FOMRHI Quarterly

BULLETIN 56
List of Publications: The Bate Collection
List of Publications: G. Dullat
List of Publications: Music Department, Haags Gemeentemuseum
Membership List Supplement

COMMUNICATIONS


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924 New Grove DoMI: J M 11; Further detailed comments: the Ns.
925 Comments on comments about conservation
926 The destruction of the tropical rain forrests – what can I do?
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930 La gaita gastorena
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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.
We will start with an apology; nothing unusual in that, you may say, but this is a personal one from me. I can’t count. Maybe you noticed, but I didn’t till I was writing the new one for this Q, that my last two New Grove DOMI articles were both no.9. That in the January Q this year should have been no.10 - sorry!

FURTHER TO: Bull.55, p.7: Not only are there courses this summer at Magnano, but there will be a series of candle-light concerts given by Bernard Brauchli and others. They are free, so if you’re in that part of Italy on 12th, 16th, 25th, 31st of August or 9th September, drop in and introduce yourselves to your fellow-member, Bernard.

CONSERVATION: Alec Loretto has sent me a photocopy of an interesting conversation with Stewart Pollens (new member - in the Supplement herewith), the Associate Conservator of Instruments at the New York Metropolitan Museum. The interview appeared in Continuo, which I presume from the advertisements in it to be American, and I’d guess that it’s the current issue. Stewart has some interesting things to say, both pro and con both conserva- and restoration; even conservation can destroy vital evidence. I hope that he will join in the discussion that’s been going on, and continues to go on, in our Qs. Perhaps he would repeat for us, and even amplify, some of the things that he’s said in this interview.

THINGS AVAILABLE: Huw Saunders (in the main List of Members) writes to say that he “should soon be able to supply embossed decorative papers of the kind found on many English virginals”. He is making a copy of the Thomas White of 1642 in the V&A, and the only way he could get such papers was by producing them himself. No prices yet, as he’s only just getting going, but if you want any papers, write to him, and once he’s got all the technical things sorted out he hopes to be able to produce papers for any virginals that you want.

Günter Dullat has produced a series of books on wooden and metal wind instruments, including some useful reprints of German patents. Most are available only from him, and I’ll send Eph a copy of Dullat’s list which he can print in this Q, and which has his address on it.

PLANS: There’s two lists of plans herewith, one from The Hague and an up-to-date one from the Bate. The latter partly because I’ve been giving you odds and ends of new ones for a while and I thought that it was time we had a new complete list. We had a donation recently that’ll give us two new colour postcards, but I’ve not taken the photos yet so I’ve not put them on the list in case I change my mind as to what they’ll be. I’ll tell you about them next time. The other reason because we’ve just been told that we should have been charging VAT all these years. They think that the plans are not subject to VAT, but postcards, cassettes and so on are. So some prices for those last have had to be changed because some of our margins were not high enough for us to pay the VAT without making a loss.

EXHIBITIONS: The eighth Utrecht Early Music Festival is from August 25th to September 3rd, and there will be an Early Music Fair on both the weekends for which makers can take stands at Dfl.150 for the first unit and 125 for each of one or two additional units (one unit is enough for a harpsichord or two spinets); you can have a half-unit (a table 120×60 cm) but they don’t quote a price for that. Whether it’s too late to book, I don’t know; bookings had to
be in by June 1st to make the Festival programme book. I do wish people would give us more notice of such events; we get information out quicker than most societies, but we can't do it instantaneously. Anyway, it seems to be a regular event, so if you’re too late for this year, write to them (Holland Festival Oude Muziek, Postbus 734, NL-3500 AS Utrecht, Netherlands) and ask to go on their mailing list.

The Early Instrument Exhibition will be at the Horticultural Hall in London 29th September to October 1st, and as I told you in the last Bulletin I'll only be there on the Friday. I'll take any renewals then (same as this year, £8.50 UK and surface abroad; Europe by air £10; everywhere else by air £11.50). If you don't catch me while I'm wandering around looking at exhibits, you'll find me either on Barbara Stanley's stand or on the NRI one. If you're not there then but will be there on the other days, Barbara will take renewals, but because she will be mainly occupied in selling her own things, only if EITHER: you produce a cheque with your name and address on the back; OR cash in an envelope with your name and address on it; OR fill out a renewal form on the spot. The point is that she'll only have time to drop such things into a box and she doesn't want to find afterwards that she's got cheques from business accounts with no recognisable name or a heap of loose cash with no identification – in either of those cases, you won't get your Qs because she won't know who you were. The rest of you, of course, will get your renewal forms with the October Q as usual (so will those of you renew at the Exhibition, but you can ignore them). The Exhibition is always a useful spot to do your renewing without having to remember to post it.

MEETING: The next American Musical Instrument Society (AMIS) annual general meeting will be at the Schubert Club Museum in St.Paul, Minnesota, May 10-13, 1990. Anyone who wants to read a paper should contact Bob Eliason, RR#3, Box 466, Lyme Center, NH 03768; for local arrangements, contact Bruce Carlson, The Schubert Club, 302 Landmark Center, St.Paul, MN 55102. Any other queries to André Larson or Margaret Banks at the AMIS address in our List of Members.

COURSES: The Geneva Centre de Musique Ancienne has a variety of regular courses throughout the year with longer ones on specific instruments or musical styles in the vacations. If you're interested in a musical working holiday in Switzerland, write to them at 8 rue Charles-Bonnet, CH-1206, Genève, Switzerland.

Those who booked will know that we've had to cancel three out of the four BATE COLLECTION SUMMER SCHOOLS; we had trouble with the oboe tutors who pulled out because of clashing recording sessions; not enough bassoonists booked to make that half of that course viable on its own, nor enough traverse players, nor renaissance recorder players, leaving us just with the baroque recorders. I suspect that this means the end of Bate Summer Schools; apart from anything else, there's not going to be enough left in the kitty after we've covered the resulting losses to pay for any advertising for future years. Nor does there seem to be much interest. It seems a pity because there isn't much other opportunity to get any teaching with some time on original instruments, but there it is. Even our Weekends are getting marginal; we've run a loss on four out of the last five, but people say that the £20 we charge for them is already too much. Still, we shall try to keep them going for another year anyway.

BATE WEEKENDS: I thought that we'd see whether Weekends suit people better than Summer Schools, so there will be a Baroque & Classical Traversa Weekend with Lisa Beznosiuk and Lewis Jones on November 4th/5th, and a Baroque & Classical Bassoon Weekend with Andy Watts and Paul White on March 3rd/4th
next year. For the Bassoon one, the main making etc sessions will be on the Saturday afternoon (instead of the usual evening) and Sunday morning because Paul has something else on in the evening (he is the champion of the Oxford University Wine-Tasting Club, and they have a practice for the Oxford-Cambridge Competition that night), with playing on the Saturday evening and Sunday afternoon. The usual rates, £20 for the Weekend, £15 either day, reductions for students.

LEICESTER EARLY MUSIC FESTIVAL. 1990.

Of eighteen early music concerts recently advertised in the East Midlands, only two were in Leicestershire (one by Michala Petri and the other by Yvette Adams and John Bence). The rest were centred around Sheffield and Nottingham. It is, of course, very much in the interests of players and makers alike to promote professional concerts of Early Music and in an effort to redress the balance, The Longslade Consort, with the help of NEMA and EMEMF is convening an Early Music Festival in Leicester in the Spring of 1990, (24-28th May).

The Festival is using St. Mary de Castro Church (Leicester) as a base. The church is one of the oldest in Leicester and seats over 600. The building will be open each day and will house exhibitions of early music and musical instruments. There will be regular informal concerts in the church by a variety of mostly semi-professional performers, and a daily major concert. A masque day, junior school day, master classes and workshops are planned and the Festival has access to a local Junior School building for some events.

In order to promote the Festival and to provide a forum for professional makers and performers, we are offering free display space to makers with a request for an agreed donation should they wish to sell at the Festival. Early Music "buskers" will be permitted subject to vetting and agreement by the organisers. A collection may be taken in the Church when busking.

Any members of FoMRHI who would like to take advantage of this offer should contact John Bence as soon as possible. (address in the members’ list).

CIMCIM: I shall be in The Hague for the musical instrument museum curators' conference from August 28th to September 4th, and will be happy to see any of our Dutch friends and members; care of the Gemeente Museum will find me (I hope, though the organisation has already got holes in it). Other than that I expect to be here for the summer, though as I may be away for the odd day or two here and there, if you want to see me or to have access to instruments do ring up first — my assistant, who'll be here anyway, keeping the Bate open, hasn't access to keys.

DEADLINE FOR NEXT Q: October 2nd, please. Do remember deadlines, please. It's July 4th today (now 5th), and this should go off to Eph tomorrow as soon as I've done the Members' List Supplement, so it'll only be three post-receiving days after the deadline I gave you in the last Q. Three things have arrived so far in those days (and another one today), which is fine, but anything that comes later waits till next time.

CODA: The sun is shining so England's threatened with drought; luckily there's no shortage of beer yet. Enjoy the rest of the summer.

Jeremy Montagu
Hon.Sec.FoMRHI
## LIST OF PUBLICATIONS

### CATALOGUES & GUIDES

<table>
<thead>
<tr>
<th>Title</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>Catalogue, published 1976</td>
<td>£ 2.50</td>
</tr>
<tr>
<td>Supplement I (End-, Notch-, &amp; Duct-Flutes), 1987</td>
<td>£ 1.00</td>
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<tr>
<td>Checklist of the Collection, March 1988</td>
<td>£ 2.00</td>
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<tr>
<td>The Javanese Gamelan Kyai Madu Laras (3rd edn)</td>
<td>£ 1.00</td>
</tr>
<tr>
<td>Current Special Exhibition Catalogue (this changes each term)</td>
<td>£ 0.20</td>
</tr>
<tr>
<td>Instruments of the Bible</td>
<td>£ 0.50</td>
</tr>
<tr>
<td>The Edgar Hunt Accession</td>
<td>£ 0.20</td>
</tr>
<tr>
<td>The Retford Gift</td>
<td>£ 0.20</td>
</tr>
<tr>
<td>Bassoon Reed-Making</td>
<td>£ 0.20</td>
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<tr>
<td>Bate Guides: Flutes (2nd edn)</td>
<td>£ 1.00</td>
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<tr>
<td>Reed Instruments (2nd edn)</td>
<td>£ 1.00</td>
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<td>Brass Instruments (2nd edn)</td>
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<tr>
<td>Percussion (2nd edn)</td>
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<tr>
<td>String Instruments and Keyboards (2nd edn)</td>
<td>£ 1.00</td>
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<tr>
<td>Guided Tour of the Collection (2nd edn)</td>
<td>£ 1.00</td>
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<tr>
<td>Period Guides: Medieval &amp; Renaissance</td>
<td>£ 0.20</td>
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<tr>
<td>Purcell to Handel</td>
<td>£ 0.20</td>
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<tr>
<td>Things to Look For (Guided Tour for children) (2nd edn)</td>
<td>£ 0.20</td>
</tr>
<tr>
<td>Treasure Trail (for young children)</td>
<td>£ 0.20</td>
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### PLANS & MEASURED DRAWINGS

All plans are photocopies on A3 paper except for the full-size bassoons and the renaissance recorder, which are dye-line copies on A1 sheets. All are full size unless otherwise noted.

### RECORDERS

<table>
<thead>
<tr>
<th>Name</th>
<th>Cat. No.</th>
<th>Price</th>
</tr>
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<tbody>
<tr>
<td>Peter Bressan, FOURTH FLUTE, boxwood, early 18th c.</td>
<td>0109</td>
<td>£ 5.00</td>
</tr>
<tr>
<td>Peter Bressan, TREBLE, boxwood &amp; ivory</td>
<td>0112</td>
<td>£ 1.00</td>
</tr>
<tr>
<td>Anonymous (Bressan style) BASS, maple &amp; ivory</td>
<td>0114</td>
<td>£ 10.00</td>
</tr>
<tr>
<td>Renaissance BASSET marked ! ! !, maple, 16th c.</td>
<td>0117</td>
<td>£ 5.00</td>
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### TABOR PIPES

<table>
<thead>
<tr>
<th>Name</th>
<th>Cat. No.</th>
<th>Price</th>
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<tbody>
<tr>
<td>Henry Potter, boxwood &amp; ivory, c.1650</td>
<td>x 01</td>
<td>£ 0.50</td>
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<tr>
<td>Rudall, Carte &amp; Co, boxwood, mid-19th c.</td>
<td>x 02</td>
<td>£ 0.20</td>
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</table>

### TRAVERSIS

<table>
<thead>
<tr>
<th>Name</th>
<th>Cat. No.</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charles Bizey, Paris, boxwood &amp; ivory, early 16th c.</td>
<td>106</td>
<td>£ 10.00</td>
</tr>
<tr>
<td>Thomas Cahusac, boxwood &amp; ivory, 2nd half 16th c.</td>
<td>11</td>
<td>£ 10.00</td>
</tr>
<tr>
<td>Thomas Collier, boxwood &amp; ivory, 2nd half 16th c.</td>
<td>113</td>
<td>£ 15.00</td>
</tr>
</tbody>
</table>
William Milhouse, boxwood & ivory, c.1800  x 1081
5 silver keys, D foot. Lent Jeremy Montagu. Measured & drawn Noel Sheehan £  5.00

Richard Potter, boxwood & ivory, dated 1782  1028
6 silver keys (C foot), 3 upper-body joints, 4,5,6. A=c.415, 427 & 436 Hz. Measured & drawn Ken Williams £ 15.00

Proser, boxwood & ivory, last quarter 18th c.
1 silver key. ex Edgar Hunt Coll. A=c.427 Hz. Measured & drawn Ken Williams £ 10.00

Schuchart, boxwood & ivory, mid-18th c.
1 silver key. Lent A.C.Baines. A=c.420 Hz. Measured & drawn Ken Williams £ 10.00

Thomas Stanesby Jr, ivory & silver, c.1733  x 1050
1 silver key. Lent Jeremy Montagu. A now = c.437 Hz. Measured Andreas Glatt, drawn David Cox, with a trace by Rod Cameron £  5.00

Stanesby Jr FLUTE D'AMOUR, boxwood & ivory, c.1720  1015
1 silver key. In Bb at A=415 Hz. Measured & drawn Ken Williams £ 10.00

OBOES:

Anonymous, 'THE GALPIN', boxwood & ivory, c.1680-90  200
3 silver keys. ex Galpin & Halfpenny Colls. A=c.392 or 403 Hz. Measured Mary Kirkpatrick, drawn Ken Williams £ 10.00

Anonymous German transitional, boxwood, c.1760  292
3 brass keys. ex Edgar Hunt Coll. Measured Mary Kirkpatrick & Gail Hennessy, drawn Ken Williams £ 10.00

Charles Bizey, maple, 1st half 18th c.

Thomas Cahusac sr, boxwood & ivory, 2nd half 18th c.
2 silver keys. ex MacGillivray Coll. Measured & drawn Ken Williams £ 10.00

Christophe Delusse, Paris, cedar & silver, c.1765  20
3 brass keys (3rd key F#). Measured & drawn Ken Williams £ 10.00

Richard Milhouse, Newark, boxwood, straight-top  293
2 brass keys. ex Edgar Hunt Coll. Measured & drawn Ken Williams £ 10.00

Hendrik Richters, Amsterdam, ebony & ivory, c.1700  2037
3 silver keys. A=c.407 Hz. Measured & drawn Dick Earle, with xeroxes of six detail photos of turned ivory mounts and engraved keys, £ 10.00

Jean-Hyacinth Rottenburgh, Brussels, TENOR OBOE  248
boxwood & brass, bulb bell, 1st half 18th c., 3 brass keys. ex Morley-Pegge Coll. Measured & drawn Ken Williams £ 10.00

Thomas Stanesby Jr, maple & silver, c.1735  29
2 silver keys, plain model. A=c.421 Hz. Measured Mary Kirkpatrick, drawn Ken Williams £ 10.00

Anonymous, OBOE MUTE, wood, c.1600 x 2012
Lent A.C.Baines. Measured & drawn Ken Williams £  5.00

CLARINETS:

Heinrich Grenser, Dresden, boxwood & ivory, c.1800  432
9 brass keys (cross Bb, E♭, F; double holes instead of cross C♯; upper shake), In Br. Measured & drawn Charles Wells £ 10.00

George Miller, boxwood & ivory pair, c.1760  4008 & 4009

George Miller, boxwood & ivory, c.1770  422
5 brass keys, in C. Restored, measured & drawn Charles Wells £ 10.00

William Milhouse, boxwood & ivory, c.1800  III 170
5 brass keys, in Br. Jeremy Montagu Coll. Measured & drawn, Alan Mills £  5.00

Mousseter, Paris, boxwood, c.1760  406
5 brass keys, in Br. Measured & drawn Ken Williams £ 10.00

I. B. Williams sr., Brussels(?), boxwood, c.1720-40  429
2 brass keys, in high F. Measured & drawn David Armitage £ 10.00

Heinrich Grenser, Dresden, BASSET HORN, boxwood & ivory,  489
late 18th c. 8 brass keys (normal 5 key + bell note + basset C & D). Measured & drawn David Grant & Peter Sheehan. £ 10.00

BASSOONS:

Thomas Cahusac sr, maple (wing boxwood), dated 1769 x 35
4 brass keys. ex Brailes Church, ex Langwill Coll. Lent Philip Bate.
A= c.407 Hz. Measured & drawn Ken Williams
the drawing fullsize £ 15.00
the drawing halfsize £ 10.00

Dominique Porthaux, Paris, maple, c.1800 x 30
5 brass keys. Lent A.C.Baines. A= c.415 Hz. Measured & drawn Ken Williams
the drawing fullsize £ 15.00
the drawing halfsize £ 10.00

POSTCARDS

1. Bressan: Treble Recorder & Fourth Flute, 0112, 0109
2. Bressan/Harris: Treble Recorder, Bizey: 1-key Flute, Schuchart: 1-key Flute, Potter: 6-key Flute, Bernard: 1-key F Flute, x0, 106, x11, 1028, 1008
3. Bochum: Conical and Cylindrical Flutes, 166, 150
4. Streitwolf: 7-key Flute, Schlegel: 2-key Oboe, Baumann: 6-key Clarinet, 1026, x21, 416
5. Anon: The Galpin 3-key Oboe, Wilhouse (Newark): 2-key Oboe, 200, 28
6. Anon: 2 Lavigne System Oboes, including 'Old Spider Keys', 227, 228
7. Millier: 2 8-key Bb Clarinets from Zoffany's The Sharp Family, 4006, 4009
8. Kusder and Wilhouse (Newark): 5-key bassoons, 33, 34
9. Tauber: 5-key Contrabassoon, 334
10. Hofmester: 2 Horns from Zoffany's The Sharp Family, 606, 607
11. Courtois: Handhorn, Rodenbostel: Trumpet, 65, x72
12. Goudot: 2-valve Horn, Calicott: Omnitonic Horn, 600, 68
14. Halari: Tenor valve-Trombone, x702
15. Zetsche: 3-valve F Bass Tuba, 663

1. The Javanese Gamelan Kyai Madu Laras
2. Horns and coiled Trumpet with painted bells, by Halari, Courtois, and Jahn.

Miniplans — Each 20p.

