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FOMRHI Quarterly

BULLETIN 42
Bulletin Supplement
Membership List Supplement
Index 1985

COMMUNICATIONS

667- REVIEWS: Victorian Reed Organs and Harmoniums, by P. & P. Fluke
669 Journal of the Australian Association of Musical Instrument Makers IV, no.3; The Glen Account Book 1838-1853, ed. A. Myers
671 New Grove DoMI: JM no. 3; further detailed comments
672 New Grove DoMI: ES no. 3: B entries after Ba
673 A return visit to Venice
674 A reamer made of aluminium
675 Another reamer-saving counterbore
676 Workshop ideas for woodwinds
677 Further to Cary's Comm 655
678 The FoMRHI network
679 Comments on Comm 666 on the Swedish gauge system
680 Ruckers doubles: the 'sixth hypothesis'
681 Early pianos at Ipswich
682 Bending in San Francisco
683 Eighteenth century German and French pitches
684 An exceptional G-sharp in Milan
685 Early instrument news from Yugoslavia
686 Letter to J. M.
687 Angled bridges and J bars on lutes

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.
A Happy New Year to about 50% of you; to more, I hope, before I have finished this Bulletin, and to even more by the time that it is printed and posted.

Which reminds me, we have once again had mailing problems, at least with those of you who pay for airmail. Djilda (the mailing is being done again at NRI) packs the Qs up into bundles, carefully separating the UK from the European surface, from the European All-Up (the curious name the Post Office uses for airmail to Europe), from the overseas surface, and from the three grades, according to distance, of overseas airmail. She then pays the appropriate rates. Then, as far as we can see, the Post Office undoes all the bundles, shoves them all together and sends them by surface to wherever. Wesley Wadsworth suggests, and I suspect that he is right, that the colour of the envelope has something to do with it; if it's brown it's junk mail that goes by junk (can't be steamship the time it takes). His letter came, I think, just in time to change things with the mailing of the October Q (though after all was written and while it was being printed), and judging by the speed of some of your renewals, I think that some at least did go by air. Anyway, we will try to stick to white envelopes, stick airmail stickers on them, and hope for the best. I'll also ask Djilda to try to be firm every quarter and read a bit of riot act to the Post Office. The trouble is that she sees only a counter clerk, and the trouble arises behind the scenes, where no customer ever goes. But please, if you get a Q with a readable date on the postmark which seems to have taken longer than it should to get to you, send me back the envelope, with the date of receipt written on it, and we'll create a bit of hell. Also, we then have concrete ammunition for a real riot act along with the next mailing.

One of our most senior Fellows, Laurence Picken, sent a very nice and very welcome 10th Birthday greeting. Many of you, too, have sent kind messages with your renewals. Many thanks from us all at the working end and from all of our members who keep us going by sending Comms and bits for the Bull; we all appreciate your encouragement very much.

LIST OF MEMBERS:

BAD QUARTERLIES: There are always a few misprinted Qs; two sheets of paper run through the machine together, and only the top one gets printed on, and then someone has a blank couple of pages. Most other troubles seem to have been conquered over the years, and till now that's been the only real problem. However, in Q. 41, Martyn Hodgson had a real horror: on the back of p.23, he found page 54, and p.23 again instead of p.53. How they achieved that, I do not know. And it would happen, of course, in the middle of his...
own Q, which raised fears of another Sverre affair in my mind. Anyway, I assume that his was the only copy affected, since I imagine that I’d have heard from others of you by now if it had hit you, too. However, if any of you have done no more than glance at your Q 41, will you please turn to page 23, turn over, and see what’s on the back. If it’s not page 24, please let me know. Do always shout as quickly as possible if you do get a dud copy.

NON-MEMBER AUTHORS: Martyn made the point that he is "unhappy that non-members should have articles published and feel that if they want to use the Quarterly the least they can do is join; after all it must be about the cheapest of all subscriptions". I am in two minds about this. To a great extent I agree with him; it is a Fellowship and we are all in it together, or we should be. On the other hand, there are a few things that we’d have missed on that basis; not very many (Mark Lindley has just joined for instance, though whether he would have done so had he not got embroiled in an enjoyable controversy, I don’t know), and there is also the problem of the institutional member, the chap who persuades his department to join instead of paying himself (there I do rather agree with Martyn, and as I said, we are a Fellowship) and more seriously the person in a museum or university which is a member because they want to have it in their library. Incidentally, there is a review by a non-member in this Q, but she happens to be a colleague of mine and an expert on Handel, and anyway it was easier to hand her my spare copy of the Catalogue than to think for someone and post it; the result of personal laziness on my part. Leaving that aside (please!) I’d be interested in your views on this matter of non-member contributions, and on Eph’s. If enough of you agree with Martyn about this, then we’ll have to see if we can persuade me and Eph to follow your opinion.

FORMAT, ETC: Martyn and a number of you have written to say keep as we are in both format and content and style. Martyn made the point that a stiffer cover (he suggested glossy, which personally I’m not so keen on) would help, and my memory is that there was an agreement that the outer sheet should be475.27(431,583),(806,598)(431,583),(806,598) on a heavier gauge of paper than the rest of the Q; I don’t know what happened to that idea, but I suspect it got forgotten, and perhaps it should be revived.

FoMRHI ACCOUNTS FOR 1984:
Advances in 1983 for 1984: 1936.06

Income in 1984:
  1984 renewals 1227.60
  New members and sale of back issues 1115.50
  Donations and over-subscriptions 196.11
  Advances in 1984 for 1985 1602.50
  Advances in 1984 for 1985 4475.27

Expenditure and deductions:
  Printing 2921.94
  Postage 959.30
  Stationery 170.00
  Carriers (Manchester to St Albans) 106.84
  Bank deductions 25.35
  Sundry items * 44.50
  Expenses 4227.93

Profit 247.34
Accumulated surplus 1544.63
Balance in hand for year 1791.97

* Includes payment to people for putting Qs in envelopes, one-calls etc.
FURTHER TO: Bull.40, p.5: Rod Jenkins says that he uses at his day job a
digital caliper, like the one I described in the bulletin, made by Moore &
Wright and costing about £80. Like the Swiss one, the zero can be set
anywhere, "so that it should be relatively trivial to glue an appropriate
padding to the jaws, something like lime might be suitable for boxwood
instruments. The zero would then be set where the new jaws meet. The
internal jaws would be a bit more difficult". That sounds a whole lot
cheaper than the one Heinz Amman told me of, and if you remember, his didn't
seem to have any protection on the internal jaws either.

Incidentally, you'll find Rod's annual Index for 1984 in this Q. Our thanks
to him as usual; it's a great help to us all.

Bull. 41, p.2 (ie the first page): There wasn't an enclosure, was there.
Having had the enquiry from Grove, we discussed it and gave them the details
of delivery date, cost and so on (it costs a bit because we are now paying
someone at NRI their hourly rate for secretarial help to stuff the Q into the
envelopes, and adding an enclosure makes the job take longer, and this
should be paid for by whoever wants us to send stuff out, not by you; it
could also just tip airmail copies into the next postal bracket; you only get
10 grams in each bracket). They said fine, and when the stuff hadn't
arrived perilously near the postal date, I rang up to ask why, and they said
"Oh, it was only a general enquiry". So that's why it didn't happen. Anyway,
if you do ever find things tucked in with your Q, you have been told the
sort of basis we'd do it on.

Same Bull, same page: Sverre hasn't joined. Whether he will, I don't know.
Bob Marvin is due here any day now, and we'll talk the whole thing over, and
he can discuss it further with Sverre if he wants to.

Same Bull, p. 6: We were discussing the lack of an Early Music Forum in the
middle of the country at the Early Instrument Exhibition at the Horticultural
Hall. Something may come of it; interest was expressed, and there could be
a volunteer to run one in the central south midlands (ie Ox/Bucks sort of
area, or Thames Valley). We felt quite strongly that London was a separate
issue and that any attempt to run London and Thames Valley (or whatever you
call it) together was doomed to failure; it would simply be another London
thing. If I hear anything further, I'll keep you in touch, of course (I'm
likely to; with any luck we can use the Bate as a free meeting centre). If
any of you who live in the sort of area this would cover would be willing to
be active in helping get a Forum off the ground, do please let me know.

Same Bull, same page: Jonathan Swayne writes:

As Vigopas, bull.41, p.6. I agree it is the
most successful substitute for ivory. It is manufactured
by RASHIG GMBH, Mundenheimer Strasse 100, Ludwigshafen/
Rhein, Tel: (06 21 ) 5 61 61. Since it is also made in a
wide variety of colours from clear to multi-coloured, the
'ivory' version is designated ' 71 A. Many different
shapes are available including rods, tubes and plates.
When I last enquired (Sept 1982) the minimum order quantity
was 5040 per colour, but the shapes could be mixed.
However it is (or used to be) available from the Early
Music Shop, Bradford in small quantities. Working
qualities are foul in every way. My experience is that
it is best to remove as much material as possible on an
engineering lathe, leaving little work to be done by
hand tools. The material is abrasive, and high-speed steel tools are advisable; carbon steel tools quickly lose their edge. Hand tools must be applied with great care; an overly enthusiastic approach is likely to result in the speedy removal of much more material than was intended, leaving a randomly pitted finish, or at worst in the shattering of part or the whole of the workpiece. While being worked, it gives off a strong smell of polystyrene (?); the swarf is feathery and sticks to everything presumably due to electrostatic charges. A mask is essential. For polishing, Brasso works fine, though the material can deform under heat if excessive pressure is applied.

(It's going to be interesting to see whether, when this prints out, leaving x number of lines blank works for a cut and paste job. On the typewriter, I just pulled the sheet out, pasted up, and put it back in the machine, but you can't do that with a word processor.)

