou) accuracy all over.

There are many ways of generating flats that, with rounding on corners, will lead one to a desired curve. The procedure given here seems sensible and allows for a variety of different thicknessing schemes within it. The schemes are distinguished from one-another by where one initially decides to put the points A to E, which are given here as arbitrary. I assume that a bow maker will use the same thicknessing scheme for all bows of a particular model that he makes. For any particular scheme, the fraction of the maximum thinning of the shaft at any point along it is fixed, and that the maker responds to variations in the innate stiffness of the bow wood by varying the maximum and minimum thickness. The bow thicknessing procedure can then be imagined to be as follows:

1. Shape the shaft part of the bow blank to have uniform square cross section at the maximum final thickness.
2. Mark point A to E on the top surface of the blank at the appropriate points for the particular thicknessing scheme being followed.
3. Transfer point A to the bottom and side surfaces.
4. At the head-end of the shaft, saw or file cuts on the bottom and side surfaces to a test minimum thickness, with the thickness from side to side roughly equal to that from bottom to top.
5. Create flats on the bottom and side surfaces which go through the blank surface at point A and the bottom of the cut at the head end.
6. Test the bow flexibility near the head, and if it is too stiff allowing for the further flexibility that subsequent shaping steps
7. Transfer the B and C marks from the top surface to the other surfaces.

8. Create flats on the bottom and side surfaces which go through points B and C.

9. Test shaft flexibility near the head again, and if too stiff, repeat from step 4. If the shaft is too stiff in the butt half, move C towards the end or reduce the maximum thickness at that end (and transfer C again) and repeat step 8.

10. Transfer points D and E to the other surfaces.

11. Create flats on the bottom and side surfaces which go through points D and E.

12. Round off corners at D, E and C by eye.

13. Proceed with further shaping of the shaft and head.

The specification of the thicknessing scheme is given as the distance from the thinnest point (near the head) to each of the points A to E divided by the shaft length (call these 'a' to 'e'). For the Tourte bow, the specification is:


For the Sydney H9338-1 bow, the specification is:

'a' = 9/16, 'b' = 3/8, 'c' = 1 (the butt end), 'd' = 5/16 and 'e' = 7/16.

The thicknessing of Sydney H9338-2 shaft is quite anomalous. It goes from 9.1 mm at the butt end down to 8.0 mm at the 5/8 point, and then stays at 8.0 mm till the 7/16 point. From there to the head, the thicknessing is convex (and therefore reasonable). I suspect that it was made according to the specification:

'a' = 3/8, 'b' = 3/16, 'c' = 3/4, 'd' = 3/32 and 'e' = 1/4,

and was considered too heavy and so was subsequently thinned down further from the 7/16 point out, with reluctance to thin at the butt end so as not to disturb either the screw mechanism or the strength of the stick around the hair-fixing wedge, whichever was present at the time of subsequent thinning. Of possible significance here is that this is the only pikes-head bow I know of that is octagonal in cross-section along the shaft's total length.

The maximum and minimum thickness of the shaft are the course adjusters of the total stiffness of the bow and relative stiffness at the two ends. The values of 'a', 'b' and 'c' (as well as 'd' and 'e' to a lesser extent) control the details. Flexibility needs thinness and length to express that thinness in a bend. I would therefore think that a larger value of 'a' would give the head end more flexibility, and a 'b' greater than half of 'a' would give the middle of the shaft less flexibility. These characteristics are shown in the Sydney bow H9338-1. When 'b' is half of 'a' and 'd' is half of 'b', a particularly smooth thicknessing curve near the head end results. This is displayed in the two other bows discussed here. These bows are also longer, and this may be associated with the greater stiffness near the butt end that having 'c' away from that end offers.

In conclusion, I must point out that I am not a bow maker and cannot vouch for the practicality of this method of bow thicknessing from personal experience. If it is as practical and simple as it seems, I would not be surprised if most bows have been, and at present are thicknessed in a similar way. Bow makers don't often seem to be anxious to publicize their methods. I would appreciate information on (1) how bow makers actually do their thicknessing, and (2) thickness measurements on more old bows.
I've been doing some thinking about bow woods lately, particularly about early bows and a more available and cheaper substitute for Snakewood. Taking a lead from Ken Williams (Q25.9) I've done a little research and the result is the following table. My (arbitrary) criteria for choosing these timbers are that they should have a density of greater than 950 and be described as having a fine texture.

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Botanical Name</th>
<th>Density</th>
<th>Elastic $E$</th>
<th>Modulus of Rupture $M$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curupay</td>
<td>Anadenanthera macrocarpa</td>
<td>1050</td>
<td>18000</td>
<td>202</td>
</tr>
<tr>
<td>Ebony</td>
<td>Diospyros spp.</td>
<td>1010</td>
<td>17700</td>
<td>189</td>
</tr>
<tr>
<td>Ekki</td>
<td>Lophira alata</td>
<td>1051</td>
<td>16200</td>
<td>164</td>
</tr>
<tr>
<td>Greenheart</td>
<td>Ocotea rodiaei</td>
<td>1009</td>
<td>22000</td>
<td>190</td>
</tr>
<tr>
<td>Ironbark</td>
<td>Eucalyptus paniculata</td>
<td>1140</td>
<td>22700</td>
<td>236</td>
</tr>
<tr>
<td>Ironwood</td>
<td>Caesalpinia ferrea</td>
<td>1200?</td>
<td>-</td>
<td>- 1</td>
</tr>
<tr>
<td>Lancewood</td>
<td>Oxandra lancedaba</td>
<td>980</td>
<td>-</td>
<td>- 2</td>
</tr>
<tr>
<td>Lignum Vitae</td>
<td>Guaiacum spp.</td>
<td>1230</td>
<td>-</td>
<td>- 3</td>
</tr>
<tr>
<td>Missanda</td>
<td>Erythrophyleum</td>
<td>1030</td>
<td>15400</td>
<td>162</td>
</tr>
<tr>
<td>Mora</td>
<td>Mora ecelsa</td>
<td>990</td>
<td>19200</td>
<td>108</td>
</tr>
<tr>
<td>Partridgewood</td>
<td>Caesalpinia granadillo</td>
<td>1300</td>
<td>-</td>
<td>- 4</td>
</tr>
<tr>
<td>Pernambuco</td>
<td>Caesalpinia echinata</td>
<td>1050</td>
<td>19000</td>
<td>150 5</td>
</tr>
<tr>
<td>Pyinkado</td>
<td>Xylica xylocarpa</td>
<td>980</td>
<td>16100</td>
<td>145</td>
</tr>
<tr>
<td>Snakewood</td>
<td>Piratinera guianensis</td>
<td>1250</td>
<td>-</td>
<td>- 6</td>
</tr>
<tr>
<td>Tallowood</td>
<td>Eucalyptus microcorys</td>
<td>1010</td>
<td>20500</td>
<td>185</td>
</tr>
<tr>
<td>Wamara</td>
<td>Swartzia leiocalycina</td>
<td>1060</td>
<td>22200</td>
<td>225</td>
</tr>
</tbody>
</table>

Densities are given in kilograms per cubic metre. Elastic Modulus is a measure of the stiffness and is given in Newtons per square millimetre. Modulus of Rupture is a measure of the amount of bending before breakage and is also given in Newtons per square millimetre. The quoted figures depend on the specimen size and experimental method. The unreferenced figures are all from the same source and are consistent.

All figures from Gwendoline M Lavers-The Strength Properties of Timber HMSO ISBN 0 11 671356 9 except:
2 & 3 Handbook of Hardwoods HMSO SBN 11 480541 0
5 FOMRHI 25.9
1 & 4 Timberline stock list (both are described, however, as being Swartzia spp.)
6 International Book of Wood Ed.Martin Bramwell ISBN 0 85533 182 8

Figures for dense exotic timbers are not easy to come by as the incompleteness of the table shows. The figures for density are mostly for timber at 12% moisture content, but I would expect variation of plus or minus 100 on the quoted numbers for sample variation.

Unfortunately all I have managed to glean from this table is a list of questions, such as:

What was so good about Snakewood and is so much better about Pernambuco?
Is Partridgewood the equal of Snakewood and has anybody tried Ironbark?
Why weren't bows made out of Ebony or Greenheart?