Giclee-drawing Postcards — NB these do not include bore measurements
1. Bressan: Treble Recorder, 0112 (Frederick Morgan)
2. Bressan: Treble Recorder, 0112 (Friedrich von Huene)
3. Bressan: Treble Recorder, 0112 picture (Friedrich von Huene)
4. Bressan: Fourth Flute, 0109 (Heinz Ammann)
5. Anon. 18th c. (style of Bressan): Bass Recorder, 0114 (Ken Williams)
6. Anon. 16th c. (marked '':') Bassett Recorder, 0117 (Tim Cranmore)
7. H.Potter / Rudali Carte: 2 Tabor Pipes, x 01, x 02 (Ken Williams)
8. Bizey: 1-key Flute, 106 (Ken Williams)
9. Cahusac sen: 1-key Flute, 11 (Ken Williams)
10. Collier: 5-key Flute, 113 (David Armitage)
11. Wilhouse: 5-key Flute, x 1081 (Noel Sheehan)
12. Potter sen: 6-key Flute, 1028 (Ken Williams)
13. Trosser: 1-key Flute, 1066 (Ken Williams)
14. Schuchart sen: 1-key Flute, x 11 (Ken Williams)
15. Stanesby Jr: 1-key Flute, x 1050 (David Cox after Andreas Glatt)
16. Stanesby Jr: 1-key Flute d'Amour, 1015 (Ken Williams)
17. Anon. 17th c.: 3-key Oboe ('The Galpin'), 200 (Ken Williams)
18. Anon. 13th c.: 3-key Oboe (German transitional), 292 (Ken Williams)
19. Bizey: 2-key Oboe, 201 (Ken Williams)
20. Cahusac sen: 2-key Oboe, 2013 (Ken Williams)
21. Delusse: 3-key Oboe, 20 (Ken Williams)
22. R.Milhouse: 2-key Oboe (straight-top), 293 (Ken Williams)
23. H.Richters: 3-key Oboe, 2037 (Dick Earle)
24. H.Richters: details of the 3 keys and the ivory turning, 2037 (xerox of photos)
25. J-C.Rottenburgh: 3-key Tenor Oboe, 248 (Ken Williams)
26. Stanesby Jr: 2-key Oboe, 29 (Ken Williams)
27. Anon. 18th c.: Oboe Mute, x 2012 (Ken Williams)
28. Miller: 6-key B♭ Clarinet, 4008 'Zoffany' (Charles Wells)
29. Miller: 5-key C Clarinet, 422 (Charles Wells)
30. Mousssetier: 5-key B♭ Clarinet, 406 (Ken Williams)
31. I.B.Williams: 2-key F Clarinet, 429 (David Armitage)
32. Grenser, 9-key B♭ Clarinet, 432 (Charles Wells)
33. Cahusac sen: 4-key Bassoon, x 35 (Ken Williams)
34. Porthaux: 5-key Bassoon, x 30 (Ken Williams)

Cassettes

Kuai Madu Laras — Recording of a public concert in March, 1987,
Kuai Madu Laras — Recording of a public concert in March, 1989,
in the Holywell Music Room by the Oxford Gamelan Society, each £4.60 (£5.15 by post)

David Reichenberg 1950–87 A Musical Celebration (Memorial Concert)
with cheque payable to The David Reichenberg Trust £10.00 (£10.55 by post)

The plans by Ken Williams were made with the aid of a grant from the Music Board of the Australia Council. Copies are available in Australia from the Music Librarian, State Library of Victoria.

Orders from all other parts of the world should be addressed to: The Curator, Bate Collection of Historical Instruments, Faculty of Music, St.Aldate's, Oxford OX1 1DB, UK. Cheques should be made payable to The Bate Collection, Oxford, and must be in pounds sterling. The University has no GIRO account but Eurocheques and Girocheques are both acceptable.

Prices, except those for the cassettes, include postage (by surface abroad), the plans folded flat to A4 size; if rolled copies are required, please send a tube or other container, and add enough to your cheque to cover the postage of its weight. If you are ordering only a few postcards or miniplans, please add something for postage.
1. HOLZBLASINSTRUMENTENBAU
   - Entwicklungsstufen und Technologie
   Ein umfassendes Handbuch zur Ausbildung und Weiterbildung. Ein Nachschlagewerk für Liebhaber. - im Druck, Moeck-Verlag, Celle

2. HOLZ- UND METALLBLASINSTRUMENTE
   Zeitschrift für Instrumentenbau
   1881 - 1945
   Fr. Schmitt-Verlag
   (Instrumentenbau-Zeitschrift), Siegburg

3. Blasinstrumente
   und
   Deutsche Patentschriften
   1877 - 1970
   METALLBLASINSTRUMENTE I
   (Instrumente u. Mundstücke)
   - Selbstverlag *)

4. Blasinstrumente
   und
   Deutsche Patentschriften
   1877 - 1970
   METALLBLASINSTRUMENTE II
   (Drehventile u. Kolbenventile)
   - Selbstverlag *)

5. Blasinstrumente
   und
   Deutsche Patentschriften
   1877 - 1970
   HOLZBLASINSTRUMENTE
   - Selbstverlag *)

6. Internationale Patentschriften für den
   HOLZ- u. METALLBLASINSTRUMENTENBAU
   - Selbstverlag *)

7. METALLBLASINSTRUMENTENBAU
   - Entwicklungsstufen und Technologie
   Ein umfassendes Nachschlagewerk.
   - erscheint voraussichtlich 1988

8. HOLZ- u. METALLBLASINSTRUMENTENBAU
   im 19. Jahrhundert
   - in Vorbereitung

*) Die im Selbstverlag erschienenen Bücher ( IDF, Nr. 3 - 6) werden vertrieben von G. Dullat, (Hrsg.), 6085 Nauheim (Lieferung nur per Nachnahme oder Vor- auszahlung, zuzügl. Versandkosten)
   Verlag E. Bochinsky (Das Musikinstrument)
   Postfach 102327, 6000 Frankfurt/M. 1
   Verlag Fr. Schmitt (Musik international)
   Postfach 1831, 5200 Siegburg
PUBLICATIONS BY THE MUSIC DEPARTMENT OF THE MUNICIPAL MUSEUM OF THE HAGUE

Musical instruments

1.1 Oude clavecimbels: hun bouw en restauratie / Old harpsichords: their construction and restauration; Kijkboekje/Picture Book, vol. 2; 1977 (sold out)
1.2 Zes bijzondere piano's (Six unusual pianos); leaflet, 1978 1,50
1.3 Traditionele muziekinstrumenten van Japan / Traditional musical instruments of Japan; Kijkboekje/Picture Book, vol. 3; 1979
1.4 Spelen met muziekinstrumenten (Playing with musical instruments); 1980 8,50
1.5 Spelen met muziekinstrumenten (Playing with musical instruments); leaflet, 1980 0,50
1.6 Pianofortes uit de Lage Landen / Pianofortes from the Low Countries; Kijkboekje/Picture Book, vol. 4; 1980
1.7 Volksmuziek en volksinstrumenten in Europa (Folk music and folk musical instruments in Europe); 1982
1.8 Het strijkinstrument (The stringed musical instrument); exhibition, Rotterdam 1982
1.9 Gamelan en andere gong-spel ensembles van Zuidoost-Azië (Gamelan and other gong-chime ensembles of Southeast Asia); 1982

Checklists of the musical instrument collection in the Haags Gemeentemuseum:

2.1 vol.1 Checklist of the pianos; in prep. (1986)

Technical drawings:

3.1 harpsichord, Andreas Ruckers (1639) 35,00
3.2 harpsichord, Giovanni Celestini (1605) 35,00
3.3 clavecitherium, Albert Delin (ca. 1760) 35,00
3.4 cornemuse, anon. (ca. 1800) 35,00
3.5 hurdy-gurdy, anon. (Normandy, 18th cent.) 35,00
3.6 clavichord, anon. (ca. 1700) 35,00
3.7 virginal, Andreas Ruckers (1643) 35,00
3.8 square piano, M. & P. Meyer (ca. 1810) 35,00
3.9 giraffepiano, Joannes van Raay (ca. 1825) 35,00
3.10 folding harpsichord, Rijk van Arkel (1768) 35,00
3.11 oboe, Hendrik Richters (ca. 1730) 35,00
3.12 oboe, Coenraad Rijkel (ca. 1710) 35,00
3.13 alto-recorder, Robert Wijne (ca. 1730) 35,00
3.14 alto-recorder, Willem Beukers (ca. 1740) 35,00
3.15 traverso, Robert Wijne (ca. 1740) 35,00

Musicassettes: Historical instruments

4.1 vol 1 John Hsu (viola da gamba), Marius van Altena (tenor), Marijke Smit Sibinga (harpsichord), Chris Farr (harpsichord and clavecitherium), Toyoheko Satoh (theorbo) 20,00
4.2 vol 2 Bob van Asperen (harpsichord, Giovanni Celestini), Mieke van der Sluys (soprano), Harry Geraerts and Marius van Altena (tenors), Max van Egmond (bass) 20,00
4.3 vol 3 Bob van Asperen (harpsichord...
4.4 vol 4 Glen Wilson (fortepiano, Louis Dulcken), Toshi Hasegawa (oboe), Erich Hoeprich (clarinet, Heinrich Grenser), Jos Konings (horn), Dany Bond (bassoon, Heinrich Grenser). W.A. Mozart: Quintet in Es; Kegelstatt-trio 20,00


Music library

Handlists of manuscripts and early prints in the music library of the Haags Gemeentemuseum:

5.1 vol.1 Dance collection; 1983 7,50
5.2 vol.2 Collections of the Théâtre Français de La Haye; 1983 7,50
5.3 vol.3 Opera collection; 1984 7,50
5.4 vol.4 Keyboard music; in prep. (1986) 7,50

Keuzelijsten van muziek en muziekliteratuur in de muziekbibliotheek van het Haags Gemeentemuseum (Checklists of music and musical literature in the music library of the Haags Gemeentemuseum)

6.1 vol.1: Volksmuziek en volksinstrumenten in Europa (Folk music and folk musical instruments in Europe); 1983 7,50
6.2 vol.2: Akustiek van muziek en muziekinstrumenten (Acoustics of music and musical instruments); 1983: index on pertinent articles in Acustica, JASA and the GAM-bulletin 7,50
6.3 vol.3: Luit en gitaar (Lute and guitar); 1985 7,50

Archives

7.1 Annotated list of the archives and collections of Dutch composers and musicians; in prep. (1986)

Iconographic collections

8.1 Japanse prenten met muziek / Japanese woodcuts with music; Kijkboekje/Picture Book, vol. 1; 1975 20,00
8.2 Verbeelde muziek: de betekenis van decoraties, vorm en materiaal van muziekinstrumenten (Music in images: the meaning of decoration, form and material of musical instruments); 1982 8,00
8.3 Hogaku – traditional Japanese music; exhibition, Amsterdam 1983 10,00
8.4 Antoon Molkenboer, ontwerpen voor muziek en toneel, 1895 – 1917 (Antoon Molkenboer, designs for music and theatre, 1895 – 1917); 1983 7,50
8.5 Muziekkarikaturen / Musical caricatures; Kijkboekje/Picture Book, vol. 5; 1983 20,00
8.6 Muziek en mythologie (Music and mythology); leaflet, 1984 1,00
8.7 Muziek en dans (Music and dance); leaflet, 1984 1,00
8.8 Muziek in karikatuur (Music in caricature); leaflet, 1984 1,00
8.9 Portretten in karikatuur (Musical portraits in caricature); leaflet, 1984 1,00
8.10 Bekende pianisten uit het verleden / Famous pianists from the past; Kijkboekje/Picture Book, vol. 6; 1984 20,00
8.11 Engelenmuziek (Music of angels); leaflet, 1984 1,00
8.12 De Brahms-Phantasie van Max Klinger (Max Klinger's Brahms-Phantasie); leaflet, 1985 1,00
8.13 Violisten (m/v) (Portraits of violinists); leaflet, 1985 1,00
8.14 Commedia dell'arte; leaflet, 1985 1,00

Miscellaneous

9.1 Muziek in de Renaissance (Music in the Renaissance); 1982 5,00
9.2 Achtergrondmuziek (Background music); 1981 5,00
9.3 Kabuki - onbekende aspecten (Kabuki - unfamiliar aspects); 1982 6,00
9.4 Klassieke muziek van India (Classical music of India); 1980 2,50
9.5 Muziek in de Filippijnen: instrumentale muziek van etnische minderheden (Music in the Philippines: instrumental music of ethnic minorities); 1977 20,00
9.6 Tektonik; 1979 5,00
9.7 Over het ontstaan van de muziekafdeling, portret van de collectie Scheurleer (The origin of the music department, a portrait of the Scheurleer-collection); 1985 15,00

Catalogi van de muziekbibliotheek (Catalogues of the music library)

10.1 vol.1 Historische en theoretische werken tot 1800 (Historical and theoretical works before 1800); 1969 30,00
10.2 vol.2 Vocale muziek van 1512 tot ca. 1650 (Vocal music from 1512 till ca. 1650); 1973 30,00

The series will not be continued. Short-title descriptions of all old prints and manuscripts will be published in the series Handlists of manuscripts and early prints in the music library of the Haags Gemeentemuseum (see above, 5).

Catalogi van de muziekinstrumenten (Catalogues of the musical instruments)

10.3 vol.1 Hoorn- en trompetachtige blaasinstrumenten (Horns and trumpets); 1970 28,50

The series will not be continued. Systematic descriptions of musical instruments will be published in the series Checklists of the musical instrument collections in the Haags Gemeentemuseum (see above, 2).

10.4 The Carel van Leeuwen Boomkamp collection of musical instruments; Frits Knuf, 1970 (sold out).

prices in Dfl.
Publications in co-operation with Inter Documentation Center (IDC)

Microfiche-editions

11.1 European musical instruments on prints and drawings  
11.2 Portraits of composers and musicians  
11.4 Collection of the Théâtre Français de la Haye; 1983, 14 vols.  
11.5 Opera collection (before ca. 1810); 1984, 9 vols.  
11.6 Collection of keyboard music (before ca. 1820); in prep. (1986)

Further sets of handlists on microfiche are in preparation. Titles are also available separately. Folders on request.

#4  
November 1985
Review of: Larigot no. 5, May 1989 (see Bull. 55, p. 4 for details).

Several interesting articles. The first part, by Joe Moir, of an annotated list of makers who supplied Thibouville with instruments; quite surprising to see some of the names involved. It suggests that we have to be a great deal more careful than we have been about saying who made what, and actually look at the instruments, not just the names stamped on them, to see whose work they resemble. There are several English makers who could do with the same treatment. Goulding is one, Longman (with or without Broderip) another, and I suspect also Astor and perhaps all the others who use the unicorn head. And why do John Mitchell Rose's flutes look so like Monzani's? Maybe we are opening a can of worms (a popular activity nowadays), but I think that we should.

Next a fingering chart for sarrusophone, presumably taken from an Evette & Schaeffer tutor as it has their imprint.

Next a short but well-illustrated article by Bruno Kampmann on duplex instruments, one of the illustrations being of an echo cornet from Boston, with the echo pointing back at the player's face, which I'd have thought would be uncomfortable to play.

Next a note on accordions and their makers and patentees in Paris, again with useful names and illustrations. Considering that Larigot is produced like FoMRHI by photocopying (but full-size), maybe we ought to have more illustrations - if they can, we can.

Next a copy of a Besson trade list, with prices from 1910. Very useful.

Larigot gets better and better, and if you're interested in the by-ways of wind instruments, mostly 19th century and early 20th, it's well worth having.

Review of: Traverso no. 2, April 1989, HCR Box 83, Claverack, NY 12513, USA, $12 per annum USA & Canada, $15 overseas.

See a Comm. elsewhere from Ardal Powell on my comments in the previous Bulletin. His points are well taken. One further comment of that sort: I was recently corrected by an Italian correspondent for using the term traverso. The noun is feminine, traversa; only when used as an adjective, as in flauto traverso, is the masculine form correct (because it has to agree with flauto). This arose because Handel does in fact always write traversa; I had thought this perhaps an error or affectation, but it is absolutely correct. So, do we all change our ways, or do we go on calling it traverso because that is the modern usage? I'll be interested in Ardal's reaction; personally, I'll change.

The second issue has just arrived. It starts with an interesting article on breath control from 18th and 19th century sources by Cathy Folkers; she would be glad of further comments and sources.

One point of interest from the news section, which I hope I may pass on, is that Bruce Haynes is updating his Music for Oboe 1650-1800 which Fallen Leaf Press published in 1985. He would be glad of any additional references, corrections, etc; he's in our List of Members.
I must check back on my shelves and see what others of these excellent handbooks I have. According to the Permuted Index, I reviewed III, IV and V (bowed, plucked string instruments, and harp respectively) in Comm.845 (Q.41, Oct.'85), and of course their main Catalogue in Comm.844 (Q.50, Jan.'88). If I have received others and have not noted them here, my apologies to you and to Kunitachi College, and I'll try to fill the gaps next time.

The frustrating thing about these, of course, is that they are, as you'd expect, in Japanese. This one covers the history and development of the bagpipe, from the Greek aulos and other instruments played by circular breathing onwards. No, I don't read Japanese, but the illustrations make it very clear what the coverage is and that they, as I and others have done, take the bag to be a labour-saving device introduced to avoid the necessity of cheek-pumping. Personally, I take it that the main problem was not cheek-pumping itself, which is a knack reasonably easy to acquire, but the maintenance of a steady pressure on held notes while changing from diaphragm pressure to cheek pressure and back again. This is the real difficulty, and presumably why the bag was introduced to replace the cheeks. Whether they pick this up, I don't know.