Same Bull, p. 7: A number of you have responded generously to my request for a bit extra on the sub. to help those who can't export money. Thank you very much, from me and especially from them. Never hesitate to suggest more names for this.

Comm. 649 - A Flexible Recorder: Jon Swayne again:
Bob Marvin's Comm. reminds me that in the Early woodwind workshop at London College of Furniture there used to be a piece of silicon moulding rubber cured in the interior of the bore of some hapless, nameless instrument and then withdrawn. The result was like an outsize tongue with warts; it was supposed to reveal the details of undercutting and bore perturbations. It certainly perturbed me. Its colour was the kind of pink that used to be used by corset manufacturers... It might suit Bob's purpose, but then again it might be too floppy.

Speaking of tongues, why doesn't Bob make his recorder a tongue duct recorder? - that would improve its flexibility no end.

Comm. 658: (see also a separate Comm herewith): When I was back in Venice in November, I had another look at four of the instruments in the Marcello Conservatory:
The C key on the first Fornari oboe is the usual Fornari shape (the key cover was missing on the second one).
The keys on the Schrechbauer (Inv. 33) are all SATI
The block on the ivory recorder (Inv. 28) is probably not original
The block on the Denner recorder (Inv. 29) is certainly not original.

EARLY INSTRUMENT EXHIBITION AT THE HORTICULTURAL HALL: It seemed to me to be as successful as usual, and as always our thanks to Richard Wood for organising it. We had not intended to have a FoMRHI stand; the cost has really got too high, especially for something like FoMRHI which doesn't reckon to make any profit. It's useful; it gives a lot of you the chance to renew easily, and we pick up some new members (more than usual, this time, and welcome to you all), but new members aren't profit. It doesn't help us
or you to spend your sub. on advertising or taking a stand; what we need to spend it on is printing and posting your Q. What happened was that a week or so before the show, Richard rang me and said that he had a small corner going spare, and would I like it at a reduced rate? After we had agreed on a very reasonable figure I said yes, because a small corner is ample for FoMRHI, and then when I arrived, he told me that someone else had cancelled and I might as well have their full-size space. So we did very well, and it was a pleasure to see so many of you, including a number that I'd not met before. I don't know how those of you who exhibited did for business, but as a place to meet one's friends and make new ones, it's wonderful. I'm certain that it's good for business in the long run, too. I told several of our students to make sure they came (and they did) and do the rounds to see which make of recorder, lute, viol, and so on would suit them best. Even if they have no money now, orders will follow in due course. I think that that is the other great advantage of the show. The prospective customer can case the field and orders will come in afterwards, just as a fair number of new FoMRHI members have come in afterwards because they picked up the bumph at the Exhibition.

Those of you who passed the NEMA stand should have noticed that they are reviving the Register of Early Music. By definition, every member of FoMRHI is involved, in one way or another, in Early Music, and you should all be on the Register. If you didn't pick up the form, please write to NEMA at 39 Capel Road, London, E7 OJP, and ask for one. As it's NEMA that's running it, it is presumably going to be an UK only thing, but there should be one in every country, and eventually I'm sure that it should, like FoMRHI, be international. It would be a good thing if all Registers were compatible so that they could all run on one computer. Any non-UK member interested in getting such a thing going in their own country might also write to NEMA and ask if they could have a form for adapting to their own country's postal format etc. Any of you within reach of Oxford can pick up a form from me; I have a stock of them in the Bate.

REQUESTS FOR INFORMATION:

Spanicher Fidl If any member has any information on this instrument I would be very pleased to hear from him/her. The instrument is specified in a humorous piece composed around 1800 which also uses several other folk instruments that were not used in classical music at that time. The range is as that of the violin. Esther Fontana, Késmárki u.18, 1212 Budapest, Hungary.

Peter Mirams asks:

I am trying to get as much information about Anton Walter's pianos as I can at a range of 12000 miles and 200 years. I know that Nurnberg used to publish plans but now they tell me that they don't, so I would greatly appreciate information as to who does. Also any useful references. I have a translation of Ruck's article in the 1955 Mozart Jahrbuch (well, most of it, anyway) but I am hoping that there is something more recent that someone can point me towards. I have all the EMJ and FoMRHI, so they are covered.

* Preferably pre 1791

Andrew Bashford has a whole raft of queries, and also some discussion points. Instead of chopping his letter up and putting bits here and bits...
elsewhere, I think I'll send it up to Eph and suggest he puts it in as a separate Comm.

MATERIALS AVAILABLE: Ed Bowles writes:
An item for your "Materials Available" column. The two most readily available sources for timpani heads are Pustjens Percussion Products, Singel 119, 1000 Amsterdam, Nederland (Irish calfskin) and Wiener Schlaginstrumentenbau, Winzerstrasse 22, A-1130 Wien, Österreich (goatskin).

DRAWINGS ETC AVAILABLE: The Lute Society publish four working drawings. They are, of course, generalised, not copies of existing instruments, but a design by the drawer. They are, with prices in brackets, the first for members of the Lute Soc, the second for non-members: 6-course by Stephen Barber (£5.50 / £7.50); 7-course and 11-course by Philip Macleod-Coupe (same prices), and Chitaronne after Büchenberg by Stephen Gottlieb (£13 / £17.50). Postage per plan: 50p UK, 75p Europe, £1 overseas surface, £2 airmail. There are also booklets, music, and a lot of resources. Their Administrator is Stephen Haynes, 86 Lonsdale Road, Oxford OX2 7ER.

The Bate Collection and the Gemeente Museum in The Hague have done an exchange of plans. If you want to see any of their drawings, I have them all here (but ring up first to make sure I'll be in when you come).

I also have a set of the Stockholm Musikhistoriska Museet plans which you can see here.

Jon Swayne writes:

I am in contact with a Hungarian bagpipe and early music enthusiast called Attila Meszlenyi. He has sent me a quantity of music for and photographs of his country's bagpipes (similar to Baines, Bagpipes p.77, no.19). If anyone wants photocopies of these, they are welcome, subject to payment of cost plus postage.

PREMISES AVAILABLE: Mike Lavis (address for this purpose: South Bristol Enterprise Workshops, Bishport Avenue, Withywood, Bristol BS13 9EL) is involved with setting up these workshops, in which units of area from 128 to 682 sq.ft. are available at rents from about £640 to £3410 per annum. There are communal woodwork and electric and gas welding machinery available free of charge for tenants. The complex has been converted from redundant and vandalised garages; single units were one garage, and the larger are double, triple, quadruple, and the largest sextuple. If you're interested, get in touch with Mike.

THE EDINBURGH COLLECTION OF HISTORIC MUSICAL INSTRUMENTS: Anne Macaulay has given them her superb collection of lutes, guitars etc, 51 instruments in all, including a Passauro lute (1667), Harp arch-lute (1665), 17th century chitaronne, late 16th century guitar, Sellas guitar (c.1620), other guitars c.1630 and early 17th and 18th century, Voboam guitar (c.1700), etc., etc. A full list is available from Arnold Myers, and the Collection is open on Wednesdays 3-5 and Saturdays 10-1 in the Reid Concert Hall, Bristo Square, Edinburgh.

COURSES: Bate Collection Gamelan Weekend will be on March 1st and 2nd. Prior booking is essential for once, because you can only seat so many people at a Gamelan. Beginners are welcome, and so are advanced players.
but let us know if you are one of these) who want experience on rebab, gender and gambang. We should all learn enough to be able to perform a small informal concert on the Sunday. Tuition by Alec Roth, Nick Gray and Joko Purwanto. We start at 10.30 on the 1st and finish I suppose around 7 or 8 on the 2nd. The cost will be the usual £15 for one of our Weekends.

**Bate Collection Traverso Weekend** will be next term, May 24th and 25th, with Jonathan Morgan for playing and Mathew Dart for making, measuring etc; both are PoMRHI members. You’re welcome to book in advance for this, but it’s not essential. The usual 10.30 for coffee start on the Saturday, the other times (finishing both days and Sunday start) to be decided by those there. However, one difference from the past: no concert at the end, though there will be some demonstration, of course, by Jonathan. The advantages of this are that it saves us the cost of an accompanist, which is quite a consideration, and it means that Sunday afternoon and evening can be working sessions, instead of rehearsal and concert. Cost will be the usual £15. At both Weekends, full time students get a £5 discount.

**Bate Collection Gamelan Summer School** will be July 20th to 27th. Again, prior booking is essential, with a deposit of £10. Tuition by the same as the Weekend, plus Neil Sorrell. Should I have said that the Bate Gamelan is said, by those who have played on all of them, to be the best in this country. As I’ve told you in the past, it was presented to us by the Indonesian Embassy because we were happy to use it; we play it every Monday evening. The cost will be £40, again with a discount for full time students to £30, and it is non-residential, but I will send anybody who books a copy of the local Information Centre’s list of hotels, b&b places, etc if they ask for it. After a week’s work, we should be able to end with a really good concert.

We will be doing other Summer Schools in the future, probably around the same time of year (ie two or three weeks after the end of term), and if any of you would like to suggest subjects that would interest you, let me know. Unfortunately, our workshop isn’t really well enough equipped to do a basic makers’ course on anything, at least I don’t think it is, but I’m willing to try pretty well anything that sounds viable.