I should be very interested to read people's comments.
1984 FoMRHI List of Members - 2nd Supplement as at 3rd October 1984

* in left-hand margin denotes a change of address or other change

**Joël Arpin, 11 Bd de la Liberté, F-93260 Les Lilas, France; t: 363-46-49 (recorder; M).**

**Edward Ball, 77 Marland Fold, Rochdale, Lancs OL11 4RF, UK (lute, vln; M,P).**

**A.C. Bashford, 3 Ash Grove, Magill, SA 5072, Australia.**

**Casey Burns, PO Box 8431, Missoula, MT 59807, USA (fl, bagpp, recrdr, tools; M,P).**

**Gordon A. Campbell, 11 Bellevue Park Road, Bellevue Hill, NSW 2023, Australia; t: 02-389 4559 (vln, rc rdr; M).**

**Robert Cross, 6 Lock Cottages, Malkins Bank, Sandbach, Cheshire CW11 OXP, UK; t: Sandbach 60861 (bar ob, curt1, shwm, bagpp; P).**

**Robert Dougan, 138 Lochview Drive, Millerston, Glasgow G33, UK; t: 041-770 5281.**

**Winfried Eggenweber, Neubaugasse 21/1/2/3, A-1070 Wien, Austria; t: 93-21-54.**

**William G. D. Fay, The Old School, Ardgay, Ross & Cromarty IV24 3BG, UK.**

**Johan Ghysoot, Zakstraat 8, B-2228 Ravst, Belgium.**

**Robert Greenberg, 2325 Third Street # 425, San Francisco, CA 94107, USA; t: (415) 552-1870 (hpschd; M).**

**Matthias Griewisch, Hostackerweg 2, D-6905 Schriesheim-Altenbach, West Germany.**

**Ian Harwood, 35 Grange Rise, Codicote, Herts SG4 8YR, UK.**

**Hendrik Hasenfuss, Forsten 48a, D-5067 Kürten, West Germany; t: 02265/7199 (lute; M).**

**Hubert Keller, Blumenstr. 19, D-6901 Mauer, West Germany; t: 06226/6636.**

**Mary Kirkpatrick, 1739 Slater Avenue Road, Ithaca, NY 14850, USA; t: (607) 272-2232.**

**Christian Kubli, Brunneracherstr. 4, CH-8174 Stadel, Switzerland; t: 01/858/2018 (organ, hpschd; M).**

**Graham & Maggie Lyndon-Jones, 20 Queen Street, St. Albans, Herts AL3 4PJ, UK.**

**Kenneth Marshall, Northfield, Errol, Perthshire PH2 7QH, UK; t: Errol 942-330 (plucked str instrs; M,R).**

**Imagard Knopf Mathiesen, Hulvejen 2, Stokkebyerg mark, DK-4450 Johannesburg, Denmark (rc rdr, trvrs, ren instrs; M,P,L).**

**M.J. Minns, Minns Oxford Ltd, 7 West Way, Oxford OX2 0JD, UK; t: 247840 (hpschd, M,R; woods, D).**

**Peter D. Nelson, 1 Westbourne Drive, Brentwood, Essex CM14 4PH, UK; t: Brentwood 222489 (brass instrs; R,P).**

**Martin Pühringer, A-414 Pfarrkirchen 39, Austria.**

**Thomas Rein, 2526 Regency Rd # 107, Lexington, KY 40503, USA.**

**James W. Robinson, 1413 S. King St, Suite 211, Honolulu, Hawaii 96814, USA; t: 944-8835 (violin; M).**

**Kevin J. Smale, 32 Homer Pk, Saltash, Cornwall PL12 6HH, UK; t: Saltash 7825.**

**David H. Spivak, RD2, Box 418, Emmaus, PA 18049, USA (gtar, lute; M,P).**

**Barbara Stanley, 21 Broad Street, Clifton, Beds, UK.**

**Martin Thren, Finkenherd 1, D-7811 St. Peter, West Germany; t: 07660-428 (fl, rc rdr; M,P).**

**Seizo Yokota, 1712-87 Minamiyoshimi, Yoshimimachi, Saitama, 355-01 Japan; t: 0493-54-4703 (hpschd; M).**

**Angelo Zaniol, Via Tomitano 3, I-31033 Castelfranco V.TO(Tv), Italy; t: (0423) 497107.**

**Martin Morris, 4 School Road, Kidlington, Oxford, UK; t: 08675-4964.**

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*apols; jm*
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Several colleagues have urged me not to waste my time replying to Overton's criticisms, using such terms as "You've made your views known; what use is there in repeating them? No serious scholar could possibly take his letter seriously" and "His confused and irrelevant reply will give [FoMRHIQ readers] a good idea of what his book is like. He's taken the rope and he's hanged himself!"

Nevertheless, I feel a reply is unavoidable for several reasons:

1) Mud sticks. I don't want to be accused of dodging.
2) He claims he is the victim of a conspiracy, of which I am part.
3) He misrepresents me. (See sections 7, 10, 12, 14 below, for example.)
4) He appeals to various eminent authorities, misrepresenting some of them too.
5) He casts doubt on my knowledge of German, and that's irritating!

Therefore the following remarks, which I will try to keep as succinct as possible.

On the first page of his reply Overton appeals to the authority of various eminent scholars, failing to realize that in so doing he is still not answering my specific, substantiated criticisms of his book. And in any case, with the exception of Dr. Karstadt (whose work on the cornett was done fifty years ago), these gentlemen are not cornett specialists. Overton, very significantly, is unable to call for support on such names as Dickey, Smithers or McCann. (The present writer knows what they think of the book but had better not quote them.)

All I can say in reply to the references to his supervisor, faculty and publisher is that the very fact that he has them behind him makes things all the worse. It was precisely because of the book's having such credentials that I made my review of it so very long and so specific. To explain how it got such credentials in the first place is not part of my job as a reviewer.

I nowhere condemned anyone to "near professional lunacy", nor did I say that Schott's are 'evoid of intelligence'. Similarly, I didn't devalue Dr Karstadt's "pioneer work on the cornett" — my point was that anyone making use of a thesis written some fifty years ago should check its facts and conclusions in the light of subsequent research. And although Overton now says "I freely acknowledge my debt to Dr. Karstadt's work", he did not do so with the necessary candour in his book, as footnote 51 of my review makes clear.

Overton implies furthermore that both Dr. v.d. Meer and Dr. Karstadt are enthusiastic about the book. That misrepresents both of them, as I found when I wrote asking just what they had in fact said about it.

Here are some excerpts from their replies:

Dr. v.d. Meer: "I have no idea, where Mr. Overton (or his publisher) have their quotations from. I remember reading the book in the summer of '82. I do not remember, whether the copy was from the author or not. If so, I may very well have sent a polite letter of thanks. I do remember putting a large number of question marks in the book, while reading it. ... I vaguely remember being asked to write a review, but refused on account of the very questionable contents of the book. ... Therefore, the quotation is not taken from a review, but from a letter, that I probably wrote (although I do not remember it) on receiving the book. ... Therefore, also, my comment was not ill-considered, but not considered at all, but merely polite. The other quotations also seem to be from letters received. This is not quite the right way to propagate a book. (The "other quotations" Dr. v.d. Meer refers to were polite "thank-you's" from other museum to publicize his book.)"
Dr Karstadt: "Sicher ist es richtig, dass an dieser Veröffentlichung eine ganze Menge auszusetzen ist. ... Daraus[From his review] entnimmt nun Herr Overton eine allgemeine Anerkennung, obwohl auch Kritisches in meinem Bericht zu lesen ist. ... Sie[his review] im Ganzen als positive Besprechung zu bezeichnen, entspricht nicht ganz meinem Bericht..." (I translate: 'It is certainly correct that there is a lot to find fault with in this publication. ... Mr Overton, takes [my review] to be a general appreciation, although my report also includes criticism. ... To call it a generally positive review does not correspond completely with my report.")

Overton further implies ("a small group of cornettists ... Mr Gretton and others of his circle ... this group") that there is a conspiracy to bash his book. Members of this conspiracy supposedly include Edward Tarr (and his Basel associates), Holger Eichhorn and myself. That very combination of names is hilarious and shows how out of touch Overton is. Doesn't he know just how little cooperation, let alone collusion, there is in the "world of the cornett"?

As to people having pre-publication access to his measurements — well I certainly didn't! I assume he is referring to Edward Tarr's citation of them in the Basler Jahrbuch für Historische Musikpraxis, V, 1981. I had nothing whatever to do with that publication — indeed my review of it in Stimulus, Sept., 1983 was severely critical of its partial reliance on Overton's measurements.

Since he can't find answers to my substantive criticisms he resorts to casting doubt on my knowledge of German. The quick reply to that one is simply to ask "What about Holger Eichhorn's German?" Eichhorn is the reviewer Overton refers to at the top of p.34 and is a native speaker of German. His review in Tibia, 2/1982, is just as scathing as mine.

In fact Overton's specific criticisms of my German can be disposed of with ease. The simplest thing is for me just to reproduce directly the passages he refers to so that readers can make up their own minds whether or not I've misrepresented him. (I have deliberately made my translations below literal rather than elegant.) The problem is not my German but rather his — see the misunderstandings and misquotes I point out in the review. Indeed one sometimes wonders whether he can actually understand what he's written — see sections 4, 6, 13 below, for example.

I stand by my review! The book is the work of a researcher who is enthusiastic but not scholarly (i.e. critically objective) and his reply is further evidence of rambling, sloppy argumentation, misinformation and unscholarly methods. He is just bluffing when he claims that all I have done is merely find "some [sic!] orthographical errors" (p.37 of his reply). My review was indeed harsh and "vitriolic but it was also wissenschaftlich". He writes as if it consisted of wild, unsubstantiated abuse, whereas it in fact gave quotations and exact references for each criticism. All the evidence is there! Let anyone who doubts me go and read the book as I did, giving it not just a superficial "flick-through" but a thorough analysis in the university library, checking "facts" and statements line by line. My (heavily!) annotated copy of the book is available to anyone who cares to come and refer to it — the faults I mentioned in my review are only some of those I found, but PoMRHTQ doesn't have unlimited space.
Replies to particular complaints:

1) He claims on p.29 that I feel it is a waste of time to visit small instrument collections. Rubbish! What I wrote was "Why waste time on Copenhagen and The Hague while omitting Berlin, Leipzig, Hamburg (!), and all Italian collections? In spite of being incomplete, his listings are entitled 'On the stock of instruments in European museums' without qualification and he draws statistical conclusions on the basis of this incomplete survey — for example 'Paris has the only two alto cornetts.'" (p.52 of my review) It's a matter of priorities — he examined minor collections while leaving out some of the most important ones. (His own story of his exciting "experience in Copenhagen" shows that he only got to see the moorfind by chance — it wasn't the object of his visit to Copenhagen.)