What is also covered here is the construction of the instrument, with an excellent series of line drawings from the goat to the finished bag. Those drawings are their own; the ones of the pipes and reeds are taken from Anthony Baines's *Bagpipes*. Almost all the illustrations are from other sources (all credited by number to a numbered bibliography), and from a wide variety of sources.

I had referred to the three others in this series as Catalogues, but reading this one, perhaps more carefully, the Checklist on the last page shows that they have only seven bagpipes and a practice chanter. Thus it may be better to refer to these, as I've done here, as handbooks, presumably as teaching guides for their students and others. I just wish that I had either the time or the resources to produce such comprehensive handbooks for my students. I can't judge the accuracy of the text, but the coverage is sufficient for any student to get a good grounding and then go on, for further detail, to the books in the bibliography. The bibliography is not annotated, which is rather a pity since at least one book that it cites is replete with gross error (my review elsewhere of Theodore Podnos, *Bagpipes & Tunings* in Galpin Journal 28, 1975, led to a long and acrimonious correspondence, but I stood and still stand by every word I wrote then).

Whether these Handbooks are generally available I don't know, but I certainly find them useful. If you want to try, their address is 5-5-1 Kashiwa-cho, Tachikawa-shi, Tokyo, 190 Japan.

This is the catalogue of the holdings of Oceanic instruments in that Institute. It is based on the catalogue compiled by Len Stanners, so firmly based that I am surprised that Richard Moyle's is the only name on the title page. Moyle provided the general introduction and the historical and descriptive introduction to each group of instruments, and Len the details on all the individual instruments. Being responsible for both jobs here, in the Bate, I’d say that the work is pretty evenly divided between the two of them and that Len should have been credited on the title page – Moyle’s knowledge and expertise were essential, but so was all Len’s slogging through the material.

Having said this, it's an excellent production, well printed, well illustrated and a worthy first catalogue of any section of the collection which will, we hope, lead to many more.

There are many gaps in our knowledge of Oceanic instruments, and this catalogue fills a number of them. It is geographically arranged, by areas (eg Western Polynesia) and within these by islands, with a map of each district. All those instruments which have been published by collectors or others are cited for cross-reference, and almost all types of instrument have a bibliographic reference for further reading. Thus it is, as well as a catalogue, a very useful source book for further research.

Those of you who see *The Galpin Society Journal* will have seen my recent review of the English translation of Hans Fischer's invaluable *Schallgeräte in Ozeanien*. This catalogue very usefully amplifies that and give more detail, and photographs, of many of the instruments. Highly recommended.

Since they've sent it to us for review, which means that any of us can have a crack at it, and since I've got a copy of my own as well as the review copy which I sent up to Eph, I thought that I'd stick in my pennyworth as well as Eph.

The book is in two distinct halves. The first, by Jim Tyler, is on the early instrument which looks, and often is played like, a tiny lute, and the second, by Paul Sparks, is on the Neapolitan instrument, which also is earlier than is sometimes thought. It'll be clearer if I say that Jim's half is on the instrument that is variously called gittern, quintern, mandola, mandorcheu, pandurlina, Milanese mandolin, mandolino, and a good many other names, and has a varying number of courses, often three, often tuned in fourths, but differing at different times and in different places. This half is extremely useful for all of us who see these little instruments and seldom know what they should be called since most books and museum catalogues each call them something different. It is extremely clearly written, with a good history, plenty of references to textual sources, music (some of which is printed here), and illustrations. One could wish for more illustrations in the book, though since they are all printed on text pages the engravings come out very much better than the three photographs, which may be why there are not more than there are. Very valuable for players is a very comprehensive list of surviving music, both manuscript and printed, with full locations in RISM sigla in Appendix I, and transcriptions of the whole of a number of pieces for mandolino in Appendix II.

The second half, by Paul Sparks, is a complete history of the Neapolitan mandoline (4 double courses in fifths), from the early 18th century onwards. The history is brief, though clear and adequate, especially for its use in France, where it had an important 18th century career, and in Austria (then of course including Bohemia) at the end of that century. This is followed by an important chapter on playing the instrument, based on Corrette's and other 18th century tutors (Leoné, Denis, Fouchetti, etc). This second half also has two appendices, again covering the same areas as those to the first half.

The mandolino/e (mandolino for Jim Tyler's instrument and mandoline for Paul Sparks's) has been a much neglected instrument, and, one can say with certainty from all the references that both authors produce to music, players, makers, etc, a very unjustly neglected one. It is quite clear that it has been of considerable importance in all its periods. Perhaps the mandoline's present reputation, deriving from O Sole Mio etc, has been one reason for the neglect of that instrument, and perhaps it is the resemblance of the mandoline to a toy lute (as well as the gross confusion over its myriad of names) that has led to the neglect of that instrument. Certainly there is no excuse for such neglect to continue. This book establishes it firmly on the map (I know that some people will say that it was never off it, but they are a fairly small minority), and the book is highly recommended to all interested in plucked string instruments, and especially (as Jim says it was in its own day) to lutenists looking for an interesting instrument to double on.
October: Howard Pollard on Can Sound Quality be Measured? Beyond me, but interesting if you're in that line. My own feeling, which may be wrong, but is based on resulting instruments from a variety of sources, is that either it can't or else our making skills are not up to taking advantage of it. But it would be nice if we could, especially for the electronic boys who could then put us all out of business.

Alex Macphee on Simple Heat Treatment of Steel, a very useful beginner's guide to the subject, dealing with a variety of different steels, where you can get or adapt them from, and what you can do to them.

Same author, and another by L.Lloyd on varnishes.

December: Ken Bamber on The Properties of Wood and Musical Instruments. Considerable detail on microscopic and sub-microscopic structure of wood.

Followed by J.I.Dunlop of Acoustic Properties of Timber, with similar detail. An important pair of articles.

There's always rather less in JAAMIM than in the average FoMRHIQ, but what there is is often important, though with a bias towards the violin and harpsichord end of the range; either they don't have as many wind makers as we do, or they don't write so much. If you're interested in getting copies, their subscription is $20 for full members, $15 for associate members (Australian dollars) and their Secretary is Frances Davis, 2 McKillop St, Dundas, NSW 2117. I'd imagine that an interested foreigner would be an associate, but I may be wrong.
Either I’m growing old (certainly), tolerant (unlikely), or slipping (probably), because I’ve spotted nothing that needs any comment before:

Ngwoml: and my main comment here is on the illustration which seems to show a very odd playing technique. The player appears to be plucking the strings of this African pluriarc with a pair of tweezers while stopping some of the strings with the fingers of his left hand. If what he is using is a plectrum, it’s an odd size and shape, and it is much deeper between the strings than is usual. There is no mention of playing technique in the entry, which, however, says that the strings are almost perpendicular to its soundbox, whereas the photo shows quite clearly that they are not.

Notes inégales: A very well balanced article, falling neither into the Dolmetsch trap of dotting everything in sight, nor into the Neumann fallacy of playing everything dead flat. The one point he doesn’t bring out is the one that I’ve always found worth having in the back of one’s mind: when a composer goes to the trouble of titling a movement in French (e.g. Badinerie or Menuet), this could be taken as an indication that he wishes the movement to be played in stile francese, i.e. inegale. As a result, I’ve taken the Bach B minor Flute Suite much slower than anyone else and with unequal notes, and found it sound very effective (there’s a useless remark if ever there was one) and similarly the Handel Fireworks Music. I don’t say ‘it must be’, but ‘it could be’.

Nyefe: Can one describe these instruments played by women in Togo as stopped end-blown flutes and then go on to say that the players sing rather than blow into the instruments? Surely something that is sung into is a voice changer and cannot be described as a flute, especially in a work which claims to adhere to the Hornbostel-Sachs classification system.

Short ration this quarter, but perhaps better than none at all. O looks like being a long one, and if I did that this time, you’d get this a week or more late, so we’ll leave it at this for now. At least we’re over halfway through this marathon endeavour.
Jeremy was kind enough to send me a complimentary copy of FQ55. In light of Comms 905 and 906, I feel it necessary to make some further remarks on conservation in the FoMRHI perspective. Since Jeremy has now published material from his letters to me, I trust it might be of some interest if I were to reciprocate. The first letter below is the one referred to in Comm 906. The second letter was my initial response to Jeremy's request for commentary on the accreditation issue. The excessively abbreviated report of its (and similar letters sent to Jeremy by other conservators) contents presented in the FQ51 Bull would appear to be a large part of what triggered Eph's reaction to the attitudes of conservators (in the FQ52 Bull), which in turn triggered my reaction. The full texts are enclosed, excluding only a few personal remarks.

"January 20th, 1989 ... To be sure you've had a catalytic effect on my attitude towards FoMRHI's stance on conservation. (At times I've felt that some of the remarks you've made in the Bull have been a trifle unfortunate.) At no point have I ever been, or intended to appear, judgemental about the policies you have established at the Bate. You are not doing things the way I would, but I don't feel anything about my own ideas to be inherently superior to any one else's. What I have found perplexing is the discrepancy, as I perceive it, between your level of concern with the finer details of conservation, and the net conservational effect of the way the Bate is being run; a "wear white gloves when you handle it, unless you want to play it, in which case you can take the gloves off" paradox. This is all entirely your own business and is as worthy of respect as is any other policy.

Corollary to this, we can either assume that there is an absolute boundary between "good" policies and "bad" policies. (Who would draw the line anywhere else than at "mine good, his bad"?) Alternatively, we can assume responsibility for what is clearly our own business and be at the disposal of others who may ask for advice. Suggesting that there is an obligation to preach one's own version of the gospel implies a belief in the good/bad polarity. I don't hold that belief, nor do I feel like being a conservation manual thumper any more. I was one for years, and noone, with the possible exception of yourself, has ever listened. And even then, after you confirm the fact that you have understood what's been said, things are often rounded of with the rider, "But of course, in practice, I must take account of the special conditions ... ."

The question which this raises is to whom your visible interest in conservation applies. If to yourself, it would seem reasonable for you either fundamentally to change Bate policy, or at least to embark upon a campaign to enlighten those whose policies you feel bound by. If to others, your credibility as an advocate of hard-core conservation can justifiably be seen as lacking the oomph provided by practicing what one preaches.

One point of criticism of your letter's statement of Bate philosophy -- playing instruments puts them in a clearly greater state of risk than does not playing them. Keeping them continually in playing condition and subjecting them to regular use does not result in "stability" in any sense of the word relevant to conservation. The argument resembles that of a heroin addict keeping his body loaded with dope to avoid the substantial health risks entailed by detoxification. The belief that other museums have hypocritical and dangerous policies provides no justification for the risks inherent in one's own policy. What it does do, of course, is obligate us to regard each other as members of the same fraternity of tea-kettles and coffee-pots.

Which is why I don't think ill of what's going on at the Bate. Nor do I feel that I have a right to think ill of what anyone does with their own gear. I can feel it unfortunate, and hope that I'd do differently given the other person's responsibility, but it ain't my business to go out on the campaign trail other than in my own immediate neighborhood. Your argument about the treatment of the museums of the future being a concern of our own day is a hard one to counter. If I don't think that I have a right to meddle in what other museums are doing right now, how can I meddle in yet other museums tomorrow? Even if I did wish to retain the fervent missionary glow of my youth, how many of the museums of the future can be addressed via FoMRHI, today? (If the answer is "a lot", perhaps the FQ should become more of a journal of record than it currently is. ?.)

Enough of all this. My Comm was written to be provocative. As always, Jeremy could be counted on to respond. I am very sorry if I have hurt your feelings in any way, having had no intention of doing so. After much deliberation, I've decided to let Musikmuseet's membership stand. I'll therefore be able to see what happens next, so the discussion needn't be closed here."
"January 11, 1988 . . . Considering, if nothing else, the rarity with which my personal airmail subscription actually has me reading the Q earlier than I otherwise would, I wonder if it wouldn't be just as well to chuck my credit into the [subventioned subscription] kitty and settle for reading the museum copy. What with Bob [Barclay] and Friedemann [Hellwig] out, the idea of a "conservators' voice" has fizzled, and in all honesty that's what has had me in these past few years. Put things on hold, if you will, until the dust has settled after your latest communication.

To it: We are talking about two separate issues here. The first is the desirability of standards and accreditation for conservators, with all the myriad of problems that this entails. The second is, what the @%*# business of FoMRHI's is it, anyway?

You've got more than enough fingers on your two hands to count all the FoMRHI members who have indicated conservation as being one of their interests. (This may be a result of your continuing to list "conservator", rather than "conservation", as an interest.) That's just over one percent of the full membership. Have I understood correctly that you now are telling the entire outfit that they are "going to look a right bunch of amateurs" if they don't come up with a viable means for accrediting musical instrument conservators? I wouldn't have thought that they could care less, and certainly would question their corporate ability to set standards for other peoples' professions. You're gonna bring us straight back to where we were at the outset of the great acronym debate. How, by the way, did FoMRHI end up on a list of curatorial/conservational associations? If your action is directed towards a formal FoMRHI decision, I would have thought that the Fellows should be given a first shot at the discussion. (What, by the way, has happened to my motion of close to two years ago [to abolish entirely the distinction between Fellows and Members]?) I am pleased, nonetheless, that you have directed your enquiry to outside the family circle. You obviously agree that the membership lacks the necessary expertise, no?

As far as I know, no group of conservators has at yet succeeded in setting generally accepted accreditation standards for itself. I would expect "musical instrument conservators as a whole" to translate a raft of nits if they did so in all haste and thereby ended up being the fools who stepped in where angels have feared to tread. The entire problem, together with its first cousin, ethics, is the subject of massive discussion and debate within the professional community. You've listed a good number of reasons for the whole business perhaps being insoluble. There are plenty more. One way or the other, it will be a while before we know. Can't really see as how any action on FoMRHI's part is going to expedite matters.

When conservators first started shunning the terminological tie to restorers it was assumed that, sooner or later, restorers would also start to call themselves conservators and thereby nullify the purpose of the nomenclatural distinction. On top of this, the differences in meaning of the words conservator and restorer in different languages have caused even greater difficulty (what with the shrinking globe and all). This at times transcends its linguistic aspect. In German, for example, the Konservator is the curator. The Restaurator works with the objects at the bench, regardless of the English language label that might be attached to any individual operation. This in turn has colored the nature of the activities, themselves, with few workers specializing in straight conservation. The option of resolving the difficulties which this causes by a simple terminological dichotomy is not available. Instead, emphasis has been placed on formulating a clear definition of the professional sphere of activities, thus providing a basis for the curricula of professional training programs. In the German frame of reference, every profession must have its Berufsbild.

Ironically, ICOM [The International Council of Museums] ended up turning the German solution into a potential nail in the English terminological coffin lid. Their Standards and Training Committee translated a draft German Berufsbild into English. (I haven't got the foggiest about how the draft was accepted in Germany; Friedemann should know.) Rather than taking advantage of the lesser ambiguity of the English terminology, they decided to translate Restaurator by inventing a "compromise" term -- the "conservator-restorer". The native English speakers who were party to this insist that it was their intention to define a new profession, related to but separate from those of the conservator and restorer. I was present when ICOM's Conservation Committee accepted the proposal, and again when an ICOM General Assembly did so. At that point I threw my hands up in total despair and realized that the days of the neat dichotomy were over. All that remains is for this to filter back through everyday parlance. What with Bob and Friedemann out, the idea of a "conservators' voice" has fizzled, and in all honesty that's what has had me in these past few years.
Anyone in possession of the manual skills necessary for restoration is quite likely easily enough to be able acquire the additional manual skills necessary for conservation. The knowledge required by the conservator, however, is not likely to be pickupable through anything other than formal tuition, or at least very heavy reading. A workshop situation is not the correct forum for this, and the whole thought of a conservation workshop, accredited or not, is more than slightly peculiar. (Restoration workshop; conservation laboratory; conservation-restoration workshop-laboratory?) Nor can I understand the purpose of an isolated conservation "job". Restoration is entirely objects oriented. The contractor says, "the thing is this way, make it that way". The restorer does so. The conservation contract would by definition include a rider, "and see to it that it remains that way for 150 years". There's no way to do that on a one shot basis. (Bob will probably have a lot more to say on this.) Ergo, conservators at museums and restorers on the loose. The concept of the conservator in private practice serving non-institutional clients, is largely that of the restorer going "legit" via a new moniker. Obviously, there is room for conservators consulting with people on things like humidifying a home, or physically removing mold from inside the family's Strad. I'd just bet that that ain't entirely what the CU's got in mind. Indeed, the upshot of your action is more than likely going to be an increase in the number of workshop people who feel it necessary or desirable to add the word "conservator" to their shingles.

There are two main ways of subdividing the discipline of conservation. The first is into materials conservation, and objects conservation. The second is into direct physical conservational treatment, and preventive conservation. (It can legitimately be argued that anyone who works at a museum ought to be involved in some aspect of preventive conservation, although only those active at the conservation bench are likely to call themselves conservators. Others are museum chemists, museum climatologists, etc.; or, if you like, curators and janitors.) It is not common to qualify the title conservator on a level more detailed than, say, metals conservator or musical instruments conservator. A part of the skill of any such person is knowing what objects they cannot treat by themselves. The proper conservation of something like a tuba might easily require the skills of both a metals conservator and a musical instruments conservator. Although a metals conservator who only deals with marine iron may know little about brass, and a trained harpsichord maker who has subsequently become a musical instruments conservator might never dare touch a tuba, it should be appropriate to ask either of them for help. It is part of their profession to be able to refer onward. Confirmation of this ability should be part of the accreditation process. The field of musical instrument conservation is not wide enough to allow for particularly fine nominal subdivision. Maybe wooden m.i.'s or metal m.i.'s, but not much further.

Note that the FoMRHI members who are employed as conservators at museums list themselves for "all instruments", even though they all have highly specialized backgrounds. The preventive aspect of their concern is not effected by the area of their craftsman training. They are also quite used to being consulted about all aspects of musical instrument conservation. This doesn't mean that a woodwind person would consider opening a lute to extract a rotting dead mouse. It does mean that they would have to know how to deal with the question. They would be limiting their usefulness if they were conveniently to claim otherwise. Anyone who would dream of hiding behind a non-specific title and directly undertaking work for which they are unqualified, certainly should not be accredited. The accreditors will have to be able to perceive any likelihood of misrepresentation on this point. Although many restorers never heard of anything like a professional code of ethics, any accreditation committee will have to deal with that issue as well. Ultimately, any accreditation would be made on the basis of two factors: the knowledge and skill of the applicant, and the credibility with which the applicant agrees to adhere to a prescribed code of professional ethics. There should be a periodic review on this last point, or at least a formal board of complaint which can initiate review as necessary.