**West Dean College** (I’m not sure whether they are members at the moment; they may be one of the renewals that I didn’t get, and they’re not in the current List; their address is West Dean, Chichester, West Sussex PO18 0QZ, and the person to contact on this is Susan L.Overman) are doing an Easter course on instrument making, 27th March to 5th April. They are running three groups:

### Proficient Craftsmen
- Lute & Theorbo
- Spanish & Bar. Guitar
- Celtic harp
- Irish knee harp
- Baroque gamba, tenor/treble/bass
- Viola d’Amore & Violin
- 4%/5 octave Spinet
- Harpsichord
- Renaissance woodwind
- Portative Organ

### Moderate Ability
- Celtic harp
- Irish Knee Harp
- Baroque gamba, treble/tenor
- Rebec
- Medieval fiddle
- Renaissance woodwind
- Hurdy gurdy

### Beginners
- Appalachian Dulcimr
- Nordic Lyre
- Bowed psaltery
- Flatback mandolin
- Renaissance flute

(What are some of these instruments?)
Cost is £239 to cover full board and tuition, plus the cost of the materials for the instrument you make, and applications, with a deposit of £20, have to be in by February 27th.

However, this was not the main reason why they wrote to me, though they did ask incidentally that I publicise the courses. Eric Moulder, who is one of the teachers, had suggested that I might know someone who would teach portative organ making. I said I would ask if anyone was interested. If you are, please get in touch with them as above as soon as possible.

They've also got a course from 16th to 22nd August on Music and Dance from the time of Shakespeare, run by Jim Tyler, for singers dancers and players of all the obvious instruments of the period. Cost £189 (both courses can be had for less by people living out and for more by people who want single rooms, showers, etc; details available from them).

**PUBLICATIONS:** Uta Henning has written *Musica Maximiliana*, with full illustration and documentation, with an English summary. Cost will be DM 48, but if you order (from her; address in List of Members) before 30th April it will only be DM 38. She and her husband have also published three records, one of Russian Orthodox bell ringing (DM 25), another of Aeolian Harp (DM 10) and the third of the lute-harpischord (DM 10). There are also still available some extracts from their music calendars etc, at DM 18.50 per 24 sheets, of which there are four series.

Uta says, incidentally, that school-level tuition in Early Music is much worse in Germany than it is here; there isn't any at all, and university and music conservatories are not much better. If this is so, why aren't the FoMRHI members in Germany shouting about it? Start your own NEMA and make a nuisance of yourselves till someone does something; even better go into local schools, and offer to teach. After all, FoMRHI started with four people in our sitting room; the Galpin Society started with eleven people in a pub. Things don't happen unless you make them happen.

**OTHER SOCIETIES:** NEMA is holding its AGM next weekend; report in the next Q. I've already mentioned the Register of Early Music; please do get your names down. (Uta: Why don't you start a Register in Germany? Then you'll know where your strengths are. I'll bet you find far more interest than you expect.)

The English Bagpipe Society held its Inaugural Meeting in our building on December 1st. They promised to tell me who was elected their Secretary and what their membership fee was, but they haven't. However, if you're interested, I'd guess that anyone mug enough to act as Acting Secretary is likely to get made permanent, so I suggest that you should write to Dave Vandoorn at 69 Valentines Way, Rush Green, Romford, Essex RM7 0YD, and he'd probably appreciate an s.a.e. Good luck to them, anyway. I opened the Bate for them, as it was a Sunday, and they seemed a highly enthusiastic bunch, and any society with that in it should be good fun to belong to.

You may remember that there was a Wood and Musical Instrument Conference at Reading last year. Partly I think as a result, a new society, The Wood Studies Group is being set up under the auspices of the Plant Anatomy Group of the Linnean Society. They are interested in all aspects of wood, including musical instrument making. Their inaugural meeting will be on Tuesday February 4th at 6.30 pm at the Linnean Society, Burlington House, Piccadilly. The person to write to, if you're interested, is Veryan Heal, National Maritime Museum, Greenwich, London SE10 9NF, or ring 01-858 4422.
extension 248. They are keen to get as many different uses, aspects, types of wood and wood users involved as possible, and I hope that some of you will be interested in getting involved with them.

Juan Carlos Alonso has formed (or is involved in) the Sociedad Uruguaya de Flauta Dulce with the aim of encouraging the use of the recorder, starting groups, setting up a library, running courses, etc. Anybody interested is welcome to get in touch with him, and he is, of course, welcome to reprint anything from FoMRHIQ, provided that he gets the authors' permission. Good luck to them. His address is in the List of Members, or it may be better to write to him at PO Box 6194, Correo Central, Montevideo, Uruguay.

LISTS OF MAKERS, ETC: Jeff Hildreth tells me that Thomas Wonberg of 4135 Cunningham Dr, Mt.Hood, OR 97041, USA is compiling a list of makers of violin and related instruments, and bows, not, I think, confined to the USA. Anybody wanting to be listed, please get in touch quick "as a book will be published soon". Jeff, incidentally, is still supplying 'mountain mahogany' for frogs and peg, and occasionally Oregon yew for bows and lute backs.

ORPHARIONS ETC: Garry Crighton writes: "In case other readers interested both in plucked strings and Praetorius are mentally as sleepy as I often am, I send notice of what I just noticed -- although perhaps it's common knowledge, I don't know -- that when one compares Praetorius' explanation of bandora, orpharion and penorcon (vol.2, pp. 53-4) with his drawings (plate XVII), it becomes clear that he has mistakenly interchanged the names of Orpheoreon and Penorcon in the drawing. In addition, in J.H.van der Meer's new book Musikinstrumente, p.59, is given the C-tuning for Orpharion and is mentioned the alternative of a tone lower. A glance into Praetorius (p.28) assures me that the alternative tuning is a tone higher than the C-tuning, although the print is not 100% clear in the bass of the C-tuning. Interesting also, although insignificant, is that Praetorius' Orpheoreon tunings are 8-course, but his drawing 7-course, as near as I can make out."

[Do you see what I mean about the underlining being too tight on the letters?]

CODA: That's the lot; provided, of course, that this machine prints out OK. List of Members' Supplement (a long one) tomorrow, and then up to Eph. I've been quick off the mark this time, and I hope that the printer will be too, so that we can start the year with a reasonably prompt Q.

DEADLINE FOR NEXT Q: All Fools' Day, April 1st. Let's hope we don't get snowed up between now and then.

Jeremy Montagu
Hon Sec FoMRHI
Sverre Kolberg

I have been assured by Bob Marvin and Cary Karp that Sverre Kolberg is a real person. Cary pointed out an ad of his in Early Music some years ago. A check with Directory Enquiries ascertained that such a person living at the given address has a telephone. I accept that Kolberg exists. I am not yet fully convinced that what appears over his name was written by him and not by a friend who is borrowing his name.

Let us now assume that Kolberg is acting on his own and he wants to be taken seriously. There is no question that he has a highly developed sense of humour. To minutely describe the construction of a manometer (a device appearing in all elementary experimental physics texts), and then claim that he has never used it, is good fun. So is recommending red wine as a fluid. His spelling and use of English are highly imaginative, and I can't imagine that his most colourful deviations from normal usage are purely accidental.

Kolberg cannot have it both ways - to be highly humourous and yet expect to be taken deadly seriously. The serious content of the two papers of his I have seen is, in my opinion, minimal, and not worth publishing (especially since he is not a member). The misuse of scientific language can be offensive to scientists if taken seriously. I would welcome a straightforward exposition of the kinds of measurements he makes with his flute fish and how these guide his reaming. If he wants to teach us any physics about the insides of flutes that's not known to Benade and Nederveen, this Quarterly is probably not the place to publish it (but I personally would be happy to look over a well-presented theory plus supporting experimental results, with a view towards advice for publication elsewhere).

I have been asked by Jeremy and Bob Marvin to apologise for not treating Kolberg's Comm 620 properly. I feel I treated it properly for what I thought and still think it was, a piece of good humour. My chosen treatment of it was intended to contribute to the humour. In this context it was asked for. I can't imagine that no humour was intended in the Comm. It is sad that Kolberg seems to be insulted by my joining in the fun. There was no intention of insulting him. I'm sorry he feels that way. I will certainly not chop up any future papers he submits any more than those of other authors, and will henceforth decide on inclusion of his papers purely on the basis of serious content. I'm sorry I had too much respect for his sense of humour.

On Carp's Comm 655

I am all in favour of FoMRHI using telecommunications technology for information transfer. How useful it can be depends on how many members have the requisite equipment or can be induced to get it, and what they do with it once they get it. My enthusiasm is slightly muted by the expectation that a Comm arriving by wire is more work, requiring reformatting and printing, but I'll cope if a deadline a few days later is important to members.

Bottom bulge on lute backs

One consistent difference between most original lutes and most modern lutes is that the old ones have a bulge in the bottom of the back, so that when viewed sideways, the lower edge of the end clasp sticks out farther than the upper edge (which is at the soundboard). Joseph O'Kelly tells me that ouds are also made this way, and the stated reason in the oud world is that it is less tiring to play the instrument when the soundboard-rib angle is less sharp.
DATA PROTECTION ACT 1984 (U.K.)

FoMRHI's address list for mailing the Q's is kept on the NRI computer. It includes your name and address, and whether you have paid airmail or surface mail subs. All of the information Jeremy publishes in his membership list, plus paid-up status, is kept in his computer. No more information on members is kept in these computer files. The information stored will only be used for FoMRHI. (It would be a criminal offence if we were to use the information for any other purpose.)

From May 1986 British law will require computer users holding certain information on individuals to register details. Registration costs £22 and involves some form-filling, so we prefer not to. Clubs like FoMRHI can be exempt from registering, providing the members have no objection to their data being on computer.

If you object to being on the NRI computer, please write to Djilda Segerman at NRI, 6 Needham Avenue, Chorlton-cum-Hardy, Manchester M21 2AA, England. Your record will then be removed from the computer. Please enclose with your objection four self-addressed labels. We will use these for mailing your Q's and possibly a subscription reminder in January '87. If you have paid for airmail postage please write "AIR" on the top right-hand corner of each label.