Far from believing small collections are not worth visiting, I think some of them are of the greatest significance — Oxford (Christ Church) for example. I was the one who urged him to go there. (His reason for not going is too silly for words — it has to do with British quarantine regulations!)

As to the Danish fingerhole horn: He now says it's "a dark-brownish animal horn." His book says "Holz oder Tierhorn" [wood or animal horn] on p.217 and "Tierhorn (Ziege?)" [animal horn (goat?)] on p.129. He now says it's "approximately 2000 years old" while his book says "ca. 3. Jh. (?)" [circa 3rd century (?)] on p.217 and "1. Jh. v.Chr. — 4. Jh. n.Chr. ?" [1st century B.C. — 4th century A.D. ?] on p.129. I know one can only date such artefacts precisely with the aid of advanced scientific methods, but such a proliferation of approximations hardly helps us.

2) What does he mean near the end of p.30 by "three university dissertations ... directly related to the appearance of the book"? In what way "related"? Instigated by it? Horrified by it and setting out to replace it?

3) (p.31, his "First...") I didn't translate anything, nor did I say he stated that cornetts have cylindrical bores. I in fact referred to his drawings, which do show cylindrical bores. Here is the relevant passage from his book (p.72):

> jedoch haben einige der späteren Instrumente, ebenso wie viele stille Zinken, einen verengten, allmählich sich öffnenden Teil sowie eine plötzliche Erweiterung vor dem ersten Fingerloch.

I translate: "however some of the later instruments, as well as a lot of mute cornetts, have a narrowed section, gradually opening section as well as a sudden expansion before the first fingerhole. a) Normal bore b) Suddenly expanding bore. Drawing 1. Bore of the cornett."

This is all very confused stuff. Illustrations and text do not agree — the illustrations clearly show cylindrical bores, but the text talks about a "gradually opening section". Something which is "gradually opening" is by definition not cylindrical. My reference was to the drawings.

To be perfectly clear: cornetts don't have anything like the long cylindrical sections he shows, not even partially. If we assume an outside measurement of some 18mm at the top of the instrument, then the bores he shows are only about 3.2mm. The cylindrical
section shown in drawing a) is about 68 mm long and there is no mouthpiece socket. The cylindrical section in drawing b) is some 54 mm long and the "sudden expansion" is enormously exaggerated. Such proportions are impossible; such instruments don't exist. The drawings are grotesque. Some cornetts do have a very short cylindrical section at the throat and some do have an expansion before the first fingerhole, but nothing like he shows.

I rather think Overton has misunderstood information he may have received from John McCann on the subject of cornett throats. To quote my own information as received from John: "I have found on a very few (1-2) instruments a short cylindrical portion near the mp socket — not more than 2 cm. I figure this was done to dress up the socket or throat because of uneven halves — not a design feature. I made an instrument like this, but it seemed harder to blow." (This particular instrument of John's has been hanging on my wall for years! PG)


I translate: "The cornett player was often advised to take thorough singing lessons early on, so that he could play the notes [or sounds] on his instrument quickly and exactly. He had to have a well-formed mouth-position [or mouth-formation] and 'make himself a good embouchure on the mouthpiece, so that such dissonance and unpleasant sound should no longer offend rather than delight the ears and minds of the hearers.' The movement of the fingers had to be coordinated precisely with the movement of the tongue and the embouchure, so that music of high quality was produced. That required, however, long and persevering practice and a secure accentuating of the fingers to the fingering system." This certainly is talking about learning to play — singing lessons, coordination, practice..... I repeat what I said in my review: the (mis)quotation from Praetorius is taken out of context and in fact refers to warming up before a performance.

5) (p.31, his "Thirdly...") Here are the references to Bernward on p.90 of his book:

I translate: "the fact that the final form of the cornett is to be found relatively early, at least circa 1015, a conclusion supported by the Bernward Column in Hildesheim."..."The cornett was [already] established as an instrument for dance music in 1015, when Bernward shows [sic] a cornett-player accompanying a dancing Salome." I am prepared to accept that Overton doesn't actually believe that Bernward constructed the pillar himself. The reason I mentioned this sentence in passing was as an example of his carelessness of expression. (Notice, in this connection, how "ca.1015" becomes "1015" tout court within just a few lines of his argument.)
6) Wrote "instruments and embouchures", but in any case the passage he translates is not the only relevant part of p.84 of his book. I was actually referring to:

a) These five representative illustrations seem to allow the conclusion that the players' embouchures were dictated by the respective position of the player (7) and the choirbook.

b) One could conclude from the use of curved cornets in the choir, as shown in the Breughel and Galle depictions for example, that the ratio of left-curved cornets to right-curved cornets is dependent on the position of the choir in the church. Although there are no definitive figures for the number of choirs which stood on the right or left side of the church, the assumption of such a dependence would help to explain the abnormally large number of left-curved instruments still preserved in museums (23 of a total of 38 curved cornets).

c) The side embouchure for the playing of more simple melodies, which is explicable from the position of the cornett in relation to the musicbook, had to give way in the Baroque to the middle embouchure for the performance of more richly ornamented music because of the better resulting sound.

These quotations alone are surely enough to show just what sort of musicologist Overton is! I shall restrict myself to three comments:

i) His remarks about the "abnormally large number of left-curved cornets still preserved in museums" are statistically worthless, since he examined only some of the surviving instruments.

ii) Several well-known baroque sources (Mersenne, Bismantova, Speer) state clearly that the side embouchure was the normal one. He seems not to know them.

iii) As to the side embouchure being ineffective in "reicher verzierungter Musik" — has he never heard records of Bruce Dickey or Roland Wilson?

7) (p.31/32, his "Fifth...") It is indeed the "close association of the mouthpiece with the instrument" which he questions on p.121 of his book. Does he not see that the corollary of such doubts is that the mouthpiece itself is not original, since its claim to originality depends on that close association? (Is that too subtle a train of thought for him?) As to "poorer seating qualities": the mouthpiece actually fits the socket closely, as is shown clearly by the much enlarged X-ray of the top of the instrument with the mouthpiece in place) which is printed on p.254 of the Basler Jahrbuch. (My personal
opinion is that one has to take into account the use of thread as a sort of gasket when deciding whether a mouthpiece fits a particular instrument.)

8) (p.32) I used neither the word "historically" nor the word "historical" when writing about mouthpieces in my review.) Pages 77 and 83 of his book clearly show that he took the mouthpieces in the museums to date from the period when the cornett was still in use.

9) (p.32) As my review points out, most of the "massive amount of written information ... added to the consciousness of the musical world" by his book was already published. He was using almost entirely secondary sources.

10) (p.32) If he's going to work on the Dinkelsbühl archives I hope he can read old German handwriting better than he can the typeface of Syntagma Musicum!

11) (pp.32-33, his remarks about Roman instruments)

a) May I remind him that he was writing a book on the cornett, not a "history of European lip-reed instruments"[sic]?

b) If he thought Roman instruments were relevant he should have stated how — the "pertinent reason for the inclusion of these particular mouthpieces" is not stated in his book. Is he now saying, as this section seems to imply, that the cornett developed as a combination of a Germanic "finger-holed horn" with a Roman mouthpiece? This connection is not made in the book.

12) (p.33) I didn't make any "remarks on the extraneousness of ... the Germanic areas."

13) (p.33, his remarks about the Liliencron poem of 1879)

He now says "This poem is the last known 19th century musical usage of the word, Zink, in the German language." That's rather different to what he says in his book, where he quotes the poem not as the last usage of the word but as the last reference to the instrument itself:

Dieses Gedicht hat eine Militärparade zum Thema; Liliencron war nicht nur ein erfahrener Offizier, sondern - während eines Aufenthalts in den USA - auch Klavierlehrer und Maler. Die ersten beiden Strophen stellen die verschiedenen Arten von Instrumenten in der romantischen Militärkapelle dar. Es handelt sich bei diesem Gedicht um die letzte bekannte Erwähnung des Zinken im 19. Jahrhundert:

*Diingling, boom boom and tschingaada,*
*sieht im Triumph der Perserschah?*
*Und um die Ecke brausend bricht's wie Tubaton des Weltgerichts, voran der Schellenträger.*

*Brumbrum, das grosse Bombardon,*
*der Beckenschlag, das Malikon,*
*die Pikkolo, der Zinkenist,*
*die Türkentrommel, der Flötist,*
*und dann der Herre Hauptmann.*

("The subject of this poem is a military parade; Liliencron was not only an experienced officer but — during a stay in the USA — also a piano-teacher and painter. The first two verses show the various kinds of instrument in the romantic military band [sic].

This poem is the last known mention of the cornett [sic] in the 19th century:

*Diingling, boom boom and rattata,*
*is the Shah of Persia passing by in triumph?*
*And round the corner it [the sound] breaks forth with a roar like the sound of the trumpet at the last judgement, with the "Iingling Johnnie" bearer at the head.*
Oompah, the big bombardon,
the cymbal-clash, the helicon,
the piccolo, the cornettist [Zinkenist],
the Turkish drum, the flautist,
and then the Captain.) (Translation PG)

Does he really mean to say that the cornett (note the spelling) was used in German military bands around 1879??? What a gas if he does! Sorry, then, to be a spoil-sport because I have to point out that the poem, which he himself quotes, doesn't actually use the word "Zink" but "Zinkenist", which doesn't always necessarily mean a player of the cornett. He should know that!

14) (p.33) Nobody said his book should be "concentrated solely on Italy." I did say "the history and use of the cornett in its heartland, Italy, is very thinly covered. The book deals almost solely with Germany." (p.51 of my review) How can one write a general history of the cornett without devoting a great deal of space to Italy?