I'm sure Bob and Friedemann are wondering how many times they're going to have to refer to the Murray Pease report and the other documents which get trotted out every time someone rediscovering the issues of professional standards and ethics. I'll allow them to do so in response to your Comm before starting in, myself.

For all of it, better and worser, I think that the m.i. people in the UK would be best advised to ride the UKIC's coattails. If at least some of its people aren't aware of mainstream museum thinking there's no hope for you, anyway. There isn't a jot of difference between the problems entailed in m.i. accreditation and any other, even if other disciplines may have a headstart in dealing with these problems. There are also the various ICOM committees and the IIC, if a higher authority is needed. Bob will probably put you unto the work of the IIC-CG and the AIC, as well.
I'm loathe to give you the names of specific experts on different types of instruments. You've set this up too conveniently for yourself, expecting gross disagreement amongst the pundits, thus leaving you free to forward recommendations according to your own personal bias. You know all the names already, and can just as well express your own opinions, although some of the remarks in your list are a bit puzzling. Suffice it to say that I don't know of any independent musical instrument makers whom I would regard as competent conservators other than a very few of those who have put in healthy stints at museums, nor have I met any others who claim to be conservators, with the possible exception of a few who don't know the difference between repairwork, restoration and conservation. You obviously disagree, which makes me suspect that you have missed something quite fundamental in all that Bob, Friedemann, I and the gang have been on about all these years.

Can't think of much else to say. You can't be right both on "our" (who's us?) having to come up with standards, and on the inherent impossibility of the whole deal. Relax -- others have worried about this before, and are still working on it. Many of them are conservation professionals, and far more qualified to grapple with the issue than is FoMRHI. I can't for the life of me see how FoMRHI can help them much, either. There is total agreement on the desirability of formal professional and ethical standards, although this doesn't always end up being projected onto the accreditation issue. If you can't sleep well in the knowledge that this hasn't yet specifically been put into practice in the musical instrument field, I would urge you to ride the question via CIMCIM and not FoMRHI. Peter Andreas [Kjeldsberg] was already on about this when we met in Buenos Aires, and has assumed responsibility for a group intended to deal with the matter. I can't quite remember if Bob was supposed to help them, or if he thought the entire CIMCIM effort was redundant; probably the latter, in which case he isn't likely to be enthused by a FoMRHI initiative. The basic issue is that the musical instrument community's ignorance of what's going on in museum conservation circles does not in any way imply that nothing is going on there. I admit that you have good cause to be concerned by the similar ignorance which appears to pervade the UK museums circles to which you have access.

Accreditation is not a panacea. Would you go to any dentist simply because he's been accredited (even if you obviously wouldn't dream of going to an unlicensed practitioner)? Ultimately, people are still going to be dependent on a destillate of the opinions of those whom they trust. There's no way that anything like that can ever be codified, seeing as how you quite rightly observe that there isn't going to be any general agreement about who's to be trusted doing what, anyway. How could it be otherwise? I never heard of a conservator who doesn't have some nightmare vision of a job they wished could be undone. The victim of such a job is going to think that the conservator is a bungler, no matter how many satisfied customers the latter otherwise has. You are not going to be able to find conservators of widespread good reputation specializing in every single type of musical instrument in Great Britain, nor perhaps anywhere. To get the CU ball rolling I would go for a small troupe of museum conservation people -- a few locals who know about training programs, grants administration, UK museum and cultural politics and the like, plus some imported m.i. people.
The Destruction of the Tropical Rain Forests - What Can I Do?

Following the recent series of articles on the subject of ivory use in musical instruments, a request was made in the last FoMRHI for some discussion of another "green" issue - the use of tropical hardwoods.

For many people like myself (a maker of renaissance recorders) who, for the sake of authenticity only use domestic hardwoods such as box, sycamore and fruitwoods, it would be easy to dismiss the matter as irrelevant, and individual makers who do use tropical woods may regard the volume they consume as unimportant. It is, however, an issue in which we all have some responsibility if we consider the materials used in our homes, workshops & offices, and the environmental consequences of the destruction of tropical rainforest which offer alarming prospects for all of us.

I was originally prompted to study the problem of the global use of tropical timber and deforestation in my other roles as a teacher of wood science, answering questions from eco-minded students, and as a cabinet maker dealing with similarly aware customers. In 1988 the pressure group "Friends of the Earth" produced a report entitled "The Good Wood Guide" which recommended a boycott of tropical timbers and dealers who sell them and encouraged replacement with domestic hardwoods. Looking more closely at the facts, however, it is clear that, worthy as it may seem, this is not the solution to the problem and it may lull people into thinking that they are "doing their bit" when the matter is far more complex & intractable than FoE are able to appreciate.

About 34% of the Earth's land surface is covered with wooded areas. Of these 21% (2.8 billion hectares) are "closed" forests (those in which the treetops form a continuous canopy over the ground) and the other 13% are more sparse, open woodlands. In the far northern latitudes coniferous, evergreen forests predominate, giving way to the broadleaved deciduous species such as oak, ash & beech in the lowland areas as we move south. The dry, upper tropical areas of north Africa, Asia & Latin America are covered with sparsely wooded savannah lands, and the lush, tropical rain forests are found in the high temperature and humidity either side of the Equator. These trees are evergreen but are bordered by deciduous areas known as monsoon forests which shed their leaves in the dry season. These two types of tropical forest are collectively referred to as "Tropical moist forests" and it is with these that we are principally concerned. 62% of all closed forests are broadleaved (hardwoods) of which 75% are found in developing nations. Developed countries contain 90% of all coniferous forests. About half the total area of tropical moist forests is in Latin America, mainly in Brazil, with the rest shared roughly equally between Africa and the Asia/Pacific region.

The rate of disappearance of the tropical forests has become a widely recognised cause for concern in the past decade. The main cause of deforestation in tropical areas is the clearance of land for agriculture to feed growing populations or to grow cash crops such as rubber, coffee and beef for export to earn foreign exchange. Known as "slash and burn" agriculture, large areas of forest are burned, the resultant ash is ploughed in and the land is cultivated until exhaustion, when it is abandoned. This wasteful method was largely responsible for the deforestation of much of Europe in earlier times. Other reasons for such large scale destruction of tropical forest are pointless prestige and capital projects such as damming & flooding for hydroelectric schemes in Brazil,
and resettlement of population, e.g. in Indonesia where the government encourages people from the overpopulated island of Java to "colonise" the huge but sparsely populated, forested islands of Sumatra, Kalimantan and Irianjaya.

It is estimated that about 11.1 million hectares of tropical forest and woodland are destroyed each year. Of this area, about 7.3 million of tropical moist forest are cleared for agriculture and 3.8 million of drier tropical woodlands for both agriculture and fuelwood. About 4.4 million hectares per annum are selectively logged.

Logging is not a direct cause of deforestation as most tropical forests are "natural", containing many species of which only a few are commercially viable. Selective logging removes only 2-10 trees per hectare (3-30% of timber volume) but felling damages other trees, disturbs the forest wildlife & eco-system and opens up hitherto inaccessible areas for farmers (via the logging roads) for further clearance after the loggers have left.

Of the timber harvested on a world basis, over 50% is burned as fuel wood, and in the developing nations, this accounts for about 80% of their cut wood removals, the remainder being used for construction, conversion to charcoal & export. On the last point, most wood is consumed locally due to its relative abundance and low value relative to its bulk. From various sources it is estimated that 3-15% of wood is traded internationally but this trade is worth about £25 billion/annum in the 1980's and wood is the third most valuable primary commodity after petroleum & natural gas. Developed nations dominate world trade in wood products - 81% imports & 87% exports by value. (1986 figures). This trade consists of exchange of new types or products not available in particular areas, import by countries with few forest resources such as the Middle East, and the import of wood pulp for paper making. Most tropical timbers are unsuitable for pulping so that the countries' export earnings from their native timbers are offset by imports of wood pulp. As literacy increases so does the demand for paper....

Total world wood removals for industrial purposes have risen by over 50% between 1959 and 1985, from 0.981 to 1.5 billion cubic metres. Estimates for the year 2000 vary from 1.7 to 2.6 billion m³, but if present annual deforestation rates are extrapolated, all tropical moist forest will have disappeared within 177 years, with some countries such as Nigeria & Ivory Coast, El Salvador & Costa Rica and Sri Lanka cleared within 50 years. There are many arguments over the methods of monitoring forest clearance and the selection of parameters for future forecasting but, even if they are approximate, the figures as they stand obviously indicate a situation which requires drastic & immediate action.

The rapid, short-term changes in the economies of developing nations as a result of deforestation may lead to irreversible problems in the future when raw materials run out, and the dangers of such large scale extinctions of the forest flora & fauna are unpredictable. A major problem linked to deforestation which is better understood is global warming or the "greenhouse effect", caused by ever increasing emissions of carbon dioxide from motor vehicles, power stations & industrial complexes. In the pre- and early industrial periods, CO₂ levels in the air were very small; it was continuously absorbed and photosynthesised by plants but the balance -more CO₂ and fewer trees- is rapidly accelerating out of proportion. This excess CO₂ traps heat radiation which would otherwise be reflected into space and causes a gradual overall warming of the Earth. An average rise of even a couple of degrees in world temperature will lead to major disasters such as increased drought and desertification, flooding (due to glacial melting) in coastal areas and profound changes in world weather, disrupting established methods of agriculture.
From the background information presented so far, it becomes clear that the amount of tropical timber cut and actually used for craft and construction is much smaller than that destroyed for agriculture or burnt as fuelwood. It should also be added that over 50% of the tropical timber traded goes to Japan which has also been very active in developing the timber conversion mills in the newly industrialised Far Eastern nations via both commercial investment and foreign "aid". According to Friends of the Earth (FoE), the U.K. is the largest European importer of tropical timber, having consumed the equivalent of 200,000 trees in 1988. It is accepted by both the U.K. Timber Trades Federation (TTF), which represents the importers & dealers, and FoE that only a fraction of 1% of imported tropical timber was harvested in any sustainable manner but, unlike the ivory question where elephants are being killed solely to satisfy a consumer demand, a tropical timber boycott would seem to be a futile gesture rather than a solution to the real problem.

Brian Johnson, a timber expert & consultant to the EEC and the World Wide Fund for Nature, argues that the value of timber should be increased (the average real price of timber has remained roughly constant for the last 25 years) and a wider range of species should be used. He rejects the FoE boycott and advocates proper management of tropical forests- in a 1980 study, only 1% of tropical forests were found to be under any sort of sustained administration. The TTF have proposed a scheme for an international levy on all tropical timber imports - at 2%, £15 million/annum could be raised in the U.K. or 500m. internationally. This money would finance forestry management schemes administered by the International Timber Trade Organisation, a U.N. trade association. The proposal has been accepted by most European timber trading bodies.

The European Parliament has also approved a scheme to help tropical countries to move towards sustainable forest management within five years. This would include central & local control of deforestation, protection of selectively logged forest (to allow regeneration), and the conservation of "pristine" areas to facilitate in-depth study of the complex forest eco-system. Replanting will also be encouraged, but this will have little effect on timber supplies or CO₂ levels for 20-30 years, the time it takes for tropical forest to mature. The European Commission and the Council of Ministers, which represents the individual EC states, have yet to approve the scheme.

The title of this article asks what the individual can do to prevent the destruction of the tropical rain forests and to reduce global warming. Rather than boycotting tropical timbers, we can have a greater influence on the situation by reducing our emissions of CO₂, cutting down the use of motor vehicles - perhaps a greater sacrifice for some people? - and consuming less energy which, directly (burning gas) or indirectly (electricity from power stations), all contributes to the greenhouse effect. We should also lobby our MPs, Government ministers and suppliers of timber to support the forest management schemes outlined above - and to accept with alacrity any levy imposed on timber towards this end.

Sources:-


Bassoon Reeds by Triébert and Massabo

Recently I was able to study and document thirty-three bassoon-type reeds, of nineteenth century (or earlier) vintage, which are currently housed in the Museo del Pueblo Español in Madrid. The museum collection contains what was originally thought to be three folk instruments, but were later realized to be: an anonymous five-keyed bassoon, probably of French origin; an anonymous one-piece bajón (dulcian); and a three piece bajón. As the existence of any European art instruments in, what is essentially, a folk museum is purely accidental, it is unlikely that the reeds (whose circumstance of acquisition by the museum is unknown) would have been acquired independently of the three aforementioned double-reed instruments. It was Beryl Kenyon de Pasqual who found the reeds (canas) scattered in the bottom of a box containing the instruments and salvaged for posterity what the museum had obviously been unaware were significant historical specimens (not an uncommon occurrence in the case of most museums’ handling of reeds). From this group of reeds I have extracted eleven of which I confidently feel are for the five-key bassoon. The remaining reeds are of a radically different form of construction and because of this I suspect they probably belong to (or could have been used with) the collection’s one and three-piece bajones. As the bajón reeds are the only surviving dulcian reeds — of any vintage; anywhere in the world — it has been decided to deal exclusively with them in a separate article to be published in the near future.

The bassoon reeds are highly significant for a number of reasons. Perhaps the most important of which is the fact that large (62-66 mm long) reeds, of the type described by Ozd at the end of the eighteenth century, were still in use long after the second half of the nineteenth century. This late vintage is supported by the makers’ names stamped on ten of the reeds: Triébert and Massabo, both of whom were active during this period. Indeed, this type of reed may even have been, because of a broad commercial availability, the most commonly used design during the second half of the nineteenth century. Up until recently it has been assumed that the appearance of the short (45 mm) modern reed coincided with the evolution of the bassoon during the second- and third-quarters of the nineteenth century and most especially in conjunction with the development of the Heckel-system bassoon. This assumption may now have to be

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1The existence of these reeds came to my attention in an article by Beryl Kenyon de Pasqual, who also very graciously helped to arrange my visit to the museum. See, Beryl Kenyon de Pasqual, ‘A Brief Survey of the Late Spanish Bajón,’ Galpin Society Journal, XXXVII (March 1984) pp. 72-80.

2The bell shape of this instrument is very Jehring-like; the long-joint (keywork, turnings, etc.) is like Prudent’s or Porthaux’s; wing, of boxwood, again, similar to Prudent; and the butt is noteworthy only for its angular keywork.

3It is significant that both Massabo and Triébert prepared reeds for competitive judgement at the Paris Exhibition of 1867. See listing under each maker, Lyndesay G. Langwill, An Index of Musical Wind-Instrument Makers (Scotland: Edinburgh, 6th ed., 1980)
carefully re-examined (perhaps even earlier than previously thought possible) and some short reeds believed originally to be of late-nineteenth century origin might eventually prove instead to have been from the twentieth century. Alternately, these reeds, if they are for the collection's five-key bassoon, might be just one of many reed types available from suppliers during this period and therefore represent an older style of design kept in stock specifically for late-eighteenth century instruments still in use. Or another explanation might lie in the Parisian origin of the reeds and the possibility they were specifically for nineteenth century French bassoons. Instruments which were more directly related (as the technical refinement of the earlier 'simple-system' bassoon) to bassoons of the past because they avoided the radical design departures incorporated in Heckel-system instruments. As a result of this continuity French instruments might have required reeds more closely related to earlier reeds.

Speculation aside, what cannot be ignored is the residue of eighteenth century reed building technique evident in these particular reeds. Virtually all have the arch pattern scrape common to ancient reeds, with only a few exceptions being scraped utilizing the parallel, horizontal gradation method — not one is scraped using the modern U (long, thick spine) common on the Heckel-system instruments of today.4 As was stated earlier, these reeds are closely patterned on those suggested by Ozi, who it seems summarized the corporate reed-building technique of the Parisian school of bassoon playing which developed throughout the eighteenth century and whose culmination coincided with the decline of the bassoon as an important solo instrument towards the end of the eighteenth century. This lineal continuity is also paralleled within the community of musical instrument makers, who often were reed makers themselves or were likely to have been as closely allied to professional reed makers as they were know to have been with professional players. In Triébert's case it is know that the founder of the firm worked in Nicolas Winnen's factory from (at least) 1804-05. One of the Winnen children, who became a bassoon player and maker, was named Prudent, whether this christian name is coincidental or actually denotes a homage or association to either of the Thierriots is difficult to know at present with any certainty. There is other, equally tenuous, circumstantial evidence to tie all of these men together. In 1788, the year Nicolas (père) Winnen's name first appears in Paris, Porthaux took up residence in a workshop on the rue Dauphine; the same street Prudent's shop was on or had been up to then. 1788 was also the year after the publication of Ozi's tutor which specifically singles out Bizey, Prudent, Porthaux, and Keller as important bassoon builders. Designs based on or allied to the instruments of these makers would have been the most commercially viable in the areas falling withing the distribution network of this important (and oft reprinted) tutor. The early bassoons of Winnen fit this pattern and stylistically, internal as well as external, there is so little difference between the late instruments of Prudent Thierriot and the early ones of Dominique Porthaux so as to

4For detailed explanations of these scrapes, as well as other technical descriptions used in this paper, please see the criteria for the documentation and analysis of historical reeds developed in: 'Early Bassoon Reeds: Paul White, 'A Survey of Some Important Examples,' Journal of the American Musical Instrument Society, 1984.
suggest they must have worked together as associates, possibly as master and apprentice. Considering Porthaux's running battle with Savary over design theft, it is unlikely he would have imitated Prudent so closely without some form of permission, if not Prudent's blessing. Further evidence which supports a close, if not direct, association between Prudent and Porthaux appears in a classified advertisement for the sale of a bassoon in a Madrid newspaper (dated March 16, 1792) which specifically mentions Porthaux as the successor to the famous 'Prudent de Paris'. As all of these individuals (excepting some of the late instruments of Triébert) share the same graceful style in the formal composition of their bassoons, as well as many other minute details (the lineage of which culminates in what must be considered one of the most beautiful instruments ever created: Winnen's gilded 'empire-style' bassoon in the Paris Conservatory Museum), it is not unreasonable to assume the same sort of continuity in reed design amongst these same men and their associates.