If you object to being on Jeremy's computer, please write to him. You will be removed from the membership list and he will not keep any other record of your membership.

Conference on surface preparation and varnish

On the weekend of the 17th and 18th of May, there will be a conference on all aspects of surface preparation and varnish. It will be at East Devon College in Tiverton. Though the main emphasis will be on attempting to understand and duplicate historical methods, knowledge and experience with modern preparations which attempt to produce the same effects would be welcome. Those interested in attending, and particularly those willing to contribute a paper, please contact the organizer:

Colin Wills
Hare and Hounds
Exton, Dulverton
Somerset TA22 9JT
(phone 064 385 266)
Review of: Phil & Pam Fluke, *Victorian Reed Organs and Harmoniums*, Victoria Hall, Saltaire, Shipley, W.Yorks. Illus, £2.50 (including postage but this may only be in UK).

This is an excellent little catalogue of the new museum of such instruments which I mentioned in the last Bull (p.4, under MUSEUMS). It describes all the instruments in their collection, illustrates a good many of them, and gives very useful notes and information about each of the makers as well as about the instruments. The photographs are remarkably clear for something produced by photo-litho; a good deal better than a lot of professionally published books nowadays. The text is printed like ours, but on better paper, and it is all in all an admirable production. I wish I could do my Bate Guides so well.


There is one very interesting article in this issue of *JAAMIM* on Moiré Contours, by John McLennan. He makes a grid with a frame of aluminium section and nylon line for the grid itself, and then shines light through it, using a quartz halogen photocopier strip light. With this he gets excellent contour photos of violin plates, and I would suggest that anyone making instruments with carved or bent bodies would benefit from constructing something on these lines. I have written to ask if there is a possibility of our reprinting the article (they have permission, subject to author's consent, to reprint anything of ours), and we'll see what happens. Meanwhile, if any of you have devised a similar gadget, please write it up. What it amounts to is holograms on the cheap.

There are other articles on industrial injuries from playing instruments, varnishes, and casein.

Undoubtedly an interesting book; one would be glad to see such account books for many instrument makers and dealers, and perhaps this publication may encourage others. Whether the price is justified, I'm less certain; £17 seems a great deal of money for a book produced essentially à la FoMRHIQ, photo-reduced from a typewritten text, with a paper cover. It is, in some respects, a frustrating book, for some of its entries are incomprehensible (partly due to Glen's spelling, but more often because quite simply one does not know what he is referring to), and only too many others are incomplete; of the many hundreds of instruments listed, few have makers' names attached, for instance. More puzzling, perhaps, is to set the purchases in the account book against the sales in the day book; where did all the rest of the instruments go? Far more were purchased than are recorded as being sold.

It is clear that Glen was a general instrument dealer, and in fact the bagpipes, with which those of us who knew the shop always associated it, hardly ever appear. A few pipes are bought, even fewer sold, and while there are large quantities of purchases of materials for making all sorts of other instruments, apart from a few purchases of ivory and elephant's teeth (the two are clearly different, for one purchase lists both; what does one use an elephant's teeth for?) and one large purchase of ebony (143 lbs), there are no other purchases of such necessities for bagpipes as skins for the bags.

Brass instruments are probably in the majority, but there are large quantities of violins and accessories, including wood, fingerboards and pegs as well as bundles of strings, mutes, and so forth. Many woodwind instruments of course, though mostly flutes and clarinets; oboes only appear three times in the index (though note the comment on this below) and bassoons only once new, though a dozen times secondhand (there was a thriving secondhand trade, including many purchases from the sale rooms. Interestingly, Glen was also either a general dealer or else he mixed up his household purchases, clocks, knives and forks, 45 yards of carpet, and so on, with those of the business). There is also a fair amount of percussion, including things like musical glasses and glass harmonicas, as well as the mainstream drums and sets of triangles (what was a set of triangles?), including one triangle listed as 17" — either a fire alarm, or it was measured along all three sides.

Obviously, one takes note of the curiosities, the listing of a lute (bought at a sale in 1845) and a claricord (? a clavicor, which appears several times, or a clavichord?), a Bass Hibernicon, a keyed trumpet bought from a gentleman in 1842, and clearly not a keyed bugle, which appear many times, and so on. Here the index of instruments does not help at all. For one thing, the order is not rational (nor is it alphabetical), and for another, while most of the instruments are listed, none of the accessories or materials are (I had to chase right through to try to pick up the entries for ivory that I'd passed, for instance, after it had occurred to me that it was worth mentioning here).

One notes that horns and trumpets are often, even usually, bought in pairs, and listed as such; the first entry includes 2 and 1 Pare (sic) French Horns
and ¾ Pare F Trumpets. One notes the first appearance of the saxhorn, in August 1845 (mis-spelled as six horn), and such oddities as an E naturel (sic.) clarinet (bought to order from Bilton). And so on and so forth; almost every page has something worthy of note to the instrument historian.

One of the most valuable aspects, of course, is the listing of makers and dealers. I have not yet, though sooner or later I must, cross-checked the entries here with Langwill’s Index, but Langwill did his best to exclude dealers only too often, when one reported the purchase of an instrument with a name which was missing from the Index, he would reply ‘a dealer for sure’, and in fact we have no equivalent Index for dealers, valuable as it would be, for they are also important when one is trying to track down the provenance of an instrument. Glen did, of course, have his favourite sources, those who appear again and again, month by month, but there are many others from whom he bought only once or only occasionally, and for future research in many aspects of the music trade and of the availability and use of instruments, this publication will be a very useful resource.

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This exhibition catalogue is a sumptuous memento of the year 1985 and of the Handel tercentenary celebrations which graced it. Among those celebrations the National Portrait Gallery’s exhibition must be reckoned one of the finest. The exhibition catalogue is beautifully printed and produced on good quality paper, nicely laid out and generously illustrated; the colour reproductions are superb. Altogether it is a wide-ranging and highly informative evocation of Handel’s life and music. The 277 exhibits (including, naturally, many portraits) are ranged into eight main groups with headings such as ‘London: the First Decade 1710-19’ and ‘The Commemoration of Handel’; each of these groups is subdivided into individual topics, as appropriate, and among these are three important sections on musical instruments, related to 38 items in the exhibition. The instrumental entries and the introductory essays connected with them were contributed by Jeremy Montagu. In an illustrated and annotated essay on ‘Handel and the Orchestra’ (which, together with Donald Burrows’ essay on Handel’s life and work and Anthony Hicks’ account of ‘The Manuscripts and the Music’, forms the introduction to the catalogue itself) Jeremy Montagu provides much thoughtful and thought-provoking detail, and some explanation of the choice and arrangement of exhibits. (One of the fundamental principles underlying the selection is expressed in the final sentence of this essay: ‘... it is the instruments Handel could have known which are exhibited here’).
In the catalogue that follows, the three sections on instruments (nos.75-83, 167-80, 217-31) are prefaced by brief but again quite detailed essays (on the orchestra at Cannons, the instruments of Handel’s orchestra in general, and the instruments of two 18th-century English families). Together with the informative notes and useful bibliographical references provided for each individual item, these essays offer to the reader an effective accumulation of detail and a sense of the shaping of the general picture of Handel’s orchestra and of the history of instruments and instrumentation in 18th-century England. The commentary ranges from details regarding instrument-makers and construction, to evocations of the social context in which instrumental music was cultivated. As well as factual accounts (taking in the most significant research up to date) there are analytical comments, for example speculation as to the reasons why foreign rather then English makers were chosen by some English musical patrons.

The sense of connecting threads characteristic of the whole catalogue is nicely kept up by the arrangement of the three sections on instruments. Two surviving 18th-century English lists of instruments (Pepusch’s list for Cannons, reproduced in facsimile and transcription as Appendix 1 in the catalogue, and Hellier’s for the Wodehouse, Wombourne - where there was a ‘temple to Handel’), both discussed and analysed in the essay on ‘Handel and the Orchestra’ (pp.25-8), form the basis of two of the instrumental sections: these are nos.75-83 (Cannons) and nos.217-31 (Hellier, together with the Sharp family instruments seen in relation to the Zoffany painting (no.228 in the exhibition) which is beautifully reproduced in colour facing p.153 of the catalogue). A third, general section (nos.167-80) lists instruments related to Handel’s orchestral resources, including ‘Handel’s Pitch Pipe’ (no.180). The amount of intriguing detail of one kind or another (Granville Sharp signing himself G#; the documentary history of the Stanesby double bassoon, ‘the Greatness of whose Sound surpasses that of any other Base Instrument whatsoever’ contained in the instrumental sections of the catalogue can only be hinted at here; there is so much of interest. There are quite a few rarities here, such as the violin by John Barrett (no.76) preserved in its original state, lent by Sir Yehudi Menuhin, and some recent finds such as the Stainer violin (no.77) ‘discovered very recently in Germany’ and ‘here shown for the first time still in its original state’. Instruments which have been altered out of their original state create of course one sort of problem for an exhibition dedicated to assembling authentic materials; another problem is mentioned by Jeremy Montagu in his introduction to the general section on ‘The Instruments of Handel’s Orchestra’ (p.191) when he remarks that ‘... regrettably it has not been possible to find a contemporary double bass in original condition which is not in active use in one of the ensembles now recreating the sounds of the eighteenth century’. But this, like the Handel tercentenary, is surely a matter for celebration. And in spite of the obvious problems, much has been found from a variety of sources, public and private, to ensure that - especially in the context of the now well-established Baroque instrumental revival - the instrument-related contents of this catalogue will be of considerable interest to the general reader as well as to the specialist.
**New Grove DOMI; JM 3; Further Detailed Comments**

Comm.604 covered the As; Comm.646 the Bs; now let's have a crack at the Cs.