15) (Last two paras. of p.33) This is really pitiful! Does he still not know who Dalla Casa was? He writes as if he was only a player, and only one of my "stars". Does he not realize that Girolamo is the Italian form of Hieronymus? Has he never seen the title page of "Il vero modo di diminuir..." which gives its author's name as "Girolamo dalla Casa detto da Udene [sic]? (His comments are reminiscent of the way he enters Cesare twice in his list of players, once as "Johann Martin Caesar" and once as "Joan [sic] Martino Cesare").

Why am I telling him all this? — After all, he's the one with the PhD on the cornett! Doesn't he know why Dalla Casa is important and should have been dealt with in his book?

16) (Middle of p.34) When I wrote "while Overton was writing, two of the very best contemporary cornett-makers had their workshops only a bus-ride away from the University of Cologne" I was obviously not referring to John Hanchet, but to Roland Wilson and John McCann. With John McCann I have discussed not only cornetts and leather-tooling but also Overton's book. John is a diplomat by profession and says I'm not to quote his opinion.

17) (Penult. para. of p.34) Just what does he mean by "others were now measuring instruments with a system remarkably like mine, whereas before no such system had appeared." Just what is that supposed to mean? If it's a dig at the Basler Jahrbuch then perhaps one should say that its authors measured instruments in the normal way, which includes being bright enough to take some internal measurements too!
FoMRHI Comm. 567  MAKING MILD STEEL ('FLAT-STOCK') REAMERS

by Andy Willoughby
in consultation with Caroline Walker, Mathew Dart, Mike Ransley and Eric Moulder.

We were taught how to make these reamers by Graham Lyndon-Jones and Eric Moulder. They are cheap in cost (if you can get the mild steel!) and are made without the use of a metal-work lathe. It is an especially useful method for making very long reamers or reamers for instruments with a bell, e.g. shawms, or if you haven't the use of a metal-work lathe. But they can be very exhausting to file, especially very long 'D' section ones.

Because they are made from mild steel they will not last as long as reamers made from silver steel, but they can be made a little longer than necessary to allow for resharpening.

TWO SORTS - RECTANGULAR OR 'D' SHAPED IN CROSS-SECTION

The reamer may be 'D' shaped in cross-section, as in Example 1., or it may be rectangular in cross-section, as in Example 2.. If you are making a 'D' shaped one, it is suggested you use flat-stock that is thick enough for about 1/3rd. of the cutting length of the reamer to be a complete 'D' in cross-section.

MATERIALS NEEDED

Flat-stock (bright finish) Mild Steel - it may be difficult to obtain this in small quantities.

Metal-cutting Bandsaw, or a Hacksaw.

Metal Rule, Dividers, Metal Scriber, Metal Punch, rough and fine Files, Vernier Gauge, and Draughtmans' Circle Template.

Marking-Out Blue, or Copper Sulphate solution.

COPPER SULPHATE SOLUTION

This can be used instead of Marking-Out Blue, to put on the mild steel so you can see clearly the lines you scribe into it. It has the advantage that, unlike Marking-Out Blue, it will not rub off.

The metal should be cleaned thoroughly with 'wet-&-dry' abrasive paper and then wiped with meths before applying the solution. It may take 15 minutes or more to dry.
FOR THE HANDLE

EXAMPLE 1

MAKE REAMER 'D' IN SECTION WHEN RADIUS COINCides WITH THICKNESS OF STEEL

CROSS SECTIONS

BORE

REAMER

AB = Ø
MARKING-OUT THE REAMER

To mark-out the 'D' section reamer, you just need the diameter measurements of the bore. To mark-out the rectangular-section reamer you need to calculate the width of the reamer necessary, because it will be different from the actual diameter of the bore you want.

\[ \text{AC} = \text{width of reamer necessary for } \phi AB \]
\[ BC = \text{thickness of flat-stock steel} \]

**PYTHAGORAS' THEOREM**

\[ AC^2 + BC^2 = AB^2 \]

We know AB (the diameter of the bore), and we know BC (thickness of the flat-stock).

But we need to know AC.

So, if \[ AC^2 + BC^2 = AB^2 \]

therefore \[ AC^2 = AB^2 - BC^2 \]

therefore \[ AC = \sqrt{AB^2 - BC^2} \]

This is easy to work out with a Calculator.

Some people find that rectangular-section reamers do not cut as well as 'D' section reamers.

**METHOD**

Saw off a length of the flat stock mild steel, allowing for the length of the reamer plus an extra 100mm. for a handle and another 20mm. or more for safety and for resharpening.
Cover one side with a coating of Mark-Out Blue, or copper sulphate solution, as described above. Scribe a single line all the way down the centre. Mark off the portion at one end for the handle, plus the extra bit. Along the centre line scribe a line across the reamer at the various positions where the width will be measured. Then punch, with a metal punch, where the two lines cross.

With dividers set to the required diameter measurements, scribe a circle around each of the punch marks. Then scribe a line each side connecting where the circles pass through the cross-lines. This gives the accurate outline of the reamer.

The end with the handle will be the wide end of the reamer, i.e.
Saw, either with a metal-cutting bandsaw or by hand with a hacksaw (much slower!) close to the lines outlining the shape of the reamer - BUT DON'T GO RIGHT UP TO THE LINES!

IMPORTANT NOTE

You must make the reamer along the middle of the length of steel. You cannot save metal by using just one half of it because it will bend when you saw it, so you need to saw equally both sides to keep it straight.

Also, when sawing, first do a little one side, and then a little on the other side, and so on, to keep it straight.

\[\text{i.e.}\]

When sawn, file nearly up to the line, but leave a little over (e.g. 0.2mm) for final cleaning up later.

'D' SECTION REAMER

If you are making a 'D' section reamer it will now need to be rounded to fit the circle of the bore. Because the flat-stock is flat and of uniform thickness, more filing will need to be done at the smaller diameters than the larger.

CROSS-SECTIONS AT VARIOUS POSITIONS ALONG THE REAMER
To achieve the right curvature for the diameter of the bore, check with a draughtsmans’ circle template, or other circle gauge.

**CROSS-SECTIONS**

- **REAMER**
  - **Ø NO GOOD!**
  - **REAMER WILL NOT CUT**

- **REAMER**
  - **Ø O.K. BUT TOO MUCH FILED AWAY**
  - **IT MAY ‘JUDDER’ OR CUT OVERSIZE**

- **REAMER**
  - **Ø JUST RIGHT!**

**ANOTHER IMPORTANT NOTE**

Put Marking-Out Blue down the sides of the reamer before filing, and be careful you **don't** file away the Blue on the cutting edge, or the reamer will be undersize.

**cross-section**

- **file here**
- **DO NOT file here!**
When filed to the right curvature, very carefully file, with a fine file, to the exact diameter, measuring with vernier calipers.

When trying the reamer for the first time, put Marking-Out Blue along the rounded sides, and then try reaming the bore.

Then take the reamer out and have a look at the sides - if the Marking-Out Blue is not rubbed away on the cutting edge, then the reamer is not cutting and more needs to be filed away above the cutting edge.

Either side of a 'D' section reamer can be the cutting edge. So the reamer can be turned either way when reaming.

METHOD FOR MAKING THE RECTANGULAR-SECTIONED REAMER

With these reamers, most of the filing is avoided. After marking-out, saw close to the line, as with the 'D' section reamer, and then file up to the line.

These reamers have 2 cutting edges and 2 non-cutting edges, but they can cut in only one direction, so decide which way the reamer is to be turned, clockwise or anti-clockwise (clockwise is usual, and it can then be power-turned in a lathe if wanted), and therefore which 2 of the 4 edges are to be the cutting edges.
To stop the non-cutting edges from dragging, file them away very slightly.

**CROSS-SECTION**

- **BORE**
- **REAMER**
- **FILE AWAY HERE**
- **CUTTING**
- **FILE AWAY HERE**

**THE HANDLE**

A handle may be made from wood, e.g.

- or a large tap wrench, or similar, can be used if you have one.

The handle should be as large and as heavy as possible - it makes the reaming easier.

If a wooden handle is used, one or two holes can be drilled through both the handle and the reamer and a bolt put through, making it easier to pull the reamer out of the bore when finished.

**POWER REAMING**

It is possible to put these reamers in a (very slow! (100r.p.m.)) lathe to ream, if the reamers are not too long.
One method is to saw a slot in a short thick rod of steel, for the reamer handle to slot into.

Then drill a hole (on the centre line) of the reamer and through the steel rod, and bolt them together.

Hold the rod in a 3-jaw chuck on the lathe.

\[\text{3 JAW CHUCK}\]

\[\text{REAMER}\]

\[\text{BOLT SECURING REAMER}\]

\[\text{STEEL ROD WITH SLOT FOR REAMER}\]

\[\text{END.}\]
TO HELL WITH "WHITHER" - IT'S "WHAT" THAT COUNTS.

I've been interested by the total lack of any reaction to Paul Gretton's Comm.502 in the January issue. It is, of course, possible that some of you are still brewing three-volume replies, but it seems likely that most of you feel, like me but presumably unlike Paul and Eph, that there doesn't need to be any "whither" about FoMRHI. J'y suis, j'y reste, as the man said. Anyway, I deliberately held back from making any comment till it seemed as though everyone else had had a chance to do so, but there are a few things that I'd like to say and which, as the person who probably spends more of my day-to-day time than anyone else (wastes more of my... perhaps Paul would say), perhaps I'm entitled to do. Those uninterested in whole matter can now skip to the next Comm.