It is precisely for this last reason that these eleven nineteenth century reeds present an import clue as to what sort of reeds should be used in conjunction with the reproduction Prudents being used in period orchestras throughout the world. Surely these reeds represent a sound generating technology closer to the eighteenth century than do the short (German-scrape) 'modern' early-bassoon reeds (Heckel reeds on steroids) commonly used by the present generation of professional early-bassoon specialists.

THE BASSOON REEDS

1 & 2. Reed one and reed number two bear what appears to be the stamp of the Parisian oboe and bassoon building firm of Triébert. The same general characteristics seem to hold true for each of these Triébert reeds. Both reeds have a double twist wire at the back and triple twist at the front, with the first wire placement at roughly a 2/3 ratio to the entire length. Each has well weathered cane. The blades are just shy of 28 mm, have a smooth even scrape (almost a polished surface), are comprised mostly of the hard dermal material just below the bark surface, and seem to have been shortened 2 to 5 mm during the working lifetime of each (a normal practice as the reed wears out, whereby flexibility, response, and resonance can be restored with the clip of less than a mm off the tip). Triébert is known to have invented a gouging machine. Possible evidence of this can be seen in each of these reeds as the tube gouges mirror each other within .1 mm: an unusually close tolerance as we will see when compared with the Massabo reeds. The gouge of these two reeds were not made to the same standard: one being 2 mm and the other 1.65 mm, this however could be explained as a purposeful commercial gradation in reed thickness and subsequent hardness. Again, note that though these reeds are probably mid-nineteenth century they still utilize Ozi's 1787 long-reed lengths. Reed two has a slightly wider tip at 17.5 mm. Reed one seems to have the number 5 scripted just in front of the first wire, which might correspond to the pricing of the reed in Madrid during the mid-nineteenth century.

3. This reed has roughly the same dimensions as the Triebert reeds though is slightly narrower at the throat and considerably thinner in the gouge and blade. The blade has obviously been shortened, because both wires have been moved forward about three mm, with the first now resting well onto the actual blade surface. This first wire had originally rested 35 mm from the butt yielding a wire to total length closer to half, rather than the 2/3 ratio of Triebert. The blade is unusual in that almost its entire length is comprised of hard (dermal) cane material.

4 through 11. These reeds were made by the Parisian reed maker MASSABO (though sometimes the stamp varies, looking much like MASSAPO, MABSABO, MASSARO, etc). All are very similar in construction, shape, and in the material used. Each has the same double and triple twist holding wires (though gauge varies) employed by Triebert, all are covered in a thick string (though not all the same gauge) which is painted red (though not all the same shade or type of paint). The lengths vary from 61.5 to 65.5 mm, with tips from 15.6 to 18+ mm; only the throat widths under the wires at 8 and 10-11 mm are similar from reed to reed. There seems to be no consistent relationship between tip size and reed length (i.e.: short / wide vs. long narrow), however one cannot assume that these proportions were not greatly altered while in the players possession. The widest and longest dimensions are probably close to the original makers work. What then makes this group of reeds interesting is that such variance could exist within one reed makers work or (assuming all these reeds belong to the collection’s five-key bassoon) that this same degree of variance would not inhibit a players performance on one particular instrument. It is also noteworthy that there is a lack of consistency by the maker in his choice of materials: string, paint, and wire all vary and appear to be less important than the manner in which they are employed, therefore taughtness, neatness (or lack of it as the turbans are very rough), shape, and style become, in this case, more indicative of a maker’s work. The blade scrape for the most part, unlike Triebert, utilizes very little of the dermal material, instead relying on equal parts of dense parenchyme and broad parenchyme: though all (Except one side of reed 5) have been well smoothed. The blade lengths range from 26 to 29 mm and it is suspected that most have been shortened to one degree or another. If each blade were once 30 mm and that now missing section added to the current length of each reed almost all would come very close to having an original length of 66 mm. Gouge for these reeds is very thick ranging from 1.65 to 2.34 mm and the opposite sides of the tube often are unbalanced, which implies the cane was hand-gouged.

Patterns indicating the various layers of cane:

- Bark
- Dermis
- Broad Dermis
- Dense Parenchyme
- Broad Parenchyme
- Touch up scrape
arch at front wire 6
back wire 6.5
37
7.8
10
66.5

150 165 140
110 135 125
70 110 105
65 80 75
50 70 60
30 45 35

arch at front wire 6
back wire 7
38

165 160 150
140 145 132
112 125 115
85 100 90
70 65 65
20 30 40

17.5

175 155 150

200
arch at front wire 7
back wire 7.5

arch at front wire 7
back wire 7.5

MASSABO 5.

MAB**BO 6.
arch at front wire 6.5
back wire 7.5

35

15.5

27

8

210

10

63

28

190

MASSA

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1969 FOMRHI List of Members – 1st Supplement as at 5th July 1969

* in left-hand margin = change of address or other change

William P. Adams, 56 Cobham Road, Halesowen, B63 3JZ, UK; 021-550 5250 (crnett., dbl reed instrs; P).
Claire Y. Barlow, Newnham College, Cambridge, UK; 0223-62273.
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Paul R. Jacobson, 623 Lincoln Avenue, St. Paul, MN 55105, USA; (612) 221-0937 (recrdr, rec/bar trav; M, P).
Torben Hove Jensen, Olaf Rudes Vej 9, DK-6270 Højbjerg, Denmark.
Jitze Koplinga, Churchhillweg 41, NL-6707 JB Wageningen, Netherlands (fidel, lute, bagpp, dulcer; M).
Robert Longstaff, Orchard View, Appleton Road, Longworth, Abingdon, Oxon OX13 5EF, UK; 0865-620206 (brdy-g, harp, lute, cithn, etc; M).
Inés Martínez, (recrdr, m; gamba; P).
Nicolas Mees, rue de l’Escurie 31, B-1190 Brussels, Belgium; (02) 344 0330 (all instrs, W, L; asst curat Conservatoire Museum).
Musikhistorisk Museum & Carl Claudius Samling, Åbou A 30, DK-1124 Copenhagen K, Denmark; 01/11 27 26.
Newark Technical College, Chauntry Park, Newark-on-Trent, Notts NG24 1PB, UK; Newark 5921.
Sebastian Nuñez, Vlytstr 6-a, NL-3513 SV Utrecht, Netherlands; 030-710063 & 313170 (lute, hpschd; M).
Guy Oldham, 10 Newton Grove, Chiswick, London W4 1LB, UK; 01-995 9029 (all instrs, esp orgn; Coll, P, W).
Terence Pamplin, Little Critchmere, Manor Crescent, Haslemere, Surrey, UK; 0428-51158 (gamba, mus instr technol, pfte, temperaments).
Nicholas Perry, The New House, Gypsy Lane, Knebworth, Staffs SG3 6DJ, UK (brass instrs, crnett; M, P).
Stewart Pollens, Assoc. Conservator, Dept. of Music instrs, Metropolitan Museum of Art, 5th Avenue at 82nd Street, New York, NY 10028, USA; (212) 879-5500.
Martin Pühringer, A-4171 St. Peter/Wg.Nr.25, Austria; 07222-8405 (hpschd; M).
Garry Ragen, Lot 1 Single Ridge Road, The Slopes, Nth Richmond, Sydney, NSW 2754, Australia; 045-731886 (gtar, etc; P, coll).
Michael Ransley, 22 Queen Street, Lostwithiel, Cornwall PL22 OAD, UK; 0208-873215 (ww, esp ren recrdr; M).
* Paul Richardson, (recrdr, M; lute, recrdr, P).
Edward E. Swenson, 11 Congress St, POBox 634, Trumansburg, NY 14886, USA; (607) 387-6650 (viennese frtpno; R.C).
Martin Thren, Charlottenburger Straße 3, D-3400 Göttingen, West Germany; 0551/7905774 (ren/bar trav, recrdr; M, F).
Library, University of California Riverside, POBox 5900, Riverside, CA 92517, USA.
* Lou Zeekaf, 04490-16394 (bar.ob; P, res).

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Museums:
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New York: Metropolitan (Stewart Pollens)

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All Instruments: Nicolas Meeus
Percussion: Danny Hathaway
String Instruments: Rob & Anne Burns
A.A. Chalkley
Dulcimers: John Cummins
Keyboards: Stewart Pollens
Piano: Terry Pamplin
Harpischord: Peter Holman
Lute: John Cummins
Guitar: John Cummins
Viuhela: John Cummins
Fiddle: Jitze Kopinga
Violin: Alfred Fry
Viola da Gamba: Peter Holman
Harp: Danny Hathaway
Wind Instruments: Rob & Anne Burns
Woodwind: Peter Bettle
A.A. Chalkley
Traversa: Scott Hirsch
Recorder: Paul Jacobson
Inés Martinez
Organ: Guy Oldham
Double Reeds: William Adams
Oboe: Michael Dupree
Bagpipes: John Cummins, s
Brass: Nicholas Perry
Cornett: William Adams

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GEOGRAPHICAL INDEX

Australia: Garry Ragen, NSW

Austria: Martin Pühringer

Belgium: Nicolas Meeds

Denmark: Torben Jensen Musikhistorisk Museum

West Germany: Martin Thren

Netherlands: Jitze Kopinga Sebastian Núñez

Spain: Ibañez Esteban

UK by counties, Cambridgeshire to Leicestershire:

Claire Barlow, Cambs Peter Bettle, Dorset John Cummins, Leics
Michael Ransley, Cornw Peter Holman, Essex

London: Guy Oldham, W4

UK, West Midlands to West Sussex:

William Adams, W. Midl Robert Longstaff, Oxon Terry Pamplin, Surrey
Alfred Fry, Notts Nicholas Perry, Staffs Martin Haycock, W. Sussx
Newark Tech. Coll. ——— A. A. Chalkley, Surrey

USA:

Michael DuPree, CA Rob & Anne Burns, MI Edward Swenson, NY
UC Riverside, ——— Paul Jacobson, MN Danny Hathaway, WA
Bernard Brauchli, MA Stewart Pollens, NY Scott Hirsch, ———
Responses to Comm. 903 on the subject of Ivory.

I had a packet of responses to his Comm. 903 in the mail from Bruce Haynes before he left Montreal for France in mid-April. He asked me to write up the results, and so here they are.

TOTAL RESPONSES RECEIVED BY BRUCE BEFORE APRIL 12th: 28

This is who they were from:

<table>
<thead>
<tr>
<th>WHERE</th>
<th>WHO</th>
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<tbody>
<tr>
<td>Canada</td>
<td>Restorers</td>
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<tr>
<td>U.K.</td>
<td>Musicians, other</td>
</tr>
<tr>
<td>U.S.A.</td>
<td>Professional makers</td>
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<tr>
<td>Australia &amp; N.Z.</td>
<td>&quot;Amateur&quot; makers</td>
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<td>Europe</td>
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<td>7</td>
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Many of these responses contained impassioned words of distaste for the idea of dealing in ivory.

I leave members to draw their own conclusions from these figures.

***

A sale of ivory tusks at Sotheby's in New York, scheduled for April, was cancelled after a public outcry, reported on U.S. national television.

A cartoon in the San Francisco Chronicle for Sunday, May 21, showed a pair of elephants sporting an assault rifle and a necklace of human teeth, while a man lay dead in the grass at their feet.
Jeremy's 7-line review of TRAVERSO in Bull. 55 may have given some people the impression that it is all froth and no beer. Though I am grateful for his notice, Jeremy is clearly working on the assumption that it should be called "Quarterly" instead of "Newsletter". It is quite true that the first issue contains no detailed reports of scholarly research; however, none will appear in future issues either. In case he is not the only one suffering from a misconception, I had better explain one or two notions behind the publication.

I do not believe there is a place for a journal devoted to the baroque flute; if one existed and was successful, it would siphon off all the relevant material from Flutist Q., Flute Talk, Early Music, and other journals. This would be against the interests of the baroque flute as it would reduce the exposure of such material to the attention and criticism of a more general audience. However, articles of interest to us baroque flutists do appear in many different publications all over the world. Almost nobody has subscriptions to all of them, so TRAVERSO is there as a signpost to direct those interested to this information. Facts and inspiration (as FoMRHI members will be aware) also come from sources other than modern periodicals and a handful of 18th Century books; TRAVERSO aims to point people in those directions too.

People who are used to having articles explain a subject to them in depth and with authority may find TRAVERSO requires more of them than merely their attention. The world of the flute in the 18th Century is full of areas about which little or nothing is widely known. There is no common core of knowledge required of a baroque flutist or teacher, and anyone seriously involved in the field has to find things out for him- or herself, or from other like-minded people who have studied and considered the subject. Without contact between these individuals, advancing the fund of general knowledge in our field is an uphill struggle. TRAVERSO aims to provide that contact, in the hope that it will have results which, among other things, can generate articles that can be published in journals for flutists or Early Music people.

As regards the subscription price, the economics of the situation are these: magazines with a large circulation are able to cut their cost-per-copy by spreading production costs over a large number of subscribers. TRAVERSO is aimed at a much smaller group of people (under 400 in the U.S.), and so this option of keeping the cost down is not open. Losses incurred by TRAVERSO are presently borne by Folkers & Powell, the newsletter's publisher. It would be possible to produce TRAVERSO more cheaply, but as editor I prefer to encourage the baroque flutist's self-respect by making it look as attractive as I reasonably can. I am paid nothing for my time, and contributors do not receive a fee. No money is raised by advertising as I do not
presently think printing ads would be consistent with the objectives of the newsletter. Finally, I promise that if TRAVERSO ever makes a profit, the subscription price will be reduced!

I too would like to see TRAVERSO grow: I would like the Bulletin Board sections under the headings "Articles" and "Books" to take up more and more room; to see more notices of courses, competitions, concerts, research published, academic posts filled, etc. This kind of growth will be a reflection of a certain kind of growth in the field of the baroque flute, and it goes without saying it depends on everyone. Though I believe TRAVERSO can stimulate, question and encourage, it will never lead anyone by the nose.

In conclusion, the newsletter is intended primarily for a readership in the U.S. and Canada for its first year. (Concert listings for the whole world would be expensive to gather and would take up more space than they were worth.) However, much that it contains is of interest to traversists and traversistes everywhere. Cathy and I will decide whether or not to carry the expense of actively soliciting overseas subscribers depending on how the first year's activities turn out. But of course contributions of news and information are most welcome without discrimination as to geography or language.
LA GAITA GASTOREÑA

Es un instrumento de viento, de lengüeta simple batiente, típico del Gastor, pequeño pueblo de la serranía de Cádiz en España.

Su construcción tradicional se realiza a partir de un asta de toro o vaca, al cual se corta el extremo agudo, en el que se introduce un cuerpo de madera de adelfa, o cualquier frutal, de sección rectangular, y adornado con tallas hechas al fuego. Este trozo de madera es taladrado en toda su longitud a 3 mm. de diámetro, ligeramente conico en su extremo superior, donde se introducirá una vez acabado el instrumento, la caña o "pitóque" (lengüeta). Se taladrarán también otros cuatro agujeros de 3 mm. de diámetro, tres en la cara superior y uno en la cara inferior, según se indica en la figura 2.

La lengüeta se hace con caña de 5 a 6 mm. de diámetro aproximadamente: Se corta por encima de un nudo, de manera que este extremo quede cerrado, y el otro, que deberá quedar abierto, se corta a 45 mm. del anterior. A continuación se rebaja la caña con una navaja o similar en la zona donde va a estar la lengüeta, la cual se conseguirá con un corte longitudinal a partir de 10 mm. del extremo cerrado, hasta otros 10 mm. del otro extremo (figura 3). El espesor y la anchura de la lengüeta debe ser de 0,5 y 4 mm. respectivamente.

De la buena realización de estas operaciones, dependerá la facilidad de ejecución de el instrumento y la calidad de su sonido.

Describo a continuación las notas que produce el instrumento, basándome en los ejemplares que he podido examinar, los cuales, salvo pequeñas diferencias en cuanto a tesitura y afinado, — debidas al tamaño variable de las cañas y de los agujeros — guardan similitud en cuanto a los intervalos de las escalas que producen. Como ejemplo vale el representado en la figura 4.

La ejecución típica del instrumento es la siguiente:

La mano izquierda pone sus dedos índice y medio sobre los dos primeros agujeros, el pulgar lo hace sobre el agujero posterior, mientras los dedos restantes se colocan debajo de la gaita a fin de sujetarla; el agujero más cercano al cuerno se tapa con el dedo índice de la mano derecha, el resto de los dedos de ésta mano sujetan el instrumento (medio y anular por encima y pulgar y meñique por debajo).

El sonido que produce la gaita del Gastor es profundo, dulce y agradable, exento de la estridencia típica de los instrumentos de doble lengüeta.
The Morley Consort Lessons and the English cittern.

The Consort Lessons appear to be a crystallisation of a popular combination of instruments in Elizabethan England. Its antecedents seem to be shown in eg. Musica Britannica, XL, 2nd and 3rd plates, and on the ceiling painting at Crathes Castle, where similar but slightly different combinations are shown. (See my forthcoming article in the Lute Society Journal)

Experiment shows that the Lessons 'work' with various instruments omitted, in particular the lute. As usually played today, prominence is usually given to the lute, presumably because the recording or concert has been organised by or around the lutenist. Various ploys are used to ensure that the lute achieves this prominence - sound engineer balancing, platform positioning, finger-plucked citterns, mutes on viols have all occurred in recent years. (David Munrow's T.V. recording, although suffering from other blemishes, is the only recording I know to have achieved a realistic balance between the instruments.)

A "treble" lute is specified in Morley and Rossetter, other references are, in 1575 when Sir Francis Middleton writes to ask whether 'treble lutes' could be obtained in London, and in Hardwick ms 10a, July 1602. '-for a bandora, 48s, treble lute 20s, bass vyoll 40s, treble vyoll 20s, for the chest to lay them in 16s'- 'carriage of these from London to Hardwick 12s'. Ian Harwood has suggested that a 'treble lute' was at a high pitch (top string nominal c") for the 4th high consort that he postulates. (see below) However the Hardwick instruments, together in one case, do sound as though they were intended to be a consort, and it does seem peculiar that the lute alone should be so described. The other possibility is that the 'treble lute' was that used for the treble part of the treble and ground duets of the period. A small-bodied lute at the usual pitch would both facilitate left-hand fingering and give better response on the upper courses where it was needed both for the duets and the consort.
Even so, with a lute especially designed for the music, it will not achieve the 'leader' quality that the frequently virtuosic nature of its tablature ( arranged by Sydney Beck, but similar to that in Rossetter, etc.) might seem to demand.