**Cadenza:** An interesting article, worth noting, especially now that early music is moving down into the 19th century. NB especially that Garcia, teaching singing in the middle of that century, was still providing his pupils with elaborate examples. It's interesting to observe how hesitant many of our modern players and singers are in this respect; they know, of course, that they should elaborate, but they are very cautious about how much of it their audiences can stand. If we are to be authentic in this respect, as in those more directly relevant to FoMRHI, the answer is clearly that the audiences should be taught to put up with it, and eventually to enjoy it. If any of you teach wind instruments, incidentally, Manuel Garcia's exercises and other works are excellent teaching material; I used to use them a lot.

**Cahusac:** I wonder whether the authors are right in thinking that almost all the instruments stamped 'Cahusac, London' are by dad; it would be nice if they were, but I'm not too sure.

**Calcott:** If I didn't know the instrument (I do; the only known example is in the Bate Collection), I would have no idea from this description of how the Radius horn worked. The problem is the phrase 'appropriate tube', for there is only one; the 'little valves' allow the player to slot the radial link tube (hence the name of the instrument) into as much or as little of the length of the bore, which is helically coiled, as he wishes, and so use the appropriate length of tubing for the crook required. Each 'little valve' cuts out all the tubing beyond it so that, for Bb alto, for example, only the tubing from the mouthpipe to the first 'little valve' and then through the radial tube and thence to the bell, is active. And that, I suspect is no clearer than the article.

**Caledonica:** There is no mention of that fact that the Caledonica was an anticipation of the saxophone.

**Calon:** Another xylophone with keys. What's more, they must be very small if four of them can 'rest on a half coconut shell'. It's reminiscent of the Fairy Queen in Iolanthe.

**Calung:** And another; the description begins with 'tubes' but suddenly becomes 'keys'; why not stick to tubes? Is bamboo wood? If not, xylophone is not strictly correct. However, I'm not sure what the alternative is; what's the Greek for giant grass?

**Cammer-Ton:** It's not true that the Baroque woodwind 'developed in Paris in the third quarter of the 17th century were built to...a' = 410 Hz'; 410 is the Bressan period pitch; the Hotteterre period instruments were more often at 392 or so (eg the Leningrad Hotteterre flute, and the Galpin oboe and the Bizey flute in the Bate, to pick three that I know).

**Canang (1):** For F" and Bb" , read f" and bb", surely

**Canang kayu:** Another xylophone with keys
Cang to Canku: All these (except canino) should have some diacritical sign over the c to show that it is a ch sound; the usual is a small v over the c, which this machine won't do, either (nor will it put the dot over the n of canku, which they, quite correctly, do provide). The same applies to quite a lot of other entries beginning with ca-, mostly Indian.

Cantophone: A kazoo of any sort works by adding a buzzing sound to the vocal, or other, sounds put into it. It gives a false impression to describe it as they do here, suggesting that it can produce notes of its own, whereas it can only modify pre-existing notes.

Castanets: I thought I knew the Cántigas fairly well, but I can't recall seeing any castanets in there. Unfortunately today, very few castanets are made of chestnut (castaña), even if that was the original material. Fig.2 does not show the orchestral version, as the text says it does.

Cencerro: 'Clapperless animal bell' is misleading; the phrase suggests that it is used in this form as an animal bell, which it isn't. To say that Messiaen's parts lie outside its range and that cowbells have to be used instead is daft; cencerro means cowbells in normal musical notation, and anyway, who says what the range is? They can be made all sizes and pitches.

Červený: Since the article is written by Buchner, it is, I suppose, fair enough to say that he worked in Hradec Kralove, but it could be sensible to use also the older name, more familiar to us, of Königgratz. I'm not sure that it is really true that his instruments 'influenced...the character of Romantic music' -- he was not the first man to make a tuba. Nor was the Wagner tuba a derivative only of his cornon.

Čakkhē: Can one describe as a plectrum something that is used to strike the strings?

Chalumeau: Did it really evolve in an attempt to produce a louder recorder? Does 'Ein Chor Chalimo von 4 stucken' mean a 4-part ensemble of chalumeaux, or an ensemble of 4-piece instruments (ie clarinets)?

Changgo: It seems hardly necessary to specify that the heads are 'of animal skin' -- what else are they likely to be made of? What would be interesting to know, is what animal, and Provine does later say, which makes it rather silly to say this at the beginning.

Chaunter: Where is this term used for the melody pipe of a bagpipe?

Cheironomy: I am very doubtful whether putting the hand over the ear is a cheironomic sign among singers; I've always understood that they do it to help them hear themselves against other sounds.

Chelys: It seems extraordinary not to mention the lyre under this head.

Chest of viols: The quotation from Mace makes it quite clear that the term also means a set of viols as well as the box in which they live, although Howard Brown seems to suggest that it only means the box.

Chicahuaztli: How are metal discu 'incorporated into' a stick? Set into, I could understand, but incorporated into means that the metal discs become part of the wood, a physical impossibility.
Chilchil (4): Another conch-shell.

Chin rest: Why should it be curious that Spohr’s chin rest was placed centrally? If you look at the drawing, it is quite clear that it was designed to fit over the tail button and that Spohr had not thought of any other method of fixing it, and therefore that this was the only possible position.

Chipchirgan: Since aerophones of any sort played by inhalation are very rare indeed (the only common one is the mouth-organ), it is a great pity that they do not say how it was sounded, whether it was played as a flute or as a reed instrument.

Chirimia: The drum in the picture is not a frame drum.

Chitarra battente: Am I not right in thinking that it always had wire strings? If so, this should be added to the list of characteristics, and in fact it is the only one, apart from the use of a plectrum which is not likely to have survived as an identifier in a museum, for example, to distinguish the instrument, as described, from any ordinary guitar of the same shape. It is easy to forget that guitars, gut strung and finger played, were often made in the same shape that one thinks of as typical of the chitarra battente (I learned this the hard way, once).

Choke cymbals: I have never heard these referred to ‘in the orchestra’ as sock cymbals; DOMI seems 60 years out of date here.

Chorus: This is one of the biblical instrument entries that I didn’t write, and it does not say, as it should, that the term is the Latin translation of the Hebrew machol, nor does it say that both the meanings given in the Dardanus letter were figments of the author’s imagination.

Cimbalom: I’ve never met cimbalom beaters covered in cotton wool; wool, yes of course, but not cotton wool. It is a surprisingly long article to be anonymous.

Cinema organ: It’s nice that they asked the chap who anybody of my age or older will remember as the leading player, Reginald Foort, to write this one.

Citole: Since Laurie Wright wrote the article, it’s not surprising that DOMI has come down on the right side in the citole/gittern business. I just wish though that anyone wanting to use the BM citole as an illustration would insist that they put a decent bridge on the thing. In my Med & Ren, I used a photo of the V&A’s electrotype instead (plate 19) because that copy was made in the 1880s, before the owners at Warwick had lost the original bridge, which I suspect from its carving may have been the original citole bridge, retained after its conversion into a violin of sorts in the 1580s; certainly it looks like no other known violin bridge, and its style of carving matches the rest of the instrument. If the Medieval Department at the BM knew anything at all about musical instruments (which they patently don’t), they’d get someone to copy the V&A bridge and throw away that revolting unshaped, unfinished, violin bridge stamped only too visibly DRESDEN. Incidentally, ignore the fact that in Med & Ren I called it a gittern; I was writing before Laurie published.

Cittern: I don’t believe that the reason for the cittern’s popularity was that it was plectrum played, but that it was wire strung and therefore did not take half an hour to tune.
Clagget: Surely the 'endless fillet' referred to in one of his patents was a continuous bow, as in some later mechanical string instruments, rather than 'a rotating wheel in the manner of a hurdy-gurdy'; a fillet is normally a ribbon or similar thing.

Clapper: To say that elsewhere than Europe, a pellet attached to a string is the usual clapper is rather misleading; it depends on what you mean by a pellet. A wooden rod is very common, and the fact that it is often attached to the body of the bell by a string, rather than to a metal hasp by a metal ring, does not turn it into a pellet.

Clappers: It is likely to have been the stamping tube and the pounding stave, rather than the clappers, which were the first substitutes for stamping. I would like to know the reference to the Anglos-Saxon psalter dated 1015, which shows clappers without jingles.

Classification (Appendix): It is not true that the English term Jew's harp is properly jaw's harp; this is a false etymology (as a glance at the OED will show) introduced by Curt Sachs and other over-sensitive co-religionists of mine earlier this century, and one which I did my best to sink in my Med & Mus, only to be sabotaged by my German translator (the German publishers, Herder Verlag, were in breach of contract in not submitting the text for approval pre-publication) who actually inserted the allegation into my text.

Although Sachs says here that homonyms are dangerous, they are also revealing; the reason that 'marimba' is used both for sansa-type instruments and for xylophones is that similar music is played on both and that the former can be a small substitute for the latter for private amusement.

Clavichord: Not a box zither; if you read the Hornbostel/Sachs definitions carefully, it becomes apparent that the clavichord is a frame zither. It is a pity in one respect (only in this one respect, I hasten to say) that they have retained the entry by that master of the subject, Edwin Ripin, for he died over ten years ago, so close on the publication of his article on the Checkker (GSJ 28) that none of us could argue with him and dispute his conclusion that the checkker was a clavichord.

Clavier (2): There is, I thought, a good deal of evidence to suggest that in German, Clavier usually meant clavichord (just as Instrument meant harpsichord).
Clog box: This is not a term for the trap set but for the wood block, which is a part of that set.

Çocoloctli: Where, on a flute, is the neck?