I think that FoMRHI has done and is doing a worthwhile job. There has been a lot of solid information in it and it is, of course, bad luck for some people that there hasn't been any, or hasn't been much in some particular areas, perhaps the only ones that they are interested in. Certainly I have learned a good deal (but then I am interested in areas in which I have little or no expertise as well as in those in which I have), and I would have thought that even the most "really eminent makers of historical instruments", to quote Paul, would have learned something, if only what other equally eminent makers were thinking and were up to.

When we started it, at a gossip session in our living room in Dulwich the night before the Early Music Exhibition in 1975, of course we hoped that everyone would join in and that everyone would contribute helpful information. Equally 'of course' we were wrong, and not everyone has. But what counts, as far as I'm concerned anyway, is the large number of people who have joined in and who have helped others with information. We've not all agreed all the time - do you know of any specialist field where you can tackle two experts without getting two, and more probably three, mutually exclusive and contradictory opinions? The great advantage of FoMRHI, and the great advantage of not having a real editor but just having someone who slings it all together and puts numbers on Comms and pages, is that in FoMRHIQ you'll get all three opinions, probably all next to each other, and you can take your choice. In an organisation that's worrying about its image and about what the "really eminent..." think, you'd probably only get one, and you might not get that if it was thought to be contradictory and contentious.

I'm afraid that sometimes I think that what Eph has said (to take one contributor among several) is a load of crap; and I know for a fact (because he's said so both to me and in FoMRHIQ) that Eph thinks the same about some of my things. Fine. That's what we're here for, and one of our most important functions, I think, is to be here for just that purpose. If some people, to take points from Paul's Comm, want to write up and use polyurethane sound-board finishes, that's their worry; anybody who objects can do so in the next Q. And the same applies to fibreglass lutes and reecs. Some of you will remember the great Comm.100 controversy and will remember that I was heavily on the side of cheap instruments for beginners - the chap who has a Zen-On 'Bressan' today will buy a good wooden one tomorrow (or he will if he can find a good wooden one that sounds as much like the original Bressan as the Zen-On plastic one does).

Eph is right: our purpose (see the Membership Form) is to promote authenticity, but that doesn't mean (much as I liked Tim Hobrough's
idea of 'back to the adze' — it's a nice tool to use even if one does find chips for months afterwards in odd corners of the room) that we have to throw away all our machine tools. We all meander (and do I mean meander!) towards or around authenticity. Even if we agree what authenticity is (and all readers of FoMRHIQ will know that we don't), one man's authentic is the next man's bogus (one man's fish is the next man's poisson).

I think I've maundered enough. Let's sum it up: I enjoy FoMRHI and I know that some of you do. If some people don't, they don't have to join. I reckon they're missing something; they reckon that they are avoiding being contaminated (and that they're saving their money). They're happy not being members; I and any of you who decide to renew for next year are obviously happy being members. So we're all happy, or as happy as is practicable in the world we live in, so let's stop worrying about 'whither FoMRHI?' and just get on with keeping it going with news, techniques, arguments and disagreements. Enjoy it.

FOHMRI Comm 569

Richard Shann

The transition from octave to unison stringing at the onset of the Baroque + apologies

One of the perils of writing FOHMRI Comms is that one tends to adopt a casual style which may leave the sense open to misinterpretation. I must apologise to Denzil Wraight for creating a wrong impression (see his Comm. no. 538). What I said in FOHMRI comm 537 was

"...the evidence concerning Italian double harpsichords with a 4' on the upper manual is much shakier than I thought...Denzil Wraight...tells me he hasn't seen any genuine ones..."

What I meant to say was 'with 4' only on the upper manual', and I should have made it clearer that I didn't mean Italian doubles in general under 'any genuine ones'. I think Denzil has made it clear that there were some Italian double manual harpsichords. The dispositions adopted on them remains a topic for more research, especially if more instruments come to light.

I'm afraid Denzil rather obscures the point of my Footnote 35 in his comments upon it (Comm 536, top of pg 21). I was not suffering from the Hubbard-Russell specious uniformity of Italian harpsichords syndrome (for more on this - the myth that the Italians made the same sort of instruments in the 16th as in the 13th centuries - see John Barnes' contribution to 'Keyboard Instruments', Ed. Ripin, EUP (1971))

I have been pushing for some while now, the notion that the shift to the Baroque was accompanied by the shift to 2x3'. I went into print on this in a hand-out I did for the '79 London Early Music Fair. Certainly the timing is suggestive: the Italians are always said to have 'gone Baroque' circa 1600 and the Northerners circa 1650. Anyway, I was being too cryptic in my GSJ article. What I said in footnote 35 of that article was quite correct: the Italians who altered the 1638 Ruckers (ca 1700 at least, since the lid painting was done in Flanders in the second half of the 17th century) had indeed an evident dislike of the 1x8', 1x4' disposition. By contrast in some parts of the Northern domain the 1x8',1x4' still had its lingering admirers, as shown by the last Couchet instruments (ca 1680) which were so disposed.

One further point on this: Eph Segerman tells me that this shift is not exclusive to the harpsichords; the wire strung fretted instruments were all octave-strung in the middle of the 16th century, the Italian ones going to unison stringing later in that century, while the French and probably the Flemish hung on into the seventeenth century before changing.
The colour of the Ruckers' wood-grain paper

Richard Shann

One of the noticeable things about the Ruckers' wood-grain paper is the variability of the colours one sees on the surviving examples (egs Michael Thomas's 1635 Ruckers, the Smithsonian virginal, the Traquair House Ruckers, the Stockholm virginal, the Hague quint harpsichord, The Brussels 4 1/2 footer, etc) excluded in this article are various non-Antwerp 'Ruckers' papers from the 18th century on). G. Grant O'Brien suggested (EM October 1979) that the earlier papers (eg the Bruges polygonal, the Milan mother & Child etc) were printed in Sienna or Ochre, with the later greenish ones done in terre verte, and that the change was made with the idea that the later papers should be in imitation of silk not wood. It seemed to me that a simpler explanation could be had if the Ruckers had used an eratic, non-permanent ink for the printing. The earlier Ruckers instruments generally show a higher standard in the decorative work, while the onset of mass production could well have lead to the substitution either of an inferior pigment or a lower grade of the same pigment.

At the Early Music Fair in 1981 I had a brief conversation with Ann McTaggert, who mentioned that Peter had been looking at some of this paper under the microscope and, although she was not able to give me full details (because of a forthcoming book) she did mention that one of the two pigments involved was unstable. This rang bells with a story I had from Thomas and Rhodes: if I understood it aright, a paint manufacturer at the turn of the century was having trouble with the terre verte supplies, and substituted a mixture of orpiment and carbon black. (The black has to have a bluish not brownish undertone.) Orpiment is a brilliant yellow pigment which is not reliably permanent, showing a tendency to fade. Thus such a mixture would tend to turn greener and drabber with age. Following this line of thought, I have (for the past two or three years) been making up my inks for the wood-grain paper from a mixture of yellow and black pigments, and find that if I increase the amount of yellow considerably from that needed to achieve a match to a typical surviving hue, then the resultant print is once again a reasonable imitation of wood-grain.

So my guess is that it was intended to imitate wood all along, and that the currently popular green papers available from several sources need re-thinking. The majority of instruments that these papers are destined for are not the C-short octave instruments of the Antwerp-Ruckers, but are usually intended for music of the 18th century. In this case, the 18th century appearance of the Ruckers papers would be appropriate (though it was more typical of the 18th century to replace these papers altogether). This 18th century appearance would have been somewhat faded towards the greenish hues we see today, with perhaps some patchiness.

While on the subject of 18th century Ruckers and their appearance due to ageing, does anyone have any practical experience of faking soundboards to look old? It must have been done by the 18th century French makers when they made 'Ruckers' harpsichords, and if done honestly to get the 18th century appearance it could be both justifiable and look attractive.

I'm afraid I'm not 100% at keeping up with the Journals, especially the foreign language ones, so if more has been published on the above in the past year or so I would like to hear about it.
Scraping Plane for Mouldings in Wood

I've made harpsichords cutting mouldings with an L-shaped scratch stock, well shown in Comm 476 by I.D. Hendry. Such a tool can be both rewarding and frustrating to use. Any twisting and the moulding is gouged; any tipping alters the depth of cut. This can happen especially if the profile being worked is deep and/or wide. The mouldings stuck onto Italian harpsichords are numerous, seven or eight profiles being typical for a given instrument. One may be as much as 26 mm wide (praise to Henkel's catalogue again). To reproduce them, one might feel the scratchstock to be necessary, the alternatives beyond it being to have a set of moulding planes or have a set of custom-created router bits. Both of these options are obviously expensive and, like creating bentsides on forms, inherently limiting—one is likely to become wedded to these shapes, although the world isn't. After presenting my problems to a planemaking friend, I got his advice on how to build a scraping plane for wooden mouldings.

The chief differences in this design (see plan) and that of the L-shaped scratchstock is that the body of the plane lies in line with the direction of cut; there is a fence long enough to keep the tool securely pressed to the board upon which one is working the moulding; and there is a simple means to allow one to begin with a shallow depth of cut, increasing it by small amounts, as complex, large profiles are worked. The wedge held by the crosspin supplies enough friction to keep the blade from riding up. To lower the cutter, one can tap downward either on the wedge or on a separate piece of cutterstock inserted behind the wedge and bearing upon the cutter itself. There is a sawcut on the inner face of the fence. This cut is made with a dovetail saw or bandsaw blade equal in kerf to the thickness of an old scraper or other source of tool steel one chooses as cutter-stock. The cutter, as in earlier outlines of making this tool, is filed to the reverse of the desired moulding profile, and a 2mm "margin" is left to fit into this vertical slot. Other elements of construction are presented by the plan.