The standard of musical attainment required for the other parts varies considerably. The treble viol or violin part is often quite difficult, the others are comparatively easy, the cittern especially.

The only situation where the Lessons would have been performed, and where musicians of such differing standards would be expected, would seem to be in a private household, where members of the family might have taken the parts of moderate difficulty, allotting the lute and perhaps treble viol ( maybe played on the lower-class violin ) parts to household musicians or talented servants. Obviously here the lutenist would not be expected to drown out his master, whilst still shining sufficiently to impress casual visitors. Some amateurs of course could play the more difficult parts - Sir Henry Unton, in his National Portrait Gallery portrait seems to appear as the lutenist in the mixed consort as also with the bass viol in the viol consort. A private household would also seem to be the only customer that could have afforded the printed music. Professional musicians without a patron would not have needed to, being fully capable of making their own divisions. ( The carefully written-out lute divisions would seem to preclude the possibility that the cittern and other inner parts were mere skeletons for embellishment ).

In the context of a family performance then, the music was published to be enjoyed by its performers as later was much viol music, and by a limited audience of immediate family, friends, and retainers, rather than for a large audience or for dancing to.

Two suggestions have been made for an alternate "performance practice". Ian Harwood has suggested a 4th high consort ( Early Music, October 1981 ). A consort as he describes should work very well, allowing the lute to be heard better, and it seems likely that the music might sometimes have been used in this way. However the necessary involvement of three instruments transposing - treble viol, bass viol and flute - would seem to make it less likely that this was the original intention.
Ian's article includes a suggestion that the Helmingham orpharion is actually a high pitch bandora. I visited Helmingham to photograph the instrument and to measure the fret spacings, hoping to be able to say definitely whether it was an orpharion or a bandora. Unfortunately the fretting pattern for an orpharion and a treble bandora could be identical. Besides tradition, there are two possible reasons for it to be considered an orpharion. Cittern fretting patterns, at any rate in Italy, seem to be identical regardless of pitch, (FoMRHI Quarterly comm. 858) so perhaps a bandora with top string d' should be similar to one with top string a. Or if Ian's bandora had a top string a, but at a high pitch, then this instrument is not fretted for a bandora tuning and must be an orpharion. Like the Palmer instrument it is decorated with a head of Orpheus (wreathed with laurel). This head may not be original. The carving is of a lower standard than on other instruments by Rose and there is a joint to the neck. If it is not original, the instrument could have been converted from a treble bandora, perhaps with only five courses, to a six course orpharion. Obviously with only five courses it could not have been used for the Lessons, but perhaps similar instruments could have been. However cittern heads were usually carved separately, and if, as is described by Pepys' account of his own viol's construction (FoMRHI Quarterly comm. 857), the carver and instrument maker were not the same person, then the different standards of carving are accounted for, and the head might be original.

One important fact emerging from my visit was that the instrument is in a meantone temperament with the 5th at about 698.5, and presumably therefore other instruments played at Court and elsewhere, circa 1580, were similarly tuned. (The Palmer orpharion and Italian citterns are slightly further from equal temperament with the 5th at 698 or slightly less.)

The other suggestion, made in the Lute Society Journal 1975, by Eph. Segerman, is for the music to be played with a treble cittern tuned an octave higher than the usual size. This would certainly have been possible using the strong iron wire, necessary for orpharions, and available at the end of the 16th century. Various of the Lessons were played both in this and in the more usual way at one of the Lute Society Summer Schools. The high pitched cittern gave greater rhythmic cohesion and impetus to
the music, making it quite suitable for dancing to, but over
-powering the lute even more. It seems surely probable that if
it had been Morley's intention that the cittern should lead in
this way, it would have had a less simple part with at least
decorated repeats and cadences. There is also some evidence
that Eph. was wrong to give the small cittern an octave tuning,
although it certainly could have been and probably sometimes
was. Its usual tuning was probably a 4th high, top string at
a nominal a', using the usual cittern wire.

Firstly ( published by Eph, FoMRHI quarterly comm. 774 )
in the Tabley ms. for 1656, Sir Peter Leycester refers to the
'Gitterne' as a treble cittern with "a variation in the Tuninge".
Presumably he would have called it a descant? soprano? if it
had been tuned an octave high.

Secondly experience suggests that constructed citterns of
the usual (≈45 cm.) string length with body thicknesses derived
from admittedly continental examples should have a tension of
2 - 2 ¼ kg. per string. To achieve a similar feel, a treble
cittern would probably have a tension of 2 kg. or a little
less. If we suppose that Praetorius' Englishman had achieved
his gittern-like tuning by rearranging his original strings,
and that Praetorius was so surprised by the bright high re-entrant
tuning that he notated it an octave too high, and presuming a
pitch standard of A-415 because the other cittern illustrated on
the same plate has a string length suited to this pitch,
wherever in Europe it was played, then using the string diameters
given in Eph's 1975 article for Praetorius' string sizes, we
can obtain the following tensions.

<table>
<thead>
<tr>
<th>String</th>
<th>Tuning given by Praetorius</th>
<th>Suggested correct tuning</th>
</tr>
</thead>
<tbody>
<tr>
<td>g&quot;</td>
<td>5 ½ kg.</td>
<td>6 ½ kg.</td>
</tr>
<tr>
<td>d&quot;</td>
<td>6 ½ kg.</td>
<td>1 ¾ kg.</td>
</tr>
<tr>
<td>a'</td>
<td>6 ½ kg.</td>
<td>1 ¾ kg.</td>
</tr>
<tr>
<td>f&quot;</td>
<td>6 ½ kg.</td>
<td>1 ¾ kg.</td>
</tr>
<tr>
<td>g'</td>
<td>1 ¾ kg.</td>
<td></td>
</tr>
<tr>
<td>a'</td>
<td>1 ¼ kg.</td>
<td>2 kg.</td>
</tr>
<tr>
<td>c'</td>
<td>2 ¾ kg.</td>
<td>2 kg.</td>
</tr>
<tr>
<td>e'</td>
<td>2 ¾ kg.</td>
<td>2 kg.</td>
</tr>
</tbody>
</table>

Rearranging the same strings for
a treble cittern tuning

The fourth high pitch would seem to fit Praetorius' string
gauges and illustration. Also the two citterns have string
lengths which match a difference of a 4th. Note that if
Praetorius' given pitch was correct, then a cittern of normal thicknesses, particularly with its back left half open, would have collapsed long before it reached Germany.

Thirdly in Holborne's book for cittern, as mentioned by Thurston Dart, 1948, 'Maister Birds Galliard' seems to require a cittern tuned to a' - unlike the other accompanied pieces in the book. Perhaps Holborne (and Robinson and Morley) was keeping his options open for more sales. Do not forget the five parts, for Viols, Violins or other Musicall Wind Instruments.

There is of course no reason why a treble cittern should not have been restrung at octave pitch using orpharion wire and used in a consort. Eph. in his article suggests that the Sir Henry Unon mixed consort is doing this, although the small size of the area of detail concerned and the naive quality of the execution especially seen in the disparity in size between individual figures in groups throughout the painting means that his reliance upon accurate measurements may be misplaced.

In summary, I suggest that although both the high pitch consort and the octave-high cittern may have sometimes been used, the majority of performances of the Lessons would have been with the usual instruments and with the music additionally embellished not more than slightly.

It was tempting to suggest that the Hardwick consort (?) instruments were ordered to complete a consort in the new manner of Morley - a 45 cm. cittern, 60 cm. lute (too large) and a box of recorders, with violins etc., but no viols, being illustrated on their dining table, perhaps taken from specimens in the house, but as the table was made 34 years earlier, this would have been an unnecessary flight of fancy?
Whoever needs music wire today, whether to string an instrument or to replace a broken string, is accustomed to the micrometer, a device to determine the string diameter easily and quickly. The micrometer is so familiar to all of us that we need not describe it. In this paper, however, we shall look at this familiar measuring device from the point of view of the historian of technology and try to find out, when, how and why the wire micrometer was invented. This article will also present an unknown document, written in 1781 and important for today's research on historical "gauge numbers".

The rise of historical instrument making in our time and the accompanying desire for scientifically precise restoration has in past decades repeatedly led to questions concerning diameters of old strings. The informed audience was familiar with several theories.

For years, we have been looking for a logical system to connect early wire numbers and diameter values. But since we thought only in terms of diameter sizes, we - as if blindfolded - disregarded the historic development and did not notice that there might have been a further correspondence beyond that of the direct connection between number and diameter.

What led us astray for so long? One of the many culprits turned out to be the wire-micrometer. We knew (1) that until the middle of the last century no micrometer existed. If no micrometer was used for wire drawing before the second half of the 19th century, precise work cannot have been possible, we reasoned; consequently we would not possibly get a clear picture.

Yet knowing the date of an invention is not enough, if we want to reach definite conclusions. My present contribution to the history of the micrometer will demonstrate that in historical research finding out "how" and "why" is sometimes more important than knowing "when".

For a long time, the history of technology was nothing more than a series of dates, listing when certain inventions were supposed to have taken place. Many historians were proud of being able, after much toil, to put back a few more years the date of any given invention. I might myself have been satisfied with showing that the use of the micrometer can be documented as early as 1780, i.e. almost a century earlier than hitherto presumed. But what could this added span of time in itself signify for today's research? New possibilities for even more speculations? No! Instead I consider it very important to show why and how the micrometer was developed or rather, why it had to be developed.

The micrometer

The history of the micrometer begins in an area that is not directly linked to either wire-drawing techniques or musical strings. Scientific astronomy experienced a steep upturn in the 17th century. As Kepler remarked - to mention only one of many - scholars became increasingly aware that knowledge obtained by calculation can be reliable only if the initial data, gained from observation, are precise. These of course depend on the precision of the astronomical instruments used for observation; those had only just come into use, replacing the naked eye.

Johannes Kepler correctly observed that a tiny mistake in the measurement of the diameter of a planet or in the determination of the distance between two celestial bodies could lead to an enormous deviation in reality. Therefore the astronomers of that time had to conceive a technical solution allowing them to measure as precisely and reliably as possible.

The problem was: Which device available in the realm of techniques of that time was capable of measuring the tiny movements of an astronomical measuring device?

Mattheus Heintz. Fecit in Zwickau, 1631.

As an astrolab "in the Royal mathematical-physical parlour in Dresden" (in 1887) demonstrates, Mattheus Heintz, a manufacturer of mathematical instruments, found a solution soon after Kepler's death: the micrometer screw. We do not know if he was the first one - more important is that he did not remain the only one.

Dr. A. Drechsler writes in his article (2): "In antiquity the screw was used to lift big loads, to push heavy objects, to exert great pressure, to strengthen connections of bodies; but its application to small movements and to the measurement of tiny quantities has been introduced only recently, and it has since been attached somehow as a screw micrometer to instruments and devices. [...] Mattheus Heintz of Zwickau has applied the screw with a drum for finer measurements and the measuring of angles on his astrolab, i.e. for outer measurements".

I will not give a detailed description of this instrument here. Let us note, however, that it was meant for "outer measurements", in contrast with the next instrument, invented only a few years later and intended for "inner measurements", i.e. supposed to be built into a telescope. Here we encounter the name of a Mr. Gascoigne, who died in a battle in England in 1644.

Gascoigne in England

A letter published in 1667 in the "Philosophical Transactions" (3) by "Mr. Richard Towneley to Dr. Croon" informs us about the use of a measuring device built into a telescope by Mr. Gascoigne. There is no illustration of it from Gascoigne's time. Figure 1 [the next page] shows the

3. "An Extract of a Letter, written by Mr. Richard Towneley to Dr. Croon, touching the Invention of Dividing a Foot into many thousand parts, for Mathematical purposes" in: "Philosophical Transactions", for Anno 1667, No 25, London 1667, p. 457. Figure on p. 541.
instrument that had come into use in England in 1667. The information, given by the author of the letter, who, as he points out himself, used and improved Gascoigne's measuring device, is still very interesting for us because of the following paragraph: "I shall only say of it, that it is small, not exceeding in weight, nor much in bigness, an ordinary Pocket-Watch, exactly marking above 40,000 divisions in a Foot, by the help of two Indexes". If we convert these data into our modern units of measurement, we get an order of magnitude of 0.0075 mm, quite an accomplishment for the "Ingenious and Exact Watchmaker", as Richard Towneley wrote, who helped him improve Gascoigne's micrometer.

The Astronomical Micrometer in France

The proceedings published by the newly founded "Académie Royale des Sciences" in Paris permit us to gain a clear idea of what such an astronomical micrometer looked like in France. It is illustrated, too, in the "Mémoires de l'Académie Royale de l'Année 1666" (4) [Figure 2, n. page].

The principle is quite a simple one. A small window TRSV is built into a stable frame NLMO so that it can be shifted to the right and to the left. The movable part is connected to a micrometer screw that pierces the right side of the large frame. Where it stands out, a pointer is attached to the screw. By this construction each turn of the screw can be seen on the dial. The whole device is built into the telescope (figure 2, upper half).

The proceedings of the "Académie" inform us that the screw can be adjusted in such a way that three full revolutions of the pointer displace

the movable window by exactly one line, the equivalent of 2.25 mm. On the
dial (figure 2) we find a subdivision into 60 parts. Since 180 of these division
marks correspond to 2.25 mm, we realize that it is technically possible here
to measure to an order of magnitude of 0.012 mm. Auzout, the author of the
article of 1666, goes even further, proposing to divide the dial into 100
parts, so that (again "translated" into our language) magnitudes of 0.0075
mm can be made visible, as in England.

This micrometer up to the beginning of the last century caused
quite a stir in the scholarly world. In the German speaking part it was called
"Drahtmikrometer" (wire micrometer), which, for the modern researcher does
have a ring of irony.

Returning to figure 2, we can see that regularly spaced thin wires
were stretched across the large stationary frame as well as the small
movable one. The distance between two stationary wires was exactly known.
In order to measure the diameter of a planet, its picture had to be fitted
between two invariant wires, so that the remaining part of the celestial
body, the part not touching the wires, could then be precisely determined
with the help of the movable frame.

We shall not now describe the Auzout micrometer in more detail
(5). Yet I will stress the following point. Like the tangential screw
micrometer of Mattheus Heintz of Zwickau, this device could also have been
used, already at that time, to measure bodies other than celestial ones, e.g.
wires.

Astronomy offered the wire-drawers of the 17th century a
practical method for measuring fine wires. But a technical transfer into the
world of wire-drawers or wire-users did not take place at that time.

As we will see later, this so-called "wire micrometer" had to wait
almost two centuries before, appropriately modified, it turned up in the
fabrication of wire or instrument making.

Why did the wire-drawers and -consumers during all these years
"deplorably" miss this "opportunity"? This would be a reasonable question, if
we were to content ourselves with a superficial glance.

Of course, the question should not be posed in judgmental terms
such as "opportunity" and "deplorably". Research into the history of
technology has often shown that a transfer is possible only when several
components make it desirable. The important factors here are usually quite
different from the presumed technical ignorance or the primitive imperfection
of the Ancients, which we are so ready to recognize. The "gauge system"
puzzle alluded to above can serve as an example. The conclusion that the
manufacture of old wire was not "precise", since no wire-micrometer has
been found in the workshops of the time, is invalid. Although we find a link
between the two concepts of precision and micrometer quite reasonable
today, in this case it need not have existed.

5. S.R.M. McKeon, "Les débuts de l'astronomie de précision" in:
Physis, XIII (1971), No 3, p. 225 & XIV (1972), No 3, p. 221.
Today we know that the old art of wire-drawing was based on a long forgotten principle: length and weight were, as I have shown (6), the two main pillars of this admirable art, directly connected to the historical systems of measurement and weight. The "Zangelmas" offered, where known, a technical solution to the problem of obtaining the exact dimensions (prescribed length per weight) of the wires during manufacture. This notched brass plate did not, in daily use, presuppose any special arithmetical or numerical abilities on the part of the craftsmen. It was much easier to handle than the micrometer and perfectly suited to the habits of the craftsmen of the time. At that time geometrical thinking was prevalent. It is therefore quite natural that the more complicated micrometer did not find entrance into this way of thinking until arithmetic had become better known in the 19th century.

But the difference in the simplicity of handling these two measuring devices and in the mathematics they involved is not the only reason why the micrometer had to wait for so long. Diameter values just were not relevant in historical wire-drawing. They were variables the Ancients did not have to take into account. The craftsman paid attention to length and weight; the dealer and the customer took notice of the gauge numbers; these latter were, as we are slow to recognize today, means of classification and not a specification of diameters. In view of this state of affairs it is only natural that no one then thought of inventing an instrument which would measure something which needn't be measured.

This situation changed toward the end of the 18th century. New voices arose with novel pretensions. Where did the pressure originate and what was its nature?

August Friedrich Lüdicke

The first name we encounter on this new path is that of August Friedrich Lüdicke. He was born in Oschatz in 1748, grew up in Torgau and later became a Professor of Mathematics in Meissen, a position he held for 41 years. He occupied himself with all the great subjects of Natural Philosophy in his century. We see from the list of his publications that he was nevertheless no pure theoretician. For three years he served as secretary of the "Ökonomische Gesellschaft" in Leipzig, a society strongly oriented toward the application of science, and during his term he must have had more than one opportunity to study very practical problems. Among other things he developed a cleverly constructed blowtorch (7), and, of specific interest to us, a "micrometer to measure the diameter of thin strings", as the title of his two publications says (8). He died in Wildsrat on December 12, 1823 (9).


In an article published in the "Wittenbergische Wochenblatt" on May 25, 1781 he describes his invention for the first time. Since this paper is not illustrated, he adds 18 years later additional information. We quote both texts (8a and 8b).

Most notable in this encounter is the fact that we are dealing with neither a wire-drawer nor a wire-user (or instrument-maker). Equally notable is the fact that Lüdicke, for his micrometer (see Figure 3), does not get inspiration from the "wire-micrometer" the astronomers use. He makes use of another principle, the same one encountered in the well-known reduction compass, which makes use of two similar triangles which coincide in one angle (10).

First the description: "The construction of this small instrument is quite simple. A thin strip of steel is attached to a level boxwood plank so that it moves around a steel pin dividing the strip into two very unequal parts; thus the ends of its legs draw curves of very different radius, the chords of which correspond to the width that is to be measured.