Cog rattle: These are also used in the orchestra, eg for musketry in Beethoven's Battle Symphony and in various modern works, and frequently in the pit band, eg in pantomimes when the comedian bends over. No drummer is without several of different sizes.

Colascione: Donald Gill says, unarguably, that this instrument derived from the Middle Eastern long lute, whose classical Arabic name is Tanbûr; surely, though, there is direct influence from the Turkish domination of Eastern Europe and the Turkish saz (and for the colasciontino, the cura saz). It is, perhaps, worth noting that the bouzouki is a modernisation of the same instrument, with a good deal of mandolin involved in its ancestry.

Collections: Unfortunately this entry appears to have been little revised or up-dated from Grove 6 (though I confess that I am writing this at home and therefore have not checked against it). There are errors (eg Markneukirchen is in the DDR and not the BDR) and there are many missing catalogues, some of which were missing from the Grove entry if I remember correctly (eg the two Berlin catalogues), and some of which have appeared since but in plenty of time to get noticed here (eg Nurnberg). Other errors include (in UK) the fact that Laurence Picken's Collection has been in the Cambridge Museum of Archaeology and Ethnology for a number of years; that the bulk of Lyndesay Langwill's collection was sold at Christie's some years ago; that there have, for several years, been checklists available of the Edinburgh collection in the Reid School; that the Halfpenny collection moved from Ilford more than ten years ago; that the Bate collection has been way over 500 instruments for a long time, that the largest private collection in this country is omitted (I've always welcomed serious visitors). And (elsewhere) there are many important collections in Japan, several of them with published catalogues; the most important collection, with a major handbook (by Oliveira) in Portugal has been omitted, at the Gulbenkian Museum; the Celebes collection (again with a handbook, by Kaudern) is missing from the Goteborg Ethnographic museum entry, nor is there any mention of the even more important handbook by Izikowitz which illustrates the bulk of the South American material there; nor, under Leningrad, of the Vertkov et al. Atlas, which is in effect a catalogue; in Los Angeles, the Lachmann collection is ignored (there is a catalogue); the Smithsonian Institution has produced many more checklists; so has the New York Metropolitan. And all these comments are the result only of a fairly quick skim over this lengthy entry. A good opportunity for a major revision of a subject which is important to all of us has been missed.

If it should be useful to any of you, I have just prepared for our librarian here a 12-page list of all the museum catalogues (and major area studies) in my own library. Copies could be made available on request at 21 or the nearest bit of paper in your own currency, though it's not likely to be much use to any of you who can't get to Oxford to look at any of the catalogues and other books listed, for I don't lend such books; they can be consulted here or at the Bate by appointment at any mutually convenient time.

Conch-shell trumpet: The prime tautologous entry; conch is Greek for shell. East Africa and the Middle east are among the conch-blowing areas ignored, also ignored are most of the European uses, though some may, perhaps, be
found in individual entries. An important bibliographical source, not cited here, is J.Wilfred Jackson, *Shells as the Evidence of the Migration of Early Culture*, Manchester U.P., 1917, which lists much important material, whatever one may think of Jackson's theories, some of which are certainly not acceptable today.

Cone flute: It is surprising to find no mention of the European flute, pre-Boehm's second model, here. It is a common term for such instruments.

Continuo: I suspected, when I first read it, that this article could lead to a good deal of controversy; I'm surprised that I have not yet seen any.

Cornadouelle: 'Bark trumpet made and used by shepherds', and that's all it says; it would be useful to be told where.

Cornet: Fig.4 does not show a cornet with a shank, but a more modern one with a solid mouthpipe. This is only one of a number of examples of what appears to be second thoughts on the choice of an illustration, and lack of careful sub-editing afterwards.

Corneta (1): This is a cornet, not a cornett.

Cornetin: If this is 'a high-pitched corneta' it is a cornet, not a trumpet; the two instruments are different.

Cornett: The cornett is not classified as 'a valveless trumpet' but as a chromatic trumpet with fingerholes (H/S 423.21). The instruments in fig.4 (*Isabella Breviary*, BL Add.ms. 18851, f.155v) are not cornetts; nor is that in fig.5 (*Worms Bible*, BL Harl.2804, f.3v); none of them have finger holes.

Cornu: Was the Etruscan cornu made of brass (ie copper and zinc)? The beginning of the article states that the Roman one was made of bronze, and one would expect the Etruscan to have been also.

Costumes, musical: Why omit the dancing skirt of grass, reed or bamboo?

Coupler: Why omit the use of the word for those coils of tubing for brass instruments which fit between the master crook and the instrument; these are called couplers.

Courses: Used on struck stringed instruments as well as plucked. There can be four or even more strings to a course. If Joan Rimmer is right, in her *Crwth* entry, that the crwth was double-coursed by or before the late 17th century, then bowed instruments should be added also.

Courting flute: Evidence from pre-Columbian Mexican codices suggests that other uses were common in that area at least. It is not classified as an external duct flute, but as an internal/external duct flute; it is quite distinct from the suling and the other external duct instruments.

Cousineau: What is the evidence that when Fétis and others refer to Pierre-Joseph Cousineau, they meant Georges?

Cozio di Salabue: If Strad's 'La Messie' is unused, why was it modernised in the 19th century?

Crook: There's no mention of couplers (see five comments up) here either, and yet this system, a master crook, later more often two, with couplers to be
used either singly or in multiple combination with the master crook, was how crooks were first used on horns; it had the advantage that one only needed to make one (later two) conical coiled brass tubes, always a tricky job, for the couplers were usually cylindrical. See, for example, the Hofmaster horns in the Bate and at Warwick, and a number of later instruments in the Bate, Horniman, and other museums.

**Crotales:** There is no evidence that the second pair of cymbals in Psalm 150 were crotales, i.e. tuned cymbals, since the original term is *t’ru’ah*, better translated as raucous than as *bene sonantibus* or well-tuned. It is very dangerous to back-project biblical terms unless one knows what the terms were in the original text, rather than what a variety of translators thought they were.

**Crumhorn:** Anthony Moonen’s important article in GSJ 36, 1983, should be, and should have been, added to the bibliography.

**Ctesibius:** The Aquincum organ is normally agreed to have been a pneumatikon, not a hydraulis.

**Cuiaca:** If this has ‘a remarkable pitch range’, it would be interesting to know what the range is.

**Culo and Cungklik:** Can we assume from now on that all mentions of conch-shell are tautologies and all xylophones and other such instruments with keys are idiocies, and forbear mention of them? See Comm.604 for the original comments on this.

**Cuzia:** The reference to the cubahi should be in capitals, not italics; it does have its own entry.

**Cymbals:** The use of note-stems up and down does NOT refer to the use or non-use of cymbals in the music of Haydn and his contemporaries, but to the use of a solid beater (one way) or switch (the other way) to strike the bass drum alla turca.

**Cymbalum:** Cymbala were, in illustrations (there is some doubt about how factual such illustrations were; see Hélène La Rue’s article in GSJ 35) almost invariably struck with hammers, not with a hammer; i.e. the player usually has a hammer in each hand.

**Coda:** Fortunately, not many letters in the alphabet carry as many entries as C does!
Beat

Amongst the meanings of the term given is "a mordent (called 'beat' only in the 18th century)". This is technically true. Mace (1676) described the beat as a repeated mordent (called 'inverted trill' in the entry). But Mace seems to have attempted to be comprehensive and nowhere else did he describe the simple mordent. Either he did not use the mordent or he neglected to distinguish between a mordent and a repeated mordent. In Mace's music the beat is notated on notes of all time values between a dotted semibreve to a quaver. The quickest notes he wrote were demi semi quavers, never more than two in a row, serving a decorative grace-like function. Assuming that this was as fast as he could move his fingers, there would be no time for a repeat in executing the beat on a quaver, leaving it a simple mordent. It is therefore likely that the term 'beat' referred to the mordent as well as the repeated mordent. A lack of concern with being precise about the number of repeats in graces is shown by Mace's use of the same symbol for the backfall (upper appoggiatura) and shaked backfall (the proper baroque shake).

Bebunq (by E M Ripin)

The author states that "the 18th century writings suggest that the [bebung] effect [i.e. vibrato] was then new ...". This might possibly be true, but it is unlikely since vibrato as an instrumental grace has been described from early in the 16th century.

Bell (i) (by P Price)

4. History: It is stated that the set of tuned bells "did not appear in Europe until about the 13th century, when it was used both for musical performances and to give the pitches for plainsong incipits." What I question here is the use in musical performances. I remember hearing a lecture of someone who was writing a thesis on the subject (I'm sorry I forgot the name), and the conclusion was that there was no evidence for this, and the only evidence indicated that the set of bells, like the monochord, was used solely for teaching music.

Bell cittern

This entry just says "See Cithrinchen". I know of no early use of the term 'bell cittern', and suspect that it was invented by modern scholars. The proper English term, given in the Talbot ms, is 'Bell Guittern'.

Biblical instruments (by J Montagu)

This entry is very frustrating, suppressing all speculations that do not have very strong support. I prefer a speculation with some shred of support to silence. Also of considerable historical interest would be an indication of what people have thought that the Biblical instruments were in different periods.

Bordone

The entry just indicates that the term is Italian for 'drone'. In the 16th century it was also used for the name of a particular low or thick string on an instrument. This might have been the lowest string at an earlier state of evolution, but Capirola/Vitale (c. 1517) gave it as the name of a thick 5th course string of a six-course lute and Lanfranco (1533) gave it as the name of the thick 4th course string of a 5-course lyra da braccio, the 5th course being lower and off the fingerboard.
Bourdon

The entry claims that the term refers to the free vibrating strings of the larger lutes and bowed instruments like the lira da braccio. But see Lanfranco above. The term also refers to a thick low-pitched string that lies over the fingerboard - particularly to the low-octave strings on the 4th and 5th courses of a baroque guitar.