One can assemble the pieces of the plane body with proper alignment by boring small holes and filling them with toothpicks as registration guides. Then drill the holes for the crosspin, before gluing up the body (with pin in place). I cut the cylindrical shoulders of the crosspin before rounding the block that will become the pin. A "plug-cutter" (American: other?) in a drillpress and an L-shaped jig to locate this block ensure accuracy in the difficult chore of keeping the tenons straight and aligned. I use a wedge of ash; it must project above the top of the plane. The plane itself should be made from the hardest wood you have readily available. Somewhere near the 10th mile of moulding, both the sole and fence develop grooves toward the ends of the plane. These disappear at the site of the cutter. They harmlessly indicate the rocking motion inevitable while using members of this class of tools. Such a plane is obviously helpful in restoration of missing sections of moulding: the cutter-to-be can be filed to conformance with any surviving moulding. I file the cutter straight across.
This Comm amplifies Richard Shann’s Comm 540, “Bending Harpsichord Bentsides.” It refers also to earlier Commos on bending (Rose 290; Way 308; Kalsbeek 356). In the past I’ve made bentsides using steam as the plasticizing agent; I’ve sprung thin boards into curved shape by nailing them onto bottoms cut to the desired curve; I’ve built a few massive laminate forms that resemble curved veneer presses; lastly, I’ve built an iron. Richard generously sent me a copy of his plan for a large bending iron some months ago. I’m pleased with the bending my iron has produced. Besides telling about this iron, I want to present something on antique harpsichord makers’ woodbending and intersperse comment on different processes of bending.

First, history. Frank Hubbard’s Three Centuries of Harpsichord Making (Cambridge, USA, 1970) remains the central collection of data on this topic. Hubbard gives inventories of workshops, referring not only to "machines" for bending (pp. 290, 291, etc), but also to "a lead trough for soaking bentsides, with the bending form" (n. 291). Out of the vagueness of these notarial jottings has coalesced a formula: soak wood in trough; bend on form; wait for wood to dry (see Rose, 290). OK for one at a time. But documented clearly is the fact that 18th-century French makers could work upon a larger scale than "low levels of output (associated with elaborate instruments for the aristocracy)" (Shann, 540). Shops had on hand "Eight curved pieces .... Thirteen curved planks," etc (Hubbard, pp. 290, 302). My guess is that some builders made up batches of pieces and then assembled cases, a procedure similar to that of good-sized shops today and certainly true of Kirckman’s. The French bentsides apparently were freestanding when recorded. No notice is taken of holding forms, restraining wires, nor of the curved pieces being lashed together to preserve their bends.

Here, a word on Lay’s mention of the unbending of steam-curved bentsides (Comm 308). I first heard of this sad development some years ago, when a nearby builder used a simple sheet-metal steam box, heated from beneath with propane stoves. He heated "Flemish" bentside blanks and pushed them into shape on his form. The curves seemed to set before he removed them. Some weeks later, however, they began to straighten out. Thus we seem to have a contradiction between modern experience and a historical record: today's makers steam bentsides that unbend; older makers soaked bentsides that didn't. A passage from the Wood Handbook (U.S. Dept. of Agriculture, pp. 301-303) might apply: "After a bent piece of wood is dried, the curvature will be maintained unless the wood undergoes changes in moisture content. An increase in moisture content causes the piece to lose some of its curvature. A decrease in moisture content causes the curve to become sharper, although repeated changes in moisture content bring about a gradual straightening." The builder’s problem might not be how to bend wood but how to stabilize the atmospheric moisture content within the workshop, in order to keep freestanding bent wood from unbending. Now? Live and work in a salt mine? My shop, along San Francisco
Bay, is blessed with fairly constant humidity. But the Lufft hygrometer swerves; the humidifier and dehumidifier alternate rumblings. I poke prongs into planks to divine their watery nature. Everything changes, wrenched by Heraclitan instability.

A possibility steamers might consider is not to hold back on the heat. Metal boxes radiate heat; plywood boxes retain it far better. Some years ago I assembled a steam-chamber that has had annual use without degrade. My steam-source is a rented wallpaper remover. The box gets very hot, especially where the steam enters, around the portion of the wood that will receive the greatest curving. To me, high heat and lots of steam are significant for successful, quick steam-bending.

Shann may be correct that there is no evidence that the process of steam-bending is "authentic." But boatbuilders and chairmakers in the USA have used it from colonial times. The major problems I have with the process are that it is uncertain during and after. That is, any flaw in a bentside blank can quickly rupture. From the point of view of a "copyist," even worse is that the wood is likely to bend according to its own will, the final curve only approximating my plan. Laminating curved sections has contrary virtues: stability, strength, and great accuracy. Thus, until I built a large iron, my trade-off seemed to be between the quasi-historicity of steaming and the shameful certainties of laminating.

Enter Richard's hot iron. Mine differs from his in having a helically curved plate, 3/8" (10 mm) thick. Its radius of curvature decreases progressively from 32" (81cm) to 12" (30 cm). To work this curve, a steel fabricating shop needs to heat the plate and slowly feed it into a heavy pressbrake. They followed a plywood template I supplied. My heating element was designed by a ceramic kiln engineer. The crosspiece against which wood is braced for bending mounts in different locations along the run of the plate, to give either larger or smaller radii. Bridges, liners, mouldings, everything wraps around and can be quickly checked during bending upon one's plan. Changes or corrections in curves are simple and can be wrought at an easy pace, without stress.

"Checked upon one's plan." Flemish builders have left us the plans they used, scribed on the bottom boards of surviving instruments. The clearest evidence at hand of this is a photo of the bottom boards separated from the 1644 Andreas Ruckers harpsichord at the Vleeshuis, Antwerp (repr. Tage alter Musik in Herne, Das Cembalo, 1981, p. 70). Scribe lines locate the case rim, footer frame members, and register positions. Unnecessary if the bottom is merely a late appendage to the instrument. Essential if the bottom boards form a "builder's template," guiding what to make and where to join the pieces. Time has left evidence here of how closely Ruckers' workmen came to the concept of the instrument marked out in scribe lines. Pale strips on the bottom boards demonstrate the close fit between the scribe lines and the case parts.
Of special interest is that the scribed line for the bentside is a precisely regular curve, more so than the actual bentside, which, to a small degree, opens its curvature toward the cheek-bentside joint. The outline of this Flemish bentside is similar to those of the 1638 Johannes Ruckers and 1645 Couchet, Edinburgh, and the 1640 Andreas Ruckers, Yale. These curves are nearly regular, with the majority of the bend not greatly more extreme at the mid-point nor significantly straighter at the cheek (see Kalsbeek, 356, on Flemish curves). These curves differ much from those of the 1680 Couchet, Boston, the 1650-80 Couchet, NYC, and the undated Couchet double at Stockholm. All of these began as large singles with deep basses, their bentsides having the form of being "bent over the knee," so that the tightest arc in the irregular curve was some 50 cm or so from the bentside-cheek joint. These curves can never have been planned as regular.

Not only do some Flemish bentsides possess this irregular curve, but also an occasional French instrument's, such as the Vaudry in the V&A, and many Italian outer cases. I'm not sure why this shape occurs. I remember a small argument with a scholar-builder of Boston on the relationship of the Boston to the NYC Couchet, and whether they might have had bentsides steamed upon the same form. I now feel that both may never have seen steam nor any form. Recall that the hot iron differs radically from a "form," especially if the curve of the iron is non-continuous. The occasional straighter section of a bentside near the cheek makes sense to me if there was no form used in bending it. Longer bentsides, as those on the NYC and Boston instruments, are most likely to have this irregular curve. Early builders, perhaps especially the Couchets, thought of a relatively fixed distance for the bentside from the tail end to the severest arc of its curve. If the bentside needed to be longer than usual, one way to make it would be to bend a blank with the severest curve thus appearing somewhere in the center. We might readily think of lengthening the straight or uncurved portion; they apparently might have added length beyond the "central" curve. The Stockholm Couchet has such a curve to its bentside, which is some 214 cm (84") long. But bentside curvology awaits more precise tabulation. Not my way.

To end with a word on the present. Using my iron, the largest work we've done was for a Taskin: a 20mm bentside. Overnight soak; low heat; no scorching; severe treble curve; 1/2 hour to make the bend. The heating elements are complex and require expertise in coil formulae. A kiln-engineer may be gracious enough to help. My iron draws 24 amps at 240 volts—5,880 watts. Through time-percentage switches, the elements need not be on often. But when they are, they clearly are. I'd be glad to hear from those interested, at 2325 3rd St., #425, San Francisco, California, USA 94107.
Interesting Comment from R. T. Shann on Bending Bentsides. I shall have to learn to be more portentious, formal, and austere in communications with the informal FoMHRI, in order not to be called 'cavalier'.

That the Old Ones tried out every conceivable method, technique, or device in trying to get better instruments made at the lowest possible cost and expenditure of labor, I have no doubt at all. Sensible fellows, the Old Ones, trying (as we quaint Americans say) to make a buck, and a fine instrument at the same time. So any possible way of getting the job done is apt to be 'authentic'. In the case of bentsides, that would include cold-soaking, hot-soaking, steam bending, or bending dry with a hot iron. I can think of several other ancient methods, like weaving plank into stakes set in tide water. I said, and say, that compared with cold soaking, steam bending is much more efficient, even in a small shop—the equipment is easier to come by than the vat needed for either cold or hot soaking (I have done both). The technology of steam bending is ancient, and was in constant use until the day before yesterday when small boats began to be made of fibreglass.