The boxwood board has been made very level on one side, and measures 3 1/2 inches of a Paris kings foot [14.85 cm] in length, 1 1/2 inches [4.05 cm] in width and is two lines thick [0.45 cm], and was cut off a ruler that had been used for more than 30 years indoors as well as outdoors, so that it was completely


seasoned; in the course of several toilsome experiments, a change in temperature of 30 degree Réaumur and a change in humidity of 120 degree according to the Lambert Hygrometer, it did not change in length or width".

Already in 1781 Lüdicke proposes that his instrument could also be made of marble or another stone slab, if no old hard wood board be available. In 1799 he "chose a fine-grained solid slab of slate, since one can easily choose the best and most solid slabs among many slates; because it is easy to drill and with respect to invariability it offers as much as we are entitled to expect".

He goes on to describe the construction of his micrometer in great length and detail. To summarize, the whole instrument forms a kind of tongs, one limb of which rotates about its axis (g), while the other one does not move. The movable limb is the longer one and ends in a window, in the centre of which a very fine silver wire (ik) is fastened. During a measurement the silver wire comes to a stop on top of one of the marks engraved on the rectangular sign (no) and thus we can easily read off the distance between points (e) and (f), the jaws of the tongs between which we have stuck the object we wanted to measure.

The magnifying factor is the following; "It follows from the construction of the instrument and the relation of the distances of both limbs from the pivot, namely 2 1/4 : 54, that the diameter of the wires stuck between the tongs becomes visible on the long limb magnified by a factor of 24".

In order to turn this invention into a useful measuring device, it "is therefore only necessary to compare this magnified distance precisely enough to the real distance". In other words, we must determine exactly how many lines or other subdivisions of a unit of measurement correspond in reality to any given distance on the dial; then we can conclude the real distance between the jaws of the tongs.

Lüdicke chooses a well-known method to attain this goal. We are acquainted with it through Geoffroy de Cryseul (11), who mentions winding a string like a spring until it measures one inch. The string diameter can be calculated by dividing one inch by the exact number of turns of the string.

Lüdicke applies the same technique to brass strips; "The enlarged scale on the arch (no) was found as follows: Ten strips of thin plated brass, each 1/20 of a Paris inch wide, were fabricated and embossed until all widths together amounted to 1/2 of a Paris inch. With these ten strips ["""] the enlarged scale for 1/2 decimal line or 0,005 Paris inches of the arch (no) was determined and corrected. This arch is large enough to be divided into 50 equal parts; such that 1/4 of each part can still be recognized by the naked eye. This instrument can thus divide a Paris inch into 1000 and, by estimate, into 4000 parts".

Converted into our familiar number system we recognize that orders of magnitude of 0.027 mm were easily measurable and that values of about 0.006 mm were visible on the micrometer scale "by estimate". Here we encounter the same values the astronomers attained 150 years earlier.

Why did the mathematician need this accuracy, or, in other words, why did he invent the micrometer?

Leonhard Euler established, as is known, the famous formula for the vibration of a string. While discussing this formula Lüdicke hit on the quite practical question of how to determine precisely one of several entities involved, namely the diameter of the string. Therefore he had the idea of using this instrument, not yet known to the world of wire-manufacture, as his paper from 1781 shows; "Enclosed please find the desired micrometer that was of such easy use for me at that time; when I applied some general terms of Professor Euler's Theory of Music to specific cases and wanted to put in diameters of wire strings I had actually measured". In Euler's formula length and tension could be measured without great difficulty; but there was no reliable device to determine the diameter quickly, easily and exactly. For this reason Lüdicke invented his wire-micrometer.

The wire drawers had not (yet) encountered a similar need. They still employed the old weight-length procedure. And the wire-users stuck to the "good old" system of gauge numbers.

We summarize that we owe the first known (as of now) wire-micrometer to a mathematician who wanted to subject to a practical test his famous colleague's formula for the vibration of strings.

Further Development

The papers mentioned above made Lüdicke's invention known to the public. The advantages of his device were soon appreciated. The time was ready for it, since around 1800 the problem of the great differences between the various "gauge systems", became even more acute. We find lamentations concerning it in most of the piano-forte manuals of the time (12).

Instrument making around the turn of the century posed new demands. The forte-piano presented new problems. The "Mechanicus and Opticus" J. C. Hoffman of Leipzig gives us insight into these in a paper published in 1808 (13): "An important quality in a new stringed instrument is of course the sameness of the strings. A forte-piano, for example, cannot be tuned properly if one of the two neighbouring strings, which are tuned to the same note, is stronger or weaker than


the other. In the manufacture of new instruments this mistake does not show when the strings are first put on, since both are taken from the same spool and therefore of equal strength. But if one string breaks and has to be replaced, then it is difficult to find another one of the same strength, since the numbers marking the wire are not reliable. Many instrument makers deplore this and have relied on their eyesight or on an instrument consisting of two brass rulers attached to each other on one end, leaving room between them, however, at the other end to accommodate a strong brass string. The two connected rulers provide us with a measure for all strings that is, while not perfectly reliable, yet a bit safer than pure eyesight.

"The reasons just mentioned led me to advertise an instrument that enables us to determine with greater reliability the equality of strings, as it is necessary for a musical instrument." This device is shown in figure 4.

In principle it is the same as Lüdicke's, though it is much simpler. The slate slab is no longer needed. The dial is directly connected to one of the limbs. An instrument maker of the first half of the 19th century should not have any problem using this wire-micrometer. Hoffman's closing sentence reads:

"This device makes differences clearly visible, the real size of which cannot be seen. It could be perfected even further by adding a nonius."

We cannot here describe the nonius, still in use today, in detail. Let us note that it is an invention of the 16th century. Hence it had to wait even longer than the astronomers' micrometer, until it finally was allowed to enter the world of wire.

Up to now we have not, in the history of wire-micrometers, encountered any instrument maker. The instruments mentioned above, invented by a mathematician or "mechanicus", offered reliable assistance in determining or comparing string diameters. Yet they did not quite meet the demands of the instrument makers of the time, as we shall learn. We are now going to encounter a great name: we shall meet, even twice, the Streicher family.

15 Alfons Huber, "Saitendrahtsysteme im Wiener Klavierbau zwischen 1780 und 1830" in: Das Musikinstrument, Heft 9, September 1988, p. 84. Figure in center, p. 89.
Streicher's Micrometer

In a paper published in "Musikinstrument", Alfonso Huber depicts a "string measuring gauge" dating from about 1825 (15). This instrument, to be seen in the Technisches Museum in Vienna, is very similar to Hoffman's measuring device. Streicher's improvement consisted in shaping the round jaws of the tongs holding the wire into a beak-like and slanted shape instead, so that it was easily possible to get it in between the strings fixed on an instrument, this being Streicher's ultimate goal, as we shall see later.

In 1848 we hear the name again, when "the famous k.k. Forte-Planoe builder to the Emperor in Vienna, J. B. Streicher" expounds his explanations and advertisements in writing (16). These are interesting even today: "The calculation of the lengths and diameters of strings differs strongly for different pianos and depends on the quality of the material as well as on the various opinions of the instrument makers. Yet all instrument makers agree that the strings of an instrument must have exactly the same diameter, if they are to produce the same note, and if that note is not to sound impure".

Streicher then stresses, as Hoffman did earlier, that a new instrument is usually strung correctly on delivery, but that problems arise as soon as strings break "by accident or because of excessive playing" and a substitute string of exactly the same diameter has to be found.

Streicher also regrets that the gauge numbers written next to the nut by the manufacturer are not very helpful. We already know the reason, due of course to the "circumstance that the wire-drawers not only use different gauge numbers, but also only rarely provide strings with the same number with exactly the same diameter, so that the tuner, if in doubt, has to rely on his eyesight alone to judge the diameter of the strings - the devices for the measurement of strings at the time are just not fit to measure strings while on the instrument".

J. B. Streicher had the string measuring device shown in figure 5 (in three different views) "made according to his directions. It shows each diameter of string magnified by a factor of 73. In order to measure the strings of a piano-forte, you must hold the measuring device like a pair of compasses at a mark beneath the dial and, holding the device vertically and all the while exerting pressure, pierce the tips (b) so far into the string that is to be measured, till the string measuring device stands upright on the pin (c) that crosses the tips". The movable long limb then draws a curve that can be seen in the rear view. The teeth indented there trigger the rotation of the pointer revolving around the dial.

J. B. Streicher pursued the same goal as his father did twenty years earlier, namely the measurement of a string while on the instrument. But he follows another path in order to determine the diameter. He explains that he "subdivided the dial into degrees, because - as mentioned earlier - the numbering of the string manufacturers differs and is not always the same. But each owner of a string measuring device will easily be capable of setting up a conversion table that will show on first sight that e.g. 28 degrees are equal to No. 4/0 Vienna or No.16 English string gauge".

As befits someone who is not only a fine instrument maker but also a good business man, Streicher's article ends with a paragraph of advertisement: "And since the skilled watchmaker Mr. Anton Zwach is willing to deliver similar string measuring devices made according to my instructions for 6 fl. D.M., the publication of this should be quite sufficient to instigate many tuners and instrument makers, who value perfect instruments, to buy it".

Here we observe an interesting development. If we compare Streicher's first solution (around 1825) to that of 1848, we shall see that the first device determines the classification of a string: No. S/O or No. 2/0 and so on. His instrument replaces the old gauge plate, so to speak, but it already has the advantage of greater precision: it can help detect differences within one number-size (17). This device must, however, be seen in the light of the traditional gauging by numbers. It is as though this device had been invented for use in one and the same system only. No thought was given to absolute diameter values.

17. See 6., p. 13, Harzer deplores that the measuring method of his time is insufficient.
The device developed in 1848, however, was capable of measuring diameters and expressing them in degrees. Gauge numbers no longer appeared on the dial. Yet they are still kept in mind, since the numbers obtained by calculation are thought of primarily as a secure means of determining the correspondence between different gauge systems. The degree numbers do indeed give direct information on the diameter of a string; thus the device stands about halfway between the first device of Streicher and our modern micrometer. The instrument makers of that time evidently did not have to be informed about the correspondence between a diameter value expressed in a given unit of measurement and a gauge number.

If we now compare the inventions of Lüdicke and Hoffman to the two tools developed by Streicher, we must stress the following points:

- The Streicher family took into account the specific problems of instrument builders. They were real experts, knew their colleagues' problems and how to help them. The construction of their micrometers allows one to get an idea of the diameter of a string, while on the instrument.

- Streicher's dial from 1848 is divided into degrees instead of into subdivisions of a foot. Thus the diameter cannot be expressed in lines, as was possible and necessary for Lüdicke (remember Lüdicke's point of departure). Streicher's way of thinking is different, his final goal is the comparison of two diameters and not the measurement of a wire in fractions of an inch or another unit of length. Faced with an ample supply of strings from many manufacturers, his device was meant to enable the user to find a substitute string of exactly the same diameter.

This ultimate aim of J. B. Streicher was a task that could not be tackled by means of the old wire gauge-plate. But the maker of FortePianos did not have Euler's formula in mind.

Lüdicke's intention, on the other hand, was the precise measurement of diameters in fractions of an inch, since he needed this quantity in numerical form for his calculations, using Euler's formula.

This historical difference also has consequences for modern research.

Let us now consider the final stage of the development of the wire-micrometer in the middle of the 19th century. Here we encounter a name well known to us today: Palmer.

Jean Laurent Palmer

The French inventor Jean Laurent Palmer had completed his micrometer in 1848. At the end of 1849 during a session of the French "Société d'Encouragement à l'Industrie Nationale" it was described under the name of "calibre à vernier circulaire". We find this description in the "Bulletin" of this society, from which we have also taken our figure 6 [n. page] (18).

The author explains that Palmer's device is built like a screw clamp. A micrometer screw C is added, its screw thread constructed so that each turn corresponds to exactly 1 mm. On the cylinder 6, furnished with a mm-graduation, there is a movable slot (d), the slanted front side of which is subdivided into 1/20 mm. Although our modern micrometers have finer subdivisions, I need give no further instructions: we all know how to use a "Palmer". I will only draw your attention to an inaccuracy in the description of 1849. The author describes the slanted edge of the slot as a Nonius (Vernier circulaire). That is not quite exact, since a true Nonius, whether circular or linear, is based on a different principle: a principle we all know from our slide gauge.

It cannot, of course, have been by pure chance that the Palmer micrometer was invented in the native country of the metric system. Let us have a quick look at the chain of components that may have influenced Palmer's inventor's spirit:

During the advent of industrial production, in the first half of the 19th century, the old manufacturing techniques, depending on places and people, were abandoned. Mass production presupposed among other things the interchangeability of certain technical elements. Therefore it required standardisation. But standardisation is possible only in a situation where all involved use the same measuring system. In France at that time this was already the case. All craftsmen had to be able to adhere to the standard norms, i.e. to use a measuring device valid for all of them.

Palmer's micrometer is by far the simplest of all the measuring devices described. Since it was born a child of the metric system, it turned out to be a practical solution for ordering, producing and controlling wires that matched the common standards of all the manufacturers and customers of one country - and later of the majority of all countries. But Palmer's solution had the added advantage of being capable of delivering scientific data that could be used immediately for calculation: with the help of Euler's formula the length and diameter of the strings may then be expressed in the same unit of measurement. (This was not the case with Streicher 1848).
The prophetic words of the author, written in 1849, turned out to be true: "Sa forme permet de faire un petit outil de poche, son prix est à la portée de toutes les bourses, sa précision ne laisse rien à désirer, et il est probable, par conséquent, qu'il sera bientôt généralement employé". [Its shape allows it to be carried in a small pocket, its price makes it available for all, its precision satisfies our demand and it is therefore probable that it will soon be in use everywhere.] (19)

The success of the French invention did in fact follow the same path as the metric system itself, a path that led around the world.

General remarks

The history of the wire-micrometer, which we have only summarized here, gives an interesting insight into the development of a (new) apparatus, a process, which is not always easily described. Each inventor lives in his own time, yet must bring forward a totally new solution. A step we often encounter in the history of technology is that, under pressure, the searching mind looks for solutions already in use in other areas that might be helpful. In such a case, the invention does not appear out of nowhere. It rather consists of bringing together in a completely new fashion several known elements.

In our case the story goes like this:

- a. Heintz, in 1631, chooses the screw.
- b. Gascoigne and Auzout, in 1667, use the screw together with a pointer and a circular dial. All three elements of a. and b. were already well-known in other technical areas.
- c. Lüdicke uses the reduction compasses, known since Antiquity, as a basis and adds, in 1781, an oval dial with subdivisions of the Paris Line.

Hoffman, in 1808, does the same thing and proposes the use of the Nonius, already used in astronomic instruments for more than 200 years.

- d. Streicher's solution, in 1848, might be listed between b and c: the reduction compasses are provided with a pointer and a circular dial divided into degrees.

- e. Palmer, in 1849, has a partly different point of departure: the clamp, the micrometer screw and the slot divided into 1/20th mm. The latter corresponds to a horizontal dial without a pointer.

Finding out how these various wire-micrometers were received and how often they were used by the manufacturers of

19. Ibid., p. 31.
musical instruments could be a topic for further research. Yet it seems that they were all successful, since we see the different string measuring devices described here illustrated next to each other in table III in the 1886 edition of Blüthner’s books on the making of a fortepiano (20). They were all (still) well known then and the instrument makers could choose freely among them.

The time was also ripe for the wire drawers to open their doors ever wider to the micrometer. The most important factor, however, was probably the new art of producing drawing dies. For centuries the wire drawer had to "make his holes himself", because he was not supplied with any standardized set of holes. Toward the end of the last century the wire-drawers were more often capable of purchasing perfectly calibrated dies. This replaced the old length-weight procedure, and with it the "Zängelmass", which became superfluous and gradually vanished into oblivion. Meanwhile the micrometer, like a magic wand, was able to perform what was wanted: the wires could be classified according to their diameters, which in turn determined the size of drawing dies, and all measurements were expressed as fractions of millimetres. The micrometer permitted the data to be checked at each step. We are on familiar ground.

Historical Measurements of String Diameters

Finally, as announced above, we shall publish a document, which might have shortened our erroneous paths, had it been discovered years ago. I say "might", for it has happened, too, that a document turned up too early in historic research. This happens if the necessary standard of knowledge has not yet been achieved, so that a meaningful and expressive evaluation of the source emerging out of the past cannot yet be guaranteed.

In the last paragraph of his 1781 article, Lūdicke gives a nice example for the applicability of his measuring device (21). He was unaware of the fact that his measurements would be so useful for many instrument makers and scientists in the second half of the 20th century. In his paragraph so relevant for us today he adds "the diameter of some strings which were all made of iron, and all spools were marked with the stamp G.H." (Figure 7) [n.page].

If we convert Lūdicke’s data, we get the following data:

<table>
<thead>
<tr>
<th>Gauge no</th>
<th>Diameter/mm</th>
<th>Gauge no</th>
<th>Diameter/mm</th>
<th>Gauge no</th>
</tr>
</thead>
<tbody>
<tr>
<td>O</td>
<td>0.567</td>
<td>O</td>
<td>0.564</td>
<td>0</td>
</tr>
<tr>
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<td>0.500</td>
<td>2</td>
<td>0.466</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>0.460</td>
<td>4</td>
<td>0.374</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>0.405</td>
<td>5</td>
<td>0.336</td>
<td>5 Hachette</td>
</tr>
<tr>
<td>4</td>
<td>0.378</td>
<td>6</td>
<td>0.296</td>
<td>6 Hachette</td>
</tr>
<tr>
<td>5</td>
<td>0.337</td>
<td>7</td>
<td>0.269</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>0.297</td>
<td>8</td>
<td>0.241</td>
<td>-</td>
</tr>
</tbody>
</table>

21. See 8a, p. 163.
22. See 6, p. 52 and p. 75f.

<table>
<thead>
<tr>
<th>Zahl</th>
<th>Auf einem Pariser Zoll 1000 Theile.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>21</td>
</tr>
<tr>
<td>1</td>
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<tr>
<td>6</td>
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<tr>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td>8</td>
<td>9</td>
</tr>
</tbody>
</table>

Meßten


M. August Friedrich Ludike.
With regard to the wire numbering we see that the Nuremberg gauge for brass and iron given by Thomee in the middle of the 19th century matches Ludicker’s data (only) up to N.4 (22). The sparse two data from Hachette correspond to No. 5 and No. 6 (23), and prove that several standard diameters sometimes matched one and the same number.