Bouzouki (by R C Morris)

The author has omitted that the instrument has recently been adopted by folk bands outside of Greece, particularly those of Ireland, who use flat-backed as well as round-backed versions of the instrument.

Bow 1 History of the bow

1. Origins to c 1650 (by W Bachmann)

The entry states "The bowstick [before 1600] was much weaker than on modern bows, so the hair gripped the strings less firmly." The first part is probably true, but the consequence only has meaning if we make the unjustified assumption that the bridge curvature was the same as in subsequent usage and the avoidance of playing more than one string was also the same, resulting in lower bow pressure against the string. The interaction between the bow and strings on the medieval fiddle is seriously misunderstood nowadays and I'll probably have a Comm on the subject in the next Q.

It is stated that "the pictorial sources thus demonstrate that many different types of bow were tried out in the 10th and 11th centuries, those that proved satisfactory being either discarded or altered ....". This is historically ridiculous. It is much more likely that artists will depict musically successful performances than one-off experiments that failed. To the extent that the artist was depicting a real musical performance, we must assume that whatever we see in old pictures was considered satisfactory at the time. Short-lived features of what we see can be interpreted in terms of the introduction of different features which were more satisfactory for either the same or changed musical requirements.

The statement "Where there was no projecting handle, the player held not only the stick but the end of the hair, and was therefore able to vary the tension of the bow as he played by pressing the hair with his fingers" implies musical use of tension variation. This may have happened but was not a widespread aspect of technique because this could not be done with contemporary bows of different design. What is missed is that the fingers might just be used to achieve a constant acceptable bow tension.

2. c 1650 – c 1750 (by D D Boyden)

The discussion is almost completely of the violin bow, ignoring bows for other instruments. Boyden quotes Hawkins (1776) on the lengths of bows in 1720, ignoring the information given by Talbot (c 1695) with which it is inconsistent. Talbot gave the length of the sonata bow as 26-27 inches long, the solo bow as 25.5-26 inches long, and the consort bow as 24 inches long. Hawkins wrote that the sonata bow increased in length from 24 inches in 1720 to 28 inches in his own day, and that in 1720 the common bow was shorter, and considering Raguinet's statement (1702) (that the Italians used much longer bows than the French), the French bow must have been shorter still. Talbot, being on the spot, is to be trusted more than Hawkins, writing more than half a century later. Hawkins's 'common bow' was probably Talbot's 'consort' bow, and since the sonata bow was probably of Italian origin, Raguinet's statement could well be satisfied by the French using a 24 inch bow.

As for the chronology of surviving bows, Boyden suffers from the malady he aptly
described on p 325 of his 'History of Violin Playing'! He there wrote "Historians of the
bow have shown a lamentable tendency to oversimplify and to select facts that fit prevalent theories". In the entry, Boyden writes "'clip-in' or 'slip-notch' bows
apparently became obsolete after 1700." A trade list from Bremner of London in 1765
included:

- violoncello bows pillar'd [ie fluted] or plane
- ditto with screws
- violin bows pillar'd or plane
- ditto with screws
- bows for small violins and kits

It should be clear from this that, in 1765 England at least, the standard bow was still
the clip-in-frog type, with the screw-type only being an alternative. The first written
evidence for screws on bows is the first volume of the Encyclopaedia in 1751. Boyden's
chronology, at least on this feature of bows, seems to be distorted by more than half a
century. For more information on this, see Comms 409 and 458.

Boyden writes "The best bows before 1750 were generally flexible" and later "a number
of early bows were clumsy and inept". The criteria for quality are clearly modern since
there seem to be no early statements on the topic. Since there is poor control of hair
tension in clip-in frog bows, it seems reasonable to assume that playing style did not
exploit the flexibility. A spicato bounce can mainly utilize string flexibility if the hair
is stiff, but is improbable if the hair is loose. The early low-headed bow does not have
the soft feel at low bow pressure, getting very stiff at high bow pressure, that the
nodding head of a high-headed bow offers. If the clip-in frog low-headed bow was
relatively stiff it can do its job best - that of being a sensitive extension to the
player's arm, doing everything the player wants without imposing its own flexing
characteristics between the player and string.

Boyden keeps promoting the fiction of what he admits is the "so-called 'Stradivari'
bow". On the first photo showing it, his legend reads "'Antonio Stradivari", and in the
second photo, just "Stradivari". There is no evidence whatsoever that Stradivari had
anything to do with this bow. Neither the top nor frog fits any of the number of
templates from Stradivari's workshop now in Cremona's Civic Museum. Being over 28
inches long and having a screw, it probably dates from much later than Boyden's c 1700
claim. The frog design, as in the so-called 'Cramer' bow, positively flaunts the fact that
it could not be clip-in. 'The Mandora-Frog Bow' would be an apt name for this unique
bow.

Broken consort

The entry is "a term generally taken to mean a consort of instruments of different kinds,
but see [the entry] ' Consort' (sect.] 3." What is omitted is that there are but two
closely related instances where the term was used before modern times. One is that the
name of a performing group in Charles II's ' private Musick' in 1660 was 'The Broken
Consort'. The other is a manuscript of music by Matthew Locke with two sets of
compositions with the annotation "The Broken Consort". The general title given for the
manuscript "Compositions for Broken and whole Consorts" is clearly not original, but it
marks the first use of the term to denote a type of ensemble. The term was popularized
in the 1959 edition of Morley's "The First Book of Consort Lessons" by Beck. There is
now a move away from using the term for the Morley type of ensemble (treble viol, flute,
bass viol, treble lute, cittern and bandora), as exemplified by the publication of "Music
A RETURN VISIT TO VENICE — Further to Comm.658.

I was back in Venice in November for a conference on restoration at the Fondazione Levi (an important conference, the papers of which will be published in due course, and a very pleasant one, for we all made a number of new friends and met even more old ones). While we were there, we had the privilege of visiting a small museum which we were told is not normally open to the public, the Fondazione Querini Stampalia. There we saw some more instruments, and I thought it worth recording them here, as a supplement to the longer list in the last Q. Because this visit was made in the lunch break between two sessions, and because it was quite a long walk from the Palazzo Levi, my notes are brief and hastily scribbled. Still, I hope that some information is better than none.

There are two oboes by Fornari.

One is stamped 1793 and appears to be rosewood, with ivory mounts. It has three head joints, the shortest marked 3 and the longest marked 1. The three keys, all of which are of ivory, are somewhat puzzling, to me anyway. There was a normal E" key, and a long open-standing key, presumably the usual C key, with the touch running right up to the upper little finger instead of to the lower little finger as usual. Immediately below this key there is a closed key which is operated by the lower little finger; I'm not at all sure what it would do, unless it was (which I've never seen before) an oboe version of a Quantz key, to differentiate between D" and E". The long C key is in a brass saddle; the others are mounted in the usual manner. All three are SATW.

The other has no date stamped on it, nor does it have any corps de rechange. It is made of boxwood with ivory mounts, and like the other has keys of ivory (a habit of Fornari's). Although it has only two keys, the usual E" and the open-standing C, again the C key goes up to the upper little finger; it seems a curious idea, but perhaps some of you have seen other Fornari oboes on the same model. Again both the keys are SATW.

There is also a Fornari cor anglais, curved and leather covered, stamped 1791. The ferrules are ivory, as are the two keys. There is a normal E" key and a long curved C key, once again for the upper little finger. Both are SATW.

Phill Young lists four Fornari oboes for Venice; there were two in the Marcello Conservatory (Q. 41, p.48, neither on the Inventory), and these are presumably the other two. He lists two cors anglais, but specifies both as being in the Marcello; either he is wrong in this respect (he may not be; there was a fair amount listed in the Inventory which I did not see, and anyway the Inventory does not cover everything), or else this is a third.

There is a one-key flute by Schlegel a Basle, with three upper-body joints, but I am afraid I took no other notes on it. Apologies.

There is a Goffriller viola, in full modern state, two anonymous violin bows, and a violin and a cello bow, both by Carlo Tononi, and both very pretty.

And that, I fear, is all that I can tell you.
A reamer made of aluminium

Recently I realized an idea to make a reamer consisting of a body turned of aluminium and a blade made of a sheet steel which is to be screwed to the body. This reamer has several advantages: If need aluminium can be turned by hand on a simple wood-working-lathe, resharpening is done very quick and easy without reducing the shape and size of the reamer, within certain limits the taper can be altered by adjusting the blade and finally it works very well, but there may be some problems to make such reamers for very narrow bores.

Turn a rod of aluminium to the wanted taper. If you have to turn by hand, material can be removed best by turning at low speed and working with a usual chisel and much force, high-speed-turning using a rough file is effective too. Smooth the tapered rod with 'wet & dry' abrasive paper. Flatten one side of the body with files. In order to avoid damages caused by a vice during the filing, I glued the body into a v-shaped kerf of a board with some drops of epoxy cement, which I melted by careful heating with a torch to remove the board after work.
You have to remove enough material to create space for the blade and the heads of the screws, but on the other hand it is important to leave a little more than the half of the tapered rod in order to get a certain fit of the reamer in the bore and to get a sharper cutting-angle.