Since steam bending leaves no char marks, nor any other deformation of the wood, I don't know how you could prove its use, but if any harpsichord maker had trouble with his bentsides in maritime provinces, he had only to go down to the local shipyard and see the technique in use.

Bending the thin wood of guitar bouts or viol parts around a tube is also an ancient technique. It is also 'steam bending' in the sense that the moisture in the wood becomes steam, and so make the wood pliable. Trouble with bending around a hot caul is that it takes so long to get the heat inside a thick bentside without damaging the wood. 'Authentic' or not, steam bending is so much easier and energy efficient and safer, and stronger—than dry bending around a caul when you are bending stuff thicker than say a quarter of an inch.

The other trouble with the hot caul is that it takes the strength of an elephant to bend a dry plank so it conforms with the caul—which is why some confirmed hot-iron benders come over to borrow our steam box in Paris. If I had one of Shann's electric devices, I would certainly soak or steam the plank first!

I am willing to believe that some charred bentsides can be found among old instruments. I am willing to believe that some bentsides were cold soaked, boiled, or whatever. I am willing to believe that the Italians put their bentsides in dry and not pre-bent, trusting to the structure to hold the thin planks. (I have built hundreds of Italians this way.) I am not willing to believe that the beech-wood double bentside of a Vater was charred to bend it (the clean-up would have been onerous, and beech is such a lovely steam-bending wood). If I find three white men in Africa, I don't conclude that all Africans are white.

But Shann is right—I don't claim authenticity for steam bending—only that I need about a thousand bentsides a year, and steam-bending is the most efficient method I have found. I recommend it to serious instrument makers. But those who value 'authenticity' for other than practical or musical reasons will have to think long and hard about how they are going to make their bentsides.

Since Shann uses the pages of FoMHRI to question the permanence of my instruments, perhaps the Honorable Editor will allow me to say that bent wood has to be locked by the structure—even Mr Shann's charred bentsides. It will stay quite stable if kept quite dry—but that condition cannot be guaranteed when the part or the instrument goes out of the shop. (We have had 14 days here of dewpoint above 70 degrees—under such conditions even an antique bentside, held to its shape for hundreds of years, will
try to straighten out. Wood is like that. It is the genius of the Old Ones to have known that the structure guarantees the shape, and not the other way around.

I am sure that experienced harpsichord builders did not misinterpret my care to see that customers get a properly curved bentside, and Mr Shann need have no fears about the permanency of my instruments.

The fact that the old bentsides are not necessarily uniform in thickness does not need to bear any unnecessary theoretical implications. If I were hand-planing a plank for a bentside, I might very well make it a bit thinner when the big bend was to come—maintaining the thickness at the top of course. We do indeed find old bentsides that are thinner at the bottom than at the top (and spines also, for that matter—no need to discard a perfectly good plank if its irregularity will never be seen or damage the structure).

And after the bentside is installed, I find that i must do a bit of planing and fairing of the surface—no two planks bend quite the same, and cups and humps must be smoothed down. Sometimes a plank may need to have some pretty strenuous nubbing. (The crudeness, frugality, lack of finish inside magnificent old instruments makes me envious—bentside liners made of three pieces of scrap wood, glue blocks made with a hatchet, the round of the tree left on the edges of planks, etc., etc. Yet everything that had to be right for the eye or the ear were well enough done.)

Let's not sneer at things we know nothing about. Laminated bentsides are not silly. They marvellously hold their shape indefinitely until they are built into a case, and that is an important consideration. They are costly, compared with steam-bent, and do not expand and shrink in height to match the cheek and tail, which is a problem in some climates with great extremes in relative humidity. Since cross-lamination was well known in the old days, I imagine that, given my problem of delivering a properly curved bentside outside the structure, the Old Ones might have found the technique useful. So far as I can tell, none of them ever gave a thought to 'authenticity' in the sense invoked by Mr Shann.

Genuine knowledge of the past, and profound respect for the achievements of the old makers, are necessary—if only to keep us from wasting time inventing the wheel. But mindless obeisance to 'authenticity' deprives us of our brains, and leads us to judge the instruments on the basis of their supposed 'authenticity' instead of how they sound and how they work.

I gladly yield the prize for 'authenticity' to R. T. Shann. And if he can make a better instrument than I can, I will go and sit at his feet. Alas, I cannot judge his work, never having seen it—nor can I find anyone who has. Ignorance for which I take the blame.
HARPSICHDOR BOTTOM SCREWS

When I first began to argue in print about not screwing up the action of a harpsichord, some supposed I was being super-authentic, cashing in on a fad of the moment, some thought I was a cheapskate, not willing to spend the money for the screws, pins, or other devices that had been invented, and some practical builders who did not want to be criticised by their customers thought I was just plain crazy.

The damper screw departed quick enough 20 years ago. The top screw has disappeared in the past five years, as people learned to time the pluck with the quill. But the bottom screw persists, even among builders who are most vociferous in advertising their 'authenticity'.

(Last year in Paris I saw the new jack being used by one of these very authentic harpsichord makers. Since everybody nowadays wants wooden jacks, there was a shaft of wood, but since everybody knows that bristles take some fussing to find one of the right tension, there was a plastic tongue with plastic spring. And to overcome the very practical problem of keeping the jacks in time with the string band as the case expands and shrinks, there was a brass ferrule on the bottom into which a screw was threaded. Bloody thing must have cost about three quid to make.)

Well, yes, for 20 or 30 years the case sides are going to expand and contract between wet and dry weather by more than a sixteenth of an inch, which means that the quills are going to vary in their relation with the strings by that much—far too much for even a tapered-jack action to accommodate. What did the Old Ones do about this? Surviving instruments present no evidence that they were even aware of the problem.

To those for whom 'authenticity' is the overriding consideration, there is, of course, no problem. Old instruments were like that, and somehow they made do. To those who scorn authenticity on the grounds of a belief in progress (that which comes later must necessarily be better), this is just one more proof of the crudeness of past ages—no modern musician would put up with the disabilities of the old instruments. But to those who maintain a profound respect for the past without abandoning their own intelligence, the problem becomes finding a solution that does not violate the evidence we find in the old instruments.

I offer a solution to the problem without any shred of evidence from archaeology. Shim under the backrail of the keyboard. When the case swells, so the jacks are too short, add a layer of veneer, or glue tabs of cloth under the back rail. (This is a much faster solution than twiddling with 180 screws on the bottoms of the jacks, and then retiming the stagger.) When the case shrinks back down, remove the shims. And in 20 or 30 years when the case stops moving up and down (as it will), take out all the shims, and you will be exactly where the old instruments are—no evidence that there was ever a problem.

Notice that this system makes completely unnecessary those little leather pads glued to the foot of the jack that 'authentic' builders so often use in desperation. Cut the jacks with a 1/16 pad under the backrail, so you can go up or down—all at once with all the jacks.

But I have no evidence that this is the 'authentic' way of doing things; I use it because it is so beautifully practical, and solves the problem efficiently. I have even been known to put two threaded rods up through the bottom to raise and lower the backrail. Two screws instead of 180.
Tentative Observations about barred Soundboards in Harpsichords

It is a firm conviction among most of us, inherited from the ebullience of the nineteenth century, that 'that which comes latest is necessarily best'. And so harpsichord makers have concentrated on the late French Double as the climax of the ancient tradition in harpsichord making. And a noble beast it is.

But in the past few years the pendulum has begun to shift. Last summer at Bruges, Leonhardt made it a point to have an instrument by Jean-Francois Chmakoff brought down from Den Hague. The instrument had a marvellous bell-like ring in the treble (bass not so good), which cut like a knife through the strings. We put the Chmakoff instrument in the same room with Trevor Finnock’s French Double to compare them, and Trevor and Gustav took turns on each.

The French did not write concertos, so the problem of using the harpsichord as an obbligato instrument with the string orchestra did not concern the French makers. But when you come to Bach, it is another story. We are intended to hear the harpsichord part, and in some places it has to soar out above the strings. Whole portions of the D minor concerto have never been heard in modern times!

Well, if the large, floppy, unbarred soundboard of the late French school won’t do the job (it takes too long for the sound to get started, and the tonal structure is too rich in partials), perhaps we should look to the German harpsichords for a solution. And German harpsichords maintained the barring on the soundboards right to the end. The treble of the Chmakoff instrument would have been marvellous for a Bach concerto. (Of course, Chmakoff was not making a German harpsichord—his starting point was the seventeenth-century French instruments—which also had barred soundboards.)

Since three different festivals and orchestras have come to me to supply instruments for the 1985 Bach orgy, all with the same problem—how to make the harpsichords heard when used with the orchestra, and since the experiments of William Dowd, Temperaments Inegaux, Chmakoff, and a number of others looked promising, I have built several instruments now with barred soundboards, but in the cases of a typical French or Flemish, so that the effect of barring could be isolated from the other aspects of the instrument.

I offer the opinion that soundboard barring can be classified into three different types (without suggesting that a clear distinction can be made between any of the three types. First, the barring that is designed to control the areas of the soundboard outside the noding bars (boudin, cutoff bar). As in the corner of a French or Flemish soundboard. Second, the 'nodal' barring, as in some Blanchet soundboards and a Hubert clavichord. Thirdly, the barring that is designed to make a composite structure of the soundboard, causing it to vibrate as a unit instead of in the strong 'hot-spots' of a Flemish or French soundboard which is unbarred save in the 'dead corner'.