It is difficult for me to say anything about the correspondence between the diameter values measured by an author of the 18th century and the values calculated by a humble scholar during the winter of 1982/83 (24), because I am one of those involved.

It is of secondary importance whether we take the values measured in 1781 or the data calculated by me as a reference point, since the difference is astonishingly small: the greatest difference being 0.006 mm, all others lying between 0.004 mm and 0.001 mm. We can only applaud the early wire-drawer for his virtuosity in applying the “Zängelmass”. We would have to contradict Alfons Huber’s claim, “that the Nuremberg gold wire-drawers were capable of the accuracy mentioned above, while the makers of strings in the late 18th and 19th century apparently no longer aspired to it”. (25) Only further research could inform us about the precise date of decline of the Zängelmass procedure.

What is the conclusion to be drawn from this short history of the wire-micrometer for the art of historical instrument making?

I would like to stress the following point among several possible statements and remarks. Once more, we have shown how historic possibilities were not used in a manner which logic would seem to expect.

The measurement of the tiny diameter of the strings which for centuries were used in instruments would not have posed an insoluble problem at the beginning of the 17th century. There was no longer any technical barrier that could have prevented the measurement of the finest string diameters. But on the other hand there was not yet any technical need that could have motivated manufacturers of wire to accommodate this possibility among their techniques. Not only was it not necessary for wire drawers to determine the diameter, but also algebraic calculation was common knowledge at most among pioneering scientists, while the artisans followed their simple geometric traditions in harmony with the technical devices at their disposal. It was not in the least necessary for the craftsmen of that time to express diameters in numerical values.

Can we transfer this latter state of affairs to the instrument making of that time? Here we lack information. Was it possible for instrument makers to neglect diameter values, when they had to solve the problems which arose with strings?

23. Ibid.
24. Ibid.
25. Ibid., p. 87.
In view of the history of the wire micrometer it is doubtful whether the calculation of string tensions and/or frequencies was customary in Streicher's time. Are we allowed to conclude that the earlier instrument makers had no theoretical basis?

This question leads us into the heart of another set of questions as yet hardly investigated: what was the relationship of theory and practice in historical instrument-making like?

As we can see with regard to other areas of the history of science and technology not related to musical instruments, there has been a whole range of finely graded historical possibilities in between the "purely empirical experience" of the often quoted Old Masters and our "mathematical-experimental" modern methods. During all these centuries, theory and practice have influenced each other; but both have also developed independently at the same time and followed different paths. Varifold research is necessary to give us a distinct view of the ensuing historical circumstances, because the consequences we find plausible today, often all too quickly, do not always match former certitudes. How we see the past and how it really was often do not agree!
Fortepiano Building in Vienne as Reflected in the Dispute between Jakob Bleyer and Martin Seuffert

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In 1811 the fortepiano builder Jakob Bleyer (1778-1812) published an article in the Allgemeine musikalische Zeitung, in which he accused his colleague, Martin Seuffert (1784-1847), of stealing his piano building methods. Bleyer included fascinating details in the article about his building procedures, including kiln drying wood with salt-water steam and information about music wire and stringing scales. Particularly interesting is Bleyer’s claim to the invention of the laminated frame, which was subsequently used by the most famous Viennese makers, including Nannette Streicher and Conrad Graf. We can be grateful that Bleyer fell out with Seuffert as he otherwise probably would not have felt impelled to write about his methods. How much did early fortepiano builders know about the science of their craft? This forgotten source provides many clues. Many of Bleyer’s comments are not comprehensible in the 20th century. What does he mean when he speaks of the “magnetic” quality of kiln-dried wood? In translating archaic, technical terminology, I have included the original German in brackets.

I. INTELLIGENZ-BLATT
of the Allgemeine Musikalische Zeitung
No. N11, November 1811, Columns 73-77

HISTORICAL DESCRIPTION OF THE UPRIGHT FORTEPIANO INVENTED BY WACHTL AND BLEVER IN VIENNA

The word invention is taken here in its wider meaning. We inscribe on each of the name plates of our upright pianos: “invented,” because ours were the first usable upright pianos. Upright harpsichords existed already at the beginning of the 15th century. More than forty years ago, keyboard instruments were being built that one called upright fortepianos. At that time, such fortepianos were only rarely served up as special treats. One placed them in a room instead of a piece of furniture. But if one had a closer look at such a mechanism, one could certainly see the drops of sweat that had gone into it on the part of its inventor. One took, as far as the musical usefulness of the instrument was concerned, the inventor’s dedication as the work itself. One praised the creator’s patience and called him an artist.

That it may be necessary to acquire a knowledge of physics, acoustics, mechanics, and mathematics in order to invent and produce a good and functional upright pianoforte, was believed as little by the piano makers of the past as by those of today.

Every inventor has the right to indicate on his product, that he is the inventor. On the other hand it is ridiculous that anyone should accord himself the honorable title of inventor on the basis of a badly made piece of work.

But when someone copies the invention of another, and then wants to claim for himself the honors as the inventor, then this is not only ridiculous but also shameless. (Such ridiculous audacity is committed by the local piano builder Martin Seuffert; he imitates our invention, and inscribes on all of his name plates: “Invention of Martin Seuffert of Vienne”. I would like to know what justifies this miserable presumption??)

For seven years now we [Wachtl and Bleyer] have been producing fortepianos, mostly uprights, based on our own invention. The piano-loving public had been flooded for several years by upright pianos, and the upright had lost all credibility. But this fact did not frighten us as we knew that the problems in these fortepianos were not due to the nature of these instruments but rather originated from the lack of theoretical knowledge on the part of their makers.

Our first upright fortepiano had the shape of a pyramid. It was entirely double-strung, and yet we could place it next to any
triple-strung grand piano. Since our first experiment measured up to our expectations, we wanted to bring the quer-forte piano into a pleasing standing position and at the same time give it an all-around perfection. In this, too, we were successful. Everyone acknowledged that our upright quer-forte pianos were far superior to the horizontal ones. In two years we produced large uprights in five, and standing 'square' forte pianos in three different models. From now on, the improvement of these instruments progressed slowly but steadily. The most important factor was to give the diameter of the strings a proper proportion, since anyone who simply trusts the wire manufacturers is often shamefully deceived. Not that they lack skill. No, rather, since their customers do not pay exact attention, they often find under two wire sizes one wire thickness, and under one size, two wire thicknesses. Furthermore, one can very easily be convinced that the wire manufacturers do not all use the same wire gauges. We gave our own fork-shaped wire gauge (Scheidenl) the following adjustment: between two strings a and b whose diameters stand in a 1 to 2 relationship, 15 steps were inserted, and in such a way that if one should mark down the diameter of all the strings in their proper order, a geometric series would emerge. If the instrument is to have a homogenous tone, then the thickness of the strings must increase and decrease in geometric proportion. Consequently, we have seventeen numbers from a to g. The local as well as the Nürnberg strings only have six wire sizes between a and h, and even if one should insert half sizes, this would still only add up to 15 sizes whose half sizes are frequently the source of errors.

Most of the refinements had to take place in the stringing scale (Mensur). Due to blind tradition and so-called improvements, this had become so out of proportion that one could no longer recognize the original octave relationship. How much the uniformity of sound suffers under a misshapen scale and a stringing whose numbering has no proportion, can be easily understood. No doubt one could answer that uniformity of sound can be equally produced by skilful hammer leathering. Yes indeed, but how long will this forced uniformity last?

Based on a controlled experiment, for which two apparatuses and one monochord had to be constructed, we determined the length and diameter of the strings, as well as the most accurate tension for the tones f" and small f. On the basis of these tones, the other 47 insertable tones, which together have to constitute a geometric series, were developed and from this we derived our octave relationship of 1 to 1.9458668.

Considering the importance of maintaining tuning stability, everyone will concede how important it is to build the strongest possible case (Kasten) so that it cannot warp. But many might be unfamiliar with the fact that the weakness of the case structure (Sarge) can ruin the originally beautiful sound of an instrument. There exist many examples of the latter. Many a bungler is so fortunate as to get a pretty sound from his instrument. But should the case structure be made of inferior material or carelessly built, then the case structure shifts out of place and puts pressure on the soundboard through which it loses its free elasticity, and the sound becomes lost to such an extent that often nothing remains but a hammered dulcimer (Hammerschlag), with a keyboard. (Hang a singer by the throat and then let him sing.) If one builds a frame in the usual manner, that is, with solid framing members, and furthermore even braces the sides, then one finds within half a year, on removal of the soundboard, that due to the tension of the strings, amounting to 90 centners [4,500 K6 or 9,922.5 lbs] all the braces will have been compressed into the case wall by the depth of a line [bei einer Linie] deep into the case wall (Abknicken) and have now become quite loose. In order to maintain tuning stability, it is not enough only to build a proper frame with solid wood construction. A good frame must not only be (A) strong, but also (B) soundly built, in order to be able to participate in and reinforce the amplitude of the sound. In April 1808 we built the first case (Kasten) according to our newly developed method. This case did not suffer from the problems mentioned above, and furthermore it filled conditions (A) and (B) most adequately.
In fact, the entire shape of the sounding-corpus (Resonanz-Sarge) with its beams and braces is constructed out of a layering of strips that are only one inch (ein Zoll) thick. On top of the first layer, the second one is glued in such a way that it covers and joins the seams (Spuren) of the first—and then follows the third layer identical to the first, the fourth to the second and the fifth to the first. Here the braces (Strebem) cannot press in because they are intimately bound to the contiguous parts, thus lending the case a natural coherence, through which the exceptional acoustical purposes (in the piano) were very well met, since it is well known that a solid body is an excellent sound transmitter. (See Chlodni’s Allectric, Vogler’s Bote zur Akustik, the note on p. 36.)

All of the wood is artificially kiln-dried. In this we followed the good example of Mr. Mündinger (a local citizen and master cabinet maker) who has been using such a method for the past twelve years. Only a few wood workers are aware of the advantages in treating the wood in such a manner. Most claim that only time dries wood out. But if one lets wood lie in the open air for fifty years, it will not dry to the point of being magnetic (?), something which does occur, however, within eight days if the artificial drying method is used. A later date we conducted an experiment with a soundboard, whose wood grain ran diagonally (in schiefen Richtung) under the strings. This was an idea that had already been tried out by our oldest predecessors, and had been rejected as unexpedient. What was crucial, however, was the correct selection of wood, the proper thickness of the soundboard and the correct joining of the same, in order to get a soundboard that, as Chlodni rightly points out, is capable of accepting any vibration of the strings. We maintain that a soundboard constructed in the usual way can never attain such a high degree of flexibility and free elasticity, qualities that greatly increase the singing sound (Sang und Klang) and the eveness of tone in an instrument. Such a soundboard, furthermore, never warps, something that happens with other soundboards to such a degree that the bass strings bump against it. The timber used for the soundboards and keyboards is steamed for forty-eight hours before going into the kiln. The hot steam of salted water penetrates all the pores of the wood and dissolves the resin found within the pores, and draws it out onto the surface of the wood where one can see it in the form of brown drops.

One can easily see that a soundboard thus treated will not only be more lasting but also more suitable for its acoustic function. The action of our upright fortepiano was of German design. We were not happy with it, and thus invented two years ago an action in the English style, by which the sound gained much strength and beauty. The action on our large, upright fortepianos is also of the German type, and has, due to some improvements, been brought up to a higher degree of perfection than the German action attached to a German grand piano. It is equal in simplicity to the latter, but in durability and playability it far surpasses it, and these two last qualities are still absent today in all the other upright fortepianos.

Some pianists have rightly remarked that the tone of our upright fortepianos seems too strident (grau) to the ear. This fault has been remedied when we started using a sound-cover (Schaldeckel) (an English invention).

In Conclusion

Experts who want to take everything that I call an improvement into consideration, will find that I do not exaggerate when I claim that our upright fortepiano (Forte-Piano en Giraffe) has in all respects a huge advantage over the grand fortepianos, with the sole exception, that due to their upright position, one cannot use them for concerts. But it is precisely this upright position that gives the instrument a far better disposition. The strings as well as all vibrating parts vibrate with much greater ease, and thus amplify the sound with more power than a horizontal body which is supported at four to five points and is thus rendered incapable of vibration. In addition, our forte-pianos have only three pedals (Mutationen): forte, lute stop
and una corda. On request we will also install the bassoon and the
Boehm harp, but never the soundboard drum and the cymbals (Cinet).

Vienna, on October 5, 1811. J.F. Bleyer

MARTIN SEUFFERT'S RESPONSE

Allgemeine Musikalischen Zeitung
Intelligenzblatt
No. 10, May, 1812

VERDICHTUNG

In the issue number 17 of the Intelligenzblatt zur Allgemeinen
Musikalischen Zeitung (November 1811), which I have just received,
on the upright fortepianos by J.F. Bleyer, I am reprimanded as a
shameless person because I had dared to claim that I had been the
co-inventor of an instrument that is supposedly invented only by
Bleyer and Wachtli. I would treat this bitter falling out with silence,
since Bleyer has died in the meantime, if it were not for the fact that
my honor has been deeply compromised and my credibility has been
diminished by his article.

I thus owe it to myself to make public the following comments in
this newspaper which is famous for its impartiality. Bleyer, who was
at first a cabinet maker and only recently learned to build pianos with
one of the local masters, entered into business with Wachtli and me
seven years ago, and we worked together on the invention of the new
action and the improved design of the upright fortepiano. Where we
gave it, on the basis of cooperative thinking and planning, the degree
of perfection that is so adequately described in Bleyer's article in the
Intelligenz-Blatt, and where, as equal partners in the business, we
put our names together on all announcements and name plates.

During these six years of partnership Bleyer never insisted that he
was the sole inventor of these improvements. It was enough for him
to see his name together with ours, and thus also to share the
earnings.

But when, for many reasons, I was forced to break from the
company, and when I began to practice on my own the art that I had
learned in my earliest youth from my father, the court organ builder
Seuffert from Würzburg, only then, at the onset of my mystery, I
availed myself of my right to add to my name the title of inventor (the
same title that the other two put on their name plates immediately
after our separation). When Bleyer became increasingly aware of the
good marketability of my instruments, his jealousy finally was
awakened. He has taken refuge in slander and spitefulness of one
kind and another in order to undermine my good reputation here as
well as abroad, to make my advancement more difficult and to
appropriate for himself and his partner all honors and praise.
Moreover, he also sought the above-mentioned falling out, to rob me
of the natural share that I deserved as collaborator on the
improvements of the instruments....

One should not speak badly of the dead. On the other hand, truth
never emerges at the wrong time and even if I had read the
Intelligenz-Blatt during Bleyer's lifetime, I would not have defended
myself in any other way.

But I am cheered by one maxim which has been tested by time:
that the unkind means by which Bleyer has tried to damage me usually
fail in their aim. Only the judgement of men who understand art, and
not the individual profiteering faultfinders will determine whether
and to what extent my labors either recommend themselves or
deserve just criticism.

In the meantime obstacles such as the sort mentioned above will
not keep me from striving towards perfection. I love and practice my
art with reflection and exertion. The current price of the upright as

(Continued on p. 75)
AN UNKNOWN BENTSIDE SPINET

BY ALBERT DELIN

Nicolas Meeûs

This instrument, in private ownership in Brussels, is inscribed on the nameboard ALBERTVS DELIN ME FECIT TORNACI 1767. It appears neither in Boalch nor in the list of 10 authentic Delin instruments that Jean Tournay published (1). It also corresponds to none of the instruments that Boalch quotes as having been seen or documented in the late 19th century. It is entirely similar to the four known Delin bentside spinets, of 1763 (Antwerp Conservatoire), 1765 (Berlin Museum), 1766 (Paris Museum) and 1770 (Brussels Museum).

The outside dimensions are given in the sketch hereby. The instrument unfortunately underwent an excessive "restoration", the soundboard having been replaced with a crude plank of pitchpine. This considerably reduces its musical interest, of course, but makes it perhaps a possible candidate for restoration to playing condition - which would involve making a new soundboard. The instrument will be auctioned in Brussels in autumn. More informations about this will probably be available later this summer.

The keyboard covers four octaves and a third, as usual, from C to e''. The spacing between the balance pins is about 15.8 cm for one octave, 47.2 cm for three octaves. Several keys are replacements, namely nrs 1, 5, 6, 12, 27, 29, 30, 33 and 53. The ebony veneer of these keys (or the bone plate in the case of nr 33 which is an upper key) are not original. Otherwise, the keys are identical in all respects to those of the other spinets of the same type. The key cloths are in very poor state, falling in dust, but there is no obvious difference between those or the original and those of the replaced keys.

The keyboard frame is assembled as is usual for Delin; the lateral braces are thinned in front, apparently in order to facilitate the extraction of the keyboard. The stop bar above the rack is a replacement. A letter h is marked on all three sides of the keyboard space inside the instrument, that is, on the inside braces of the case and on the back side.

Some of the jacks are original. The lower guide is preserved loose in the instrument and seems original. The leather covering of the upper guide does not seem original, as it does not show Delin's markings. The wrestplank is of oak, 36 mm thick.

The soundboard is a crude replacement, as mentioned above; a little triangle of the original spruce soundboard survives at the left of the upper guide. The rose, rather crudely cut, is closed with a piece of cloth and framed underneath with two crude bars. The curved cut-off bar, on the other hand, could be the original one.
The bridge also probably is original; it has the characteristic hollowing out in the bass, as in the other spinets. It seems to have been glued on the new soundboard quite exactly in its original position, producing string lengths that are reasonably similar to those of the other spinets: (in mm) C=1274; F=1184; c=998; f=887; c'=676; f'=552; c''=355; f''=271; c'''=165; e''''=128. Several nut pins have been doubled; the measurements given here are taken from those that seem original.

The case is covered with a rather thick grey paint that makes it difficult to examine the case moulding profiles. For what can be seen, these look identical with those of the other spinets, as does the soundboard moulding (the moulding along the back side is new). The original colour of the case may have been bluish. As there are no signs of this blue on the stand, which also is not very carefully made, it may be considered that it is contemporary with the repainting in grey. The painting on the lid, rather unskilful, may be from the same date.


(Continuation of Comm 933 from p. 73)

well as the grand forteplanos in both the German and the English style will be sent to any music lover along with drawings of the different shapes of the upright forteplanos.

Martin Seuffert,
Civic Organ and Instrument maker
auf der Woden, No. 75 & 76.