This latter, 'Italianate' barring, found in early fortepianos, in France through much of the seventeenth century, and in Germany until the very end, is schematic to a degree, with the bars tending to be placed in a regular rhythm spatially. The entire soundboard is stiffened greatly across the grain with very little addition of weight.

Talking about sound is difficult, but since tonal results are what we are trying to achieve, and since oscilloscopes and other electronic gadgetry give us so little evidence of what our ears can hear, I will try. The sound of the barred soundboard organizes itself much faster than the unbarred board, and 'cleans' itself much faster of the white-noise following the pluck. The upper partials are greatly reduced (which
the bass seems less distinct and powerful), and this gives a more 'pianistic' treble, which has maximum contrast with string tone. (Simplification of treble tone was a preoccupation with the piano manufacturers during the nineteenth century—if the energy is concentrated in the lower partials, the sound carries to the back of the hall.)

Another reason for using French and Flemish cases for these experiments is that the bottom can come off, and experiments made with soundboard thickness and thickness and stiffness of barring, things not possible with the typical German or early French construction. What is interesting here is that the barring itself, rather than the dimensions of the bars (within reason), is the critical factor. The action precise dimensions of the bars is not critical within say 1/8 inch in thickness, or 1/8 inch in width. This is important in that it allows soundboards to be made for instruments with closed bottoms without anxiety about the failure of the instrument.

You cannot perform the radical surgery on the sound of the instrument that is possible after the French or Flemish instrument is strung up and playing, but the barring achieves a homogenization of the sound which makes this unnecessary.

As one would expect, the divergence of the dual tap-tone, so characteristic of the French and Flemish instruments, is obscured (and with the Italianate bridge of the German instruments you would not expect to find it).

Use of these experimental instruments in fairly large concert halls confirms that the 'barred' sound, simpler in partial structure, and with the energy more concentrated, in other words, more 'pianistic', does carry better in large spaces, and does separate itself from the sound of the strings. Internal voices are as transparent as with the French sound—no transparency seems to be lost.

A year or so ago the leader of one of the baroque orchestras said to me, "I am tired of asking my violins to play more softly so the harpsichord can be heard. They are using short necks and gut strings. Surely they should be allowed to make as much noise as their instruments need to make if they are to play freely and expressively. I can't believe that it is 'authentic' to be toning down the strings. Something has to be done with the harpsichord."

I am sure something can be done about the harpsichord. Our preliminary experiments give me a lot of hope. It is not a question of brutal pluck, but a different organization of the sound, a different timbre, and the energy concentrated in fewer partials. The barred soundboard is, I think, a part of the solution.
Non-Ferrous Harpsichord Wire

Back in the good old days before we knew how to make a bass on a harpsichord (and were even putting 16' stops on the critters to try to get some response down there), the most satisfactory bass strings for a harpsichord were some sort of bronze. The bronze didn't make much music, but it rattled just fine, and told the ear that something was happening—and the ear, accommodating as it is, assigned the musical pitch.

We were all so in love with bronze, that we used it even when brass would have done better, sometimes carrying it up into the 4' also. Even clavichords were strung in bronze, although the 'box of bees' certainly never needed it.

The advent of a full bass in the harpsichord (I believe Hyman was the first to achieve this, and he did it by believing in the old instruments instead of trying to invent them all over again) was not met with universal approval. After Hyman died, one of our famous American harpsichordists took his Hyman around from harpsichord maker to harpsichord maker, saying, "I never had a bass like that in my life before, and I don't need it. Take it out!" But other players, like Fernando Valenti welcomed it; when he played on the first harpsichord of its kind he had seen, Fernando got down on his knees and wrapped his arms around it. "At last!" he said.

Harpsichords with basses are not yet universal—I know of one baroque orchestra that tours with a double bassist—the bass line is overloaded when there is a good harpsichord for the continuo, but often the doubling of the bass line is very much needed.

In the past five or six years we have become conscious that we certainly don't need all the fuzz and noise of bronze in the bottom octave, so a number of builders have been experimenting with red brass drawn softly enough to give a cleaner sound. Willard Martin was among the first to work with this idea, and had some soft 90/10 brass drawn by Little Falls. The Willard wire works very well, but in pursuing his theory of a straight-down reduction, the wire came out so soft that until it had work-hardened on the instrument for about two months it stretched and sagged in pitch that it was impractical for a practical instrument maker. Once this wire had hardened on the instrument, it brightened considerably, and gave a very satisfactory sound. Malcolm Rose's red brass has its champions (Malcolm Wilson likes it for the bass of the piano we made for him in the shops here).

Frustrated with Martin's wire, I had Little Falls draw some for me that began with a slightly larger rod (and so had two more reductions through the dies before we came to the working sizes), and this works and sounds as well as the Martin wire does after several months. It brightens quickly, but never gets too bright. The Martin wire, and my own 'second' wire are both 90/10. I have also had 85/15 drawn to the same rules, and of course the extra 5 percent zinc makes this easier to make and control. I think I like the sound of it as well, and it can be used right up to a low cross over (A or B). For a high cross over (d or d#), you must go to hard-drawn 70/30 to achieve the tensile strength, but it is a mistake to draw 70/30 nine or ten numbers hard as some do. The wire gets brittle faster than its tensile strength increases.

The Jacobs Hyman is now in the collection of the Yale Museum, and the curator, Richard Rephann called me the other day to ask my advise. "Do I leave the bronze on the instrument, as Hyman made it, demonstrating a certain period in the development of the modern instrument—or, since we will be using it in recitals, do I restring the bass with the wire we now have, and make it sound the way we now think it should?" Having known Hyman, and his passionate desire for the truest sound, I would restring—
but I can see the point in preserving the best sound that 1969 had to offer.

The Jacobs Hyman can well stand the restringing, but it is disturbing to see instruments without a bass being restrung in the soft brass—such instruments wind up with no bass definition at all. Another case of a passion for 'authenticity' overriding good sense and musical usefulness. If the box does not give a bass, soft wire is not going to give it to you. Leave the bronze alone.

I have been careful to do all this work with wire without reference to mathematical formulae or abstract theories. You don't build fine musical instruments with formulas or theories—or even with your hands. You build them with your ears, and the ears are capable of distinctions far too subtle for the current stage of the 'science' of acoustics or mathematical formulation. I don't have time to waste being learned, pompous or profound in the good Germanic sense.

D. Jacques Way August 18, 1984

FoMRHI Comm 577

Installing Soundboard Wet and Dry

I refuse to have air conditioning in our Stonington shops. I want to know all there is to know about how the instruments work in every kind of climate, and we have a kind of microcosm of world climates here. For a large part of the summer we are in the Bermuda high, which pumps wet, tropical air up from the Gulf of Mexico, making us steamier and hotter than any equatorial venue. When the high breaks and we get a whiff of Canadian air, the relative humidity will drop 40 percent for a day or so—and then climb back up there. Then in the winter we get the extremely dry Siberian and Canadian blasts. Making keyboards and soundboards behave under such variations is an adventure. The truth is, the classical harpsichord can't take such variations comfortably—the best we can do is to make things work between 40 and 80 percent relative humidity, and beyond those limits sauvé qui peut.

But the one thing I do insist upon is that when the relative humidity increases the soundboards must go up instead of down. In the old days of the revival, it was common for even the best builders to resort to 'happiness bars'—spring-topped props under the bridge. I remember one famous harpsichord with four of these.

Common practice these days is to put the boards in dry enough so they will crown up as they return to normal moisture content, and some builders use cross ribs that are arched and forbid the boards sinking. (By the way, such ribbing does little or no damage to the sound if properly applied.)

We are very careful how we lay the cup and rise of the grain—that goes without saying. We do no more in this respect than any good cabinet maker should do (and used to do) in making a panel. Still, about one board in twenty refuses to cooperate. It goes down instead of up, and we have to tear it out and start over again.
Recently I have been trying another tack, which seems to solve the problem. Instead of curing the soundboard in a dry box before installing it, I bring it close to the maximum moisture content it is apt to encounter, and by laying blocks on the frames ensure that it is deeply crowned (of course, with Hemsch frames I must fasten the blocks with tape). When the board dries out, it sinks, of course, and it takes nice judgement depending on the areas in the design to have it sink proportionately in the tail and treble. (One board I had to soak out along the bentside and trim off some spruce—a process which I thought greatly improved its sound.)

Now I hear the authentic brigade shouting that none of the old harpsichords have crowned soundboards, and they are perfectly right, of course. First of all, the very stable relative humidity of Western Europe (including England) is the envy of all us colonial boys. But there is more to it than that. Not a single old soundboard (to my knowledge) has survived without many splits. (Splits don't hurt the sound, and mending the splits improves the sound—witness the marvellous sound still left in many of the old instruments.) Coniferous woods shrink absolutely with age (we have had to add a quarter of an inch to a small piano soundboard in restoration—since we had the whole board out it seemed better to do this at the edge than by adding four splines in the middle. Crowned and barred piano soundboards go flat in fifty years or so, as we all know.

So it would be fantastic to expect any crown to survive on an old instrument. I think that when we get to see inside more German harpsichords, we are going to find evidence that those barred boards were crowned before they were installed. At any rate, I enjoy having the soundboards I make retreat from the crown instead of splitting in winter dry-snaps. And I enjoy having them rise in summer wet spells, instead of sinking until the 8' strings slap the 4' bridge.

By installing the soundboard wet with a crown, the whole business becomes easy to control and predictable. I don't know why I didn't think of it long ago, and I am sure in my own mind that the Old Ones were way ahead of me. Damned if I know how to prove that this much easier way to control a soundboard is authentic, though.