Everyone who likes to control the angle between the blade and the tangent at the cutting-point can calculate it by use of the following formula.

\[ \cos \phi = \frac{d+b}{r} - 1 \]

\( r \) = radius  
\( d \) = diameter of the flattened body  
\( b \) = thickness of blade  
\( \phi \) = angle between blade and tangent at the cutting-point

Drill some holes (\( \phi 2,5 \text{ mm} \)) through the body rectangular to the flattened side and cut in threads (M 3) with a tap. Drill a hole through the non-flattened end of the body to fix a handle. I guess I don’t have to describe such things. The blade is to be made of a sheet steel of about 1 mm thickness by use of saw and files. File in slots matching the threads in the body. The rectangular cutting-edge is to be sharpened with a fine file like the one of a scraper. Finally screw the blade onto the body and adjust it to the correct taper.
Another Reamer-saving Counterbore.

Whereas the larger counterbore described by Bob Marvin in Comm. 648 requires the use of welding facilities, this one can be made using a wood lathe, though it is a bit more complex, and an engineering lathe helps. It uses interchangeable blades and pilots, so these can be made up as required.

The counterbore is in three parts – body, blade and pilot. The blade fits into a slot in the body, and is located centrally by slots in its front and rear edges which fit over pins in the pilot and the rear of the body slot. Dimensions depend upon the blade stock and thread sizes; I happened to use 1\2" x \3" gauge plate and 2\16" BSF threads, so some dimensions here are imperial.

The body is in three parts. A piece of 19mm round mild steel is bored through to 11mm. One end is tapped to a depth of about 25mm with a suitable thread, in my case, 2\4" BSF. In the other end cut and file, or mill a slot to receive the blade, 1\2" long x \3" wide. Into the threaded end goes a piece of threaded rod about 50mm long, turned down to a pin \3" Ø x \3" long on the end which goes into the body. The other end projects beyond the body and screws into a suitable shank. The other end of the body takes another piece of threaded rod shaped as follows: cut it to 40mm long, turn down 20mm of it to 11mm; in that end cut and file, or mill a slot \3" wide and take the slot \3" or slightly more into the threaded portion; turn a few threads off the threaded end so that it will screw all the way into the blind threaded hole in the pilot; finally bore a \3" hole all the way through. The slotted end of the threaded rod is then hard soldered into the slotted end of the main part of the body so that the slots line up.

The pilot is a piece of mild steel rod of whatever diameter you require, and 25mm long. Tap it 20mm deep to receive the thread on the front of the body, and bore the remaining 5mm length with a \3" hole to receive a locating pin. This should be of \3" silver steel, \4" longer than the pilot and hard soldered into the body of the pilot.

The blades, being of 1\2" x \3" gauge plate, need only be hacksawed, filed and ground to width; then a slot \4" wide and just over \3" deep is filed or milled centrally in the front and back edges. I used a 1\2" Ø milling cutter made from the same gauge plate, and therefore the right thickness.

The tool is simple to use since the blade is positively locked by the pilot, and released when the pilot is unscrewed.

Blades should be given a side and front rake, and slightly tapered towards the back, otherwise they can score the bore when withdrawn.
Body assembled.

Body exploded.

Locating pins

Blade

Pilot

Front rake

Side rake

Rake angle probably exaggerated in sketch.
Workshop ideas for woodwinds.

I am offering here various ideas which I have found useful over the last few years. They are probably not original, nevertheless there may be some to whom they are new.

1. Long hole augers: I have had more success with a different shape from that proposed by Rod Cameron in Comm. 197. The basic principles are the same; the difference lies in the tip, which in this case is a modified D bit. Start by cutting and/or filing away half the diameter of the silver steel rod for about 6 diameters back from the tip. You can taper the cut up to the full diameter at the back end, rather than have an abrupt step. Then grind the inside hollow, being careful not to remove more than half diameter. Grind the tip to give side rake, about 5 degs, and top rake, about 10 degs. Viewing the tool as though you were offering it to the work, the left tip should now be leading. The tool will work as it is, but the next operation will make it much more free cutting. Consider the front face again from the handle end, present the tip head-on to the grind stone with the handle raised, and grind a wedge shape away from the right hand side of the front face, most material being taken away at the top, tapering to nothing at the bottom edge; take this cut slightly over-centre to the left. A few cuts with a three-square file on the flat forming backward-facing hooks will pull the chips out.

2. I use these up to 13mm. Above this size, I use hollow auger tips on mild steel shanks. Use a length about 7 times the diameter plus enough for a male or female thread or socket or however you want to fix it to the shank. Bore out for 6 times the diameter back from the tip, leaving adequate wall thickness. Cut, file and grind away half the diameter as before, then grind side and top rake to the tip of the shell. Next hard-solder a piece of industrial hack-saw blade onto the tip. This is normally of a type of steel not softened by soldering temperatures. It's hard to cut; I use a steel-cutting angle-grinder wheel mounted in a mandrel in the lathe. Protect the lathe parts as far as possible from the dust, which is very abrasive, and wear a mask and goggles. Finally grind carefully the rough tip to the D profile. If you leave the left hand side a whisker oversize, the auger will have less tendency to bind without affecting accuracy. Then relieve the right-hand side, as before, taking the cut slightly over-centre.

These are easier to make than the round tipped type, and quick to sharpen. I step bore bagpipe chanters working from big to small. I would have expected round tipped augers to centre themselves on the previous cut more accurately, but the square tipped variety work just as
well; well within the capacity of the reamer to produce a smooth bore. Starting at 20mm and finishing at 4mm over a distance of 600mm plus, I expect to come out within 4mm of the centre.

For drill sizes up to 9mm I never use a guide to enter the tool in the work; I follow a procedure suggested by Holtzapffel (John Jacob H. Hand or Simple Turning, Principles and Practice, Dover Publications, ISBN 0-486-23365-0). Turn a steep cone in the face of the blank with a skew chisel; make this slightly larger than the diameter of the auger; with practice you judge it by eye. Present the auger tip to the cone holding the handle off to the right to compensate for the fact that the right hand side of the front face is relieved. As the tool begins to cut, bring the handle smoothly onto centre line. Push gently at first until you are sure the auger is going on centre, then you can proceed more quickly. I use plenty of raw linseed oil to lubricate the tip - it seems to fetch out more wood that way - unless it starts squeaking when lubrication seems to make things worse. If this happens, try dipping the tip in talcum powder after oil.

For sizes above 9mm I bring the tool rest close to the face of the blank up to half the diameter of the auger below centre height. Proceed as before, but bear down on this support until the auger stops chattering and starts cutting smoothly.

2. Mandrels for turning bored blanks.

If your lathe has a threaded nose and a sufficient shoulderon its headstock spindle, you can screw a mandrel blank directly onto the nose resulting in a firm, economical fixing, with no chucks in the way. Turn a seasoned hardwood blank of sufficient length and diameter and face off the ends. Mount one end in a 3 jaw chuck; bore in the free end a hole the same diameter as the nose thread, and in depth the length of the nose less about three threads worth. Deepen this hole with a drill about 1.5mm smaller in diameter than the previous one taking it to a depth slightly greater than the nose length. Grease the hole with tallow, then after removing the chuck, screw the blank onto the nose, allowing the latter to cut its own thread. Ensure that the face of the blank butts firmly up against the shoulder of the lather spindle. If you do not, it will not dependably return to that position on subsequent mountings. You can then turn the mandrel body true, and turn the end to a snug fit in the instrument blank bore.

3. Tapwrenches

I can confirm that these make excellent handles for reamer or auger shanks, as suggested by Bob ‘arvin in Comm.180. They are extremely quick to apply and remove when changing sizes, and unlike mole wrenches are balanced. However obviously you don’t have to make your shanks out of hexagon steel and modify the tapwrench jaws to 120 degs. You can file or mill the shanks ends square.

4. Talcum Powder

Makess an effective lubricant for reamers or augers that tend to bind. I find that oil, tallow, wax etc. generally makes things worse.
5. Fingerhole drilling jig.

First you need a baseboard of a size related to the length of the instrument to cope with overhang. Plywood/chipboard/blockboard is suitable. Provide it with some means of locking it to and positive registration with the table of your drill press so that when you remove it and replace it, it goes back precisely to the same position. Drill a hole in it centrally on the press to receive a steel or plastic peg. The peg should be a very firm fit in the hole, or it can be glued in. Either way, it must be precisely on line with the quill of the drill. The instrument is held in a continuous vee block, or a pair of vee blocks or split ring clamps fixed to another baseboard. This part of the jig should be provided with an end stop or some means of positive registration with a mark on the instrument, e.g. the top window line on a one-piece recorder. In the underside of the instrument-clamp baseboard drill a hole in the same vertical plane as each fingerhole and precisely on the centre line of the vee blocks. These holes should be a smooth fit over the peg in the drill table baseboard, but free of play.

This system obviates the need to mark out fingerhole positions, which I find a very tedious occupation. You can use it in two ways; either to drill all the holes in one instrument successively moving from hole to hole over the peg, or if you can provide some means of axial location for instruments in the vee blocks or clamp you can drill all the first holes in a batch, and so on.

If you are sure of your hole sizes, an extension of this system would be to make the sizes of the holes in the underside of the instrument clamp the same as the fingerholes. Then you would use an end-cutting bit in an overhead router, and a locating peg the same size as the bit. Thus all the fingerholes could be cut without changing bits.

6. Tast drill modifications.

Probably everyone knows about these, but they may be worth repeating. One I discovered for myself, and then found in a book (Frank Paine's woodturning); the other I was shown, but it was being done cumbersomely in a lathe using a tool post grinder. Both can be done quite easily holding the bit by hand on a grinding wheel.

The first is useful if you want to enlarge a hole in a previously bored instrument blank, say for a long socket, and you lack the appropriate counterbore. Standard twist drills used for this can pull themselves (and the tailstock) into the wood with unpleasant results. Because of the angle at which the flutes meet the front faces, the cutting edge has a lot of rake. The answer is to grind a small flat, 0.5mm wide is plenty, on each cutting edge, holding the drill with its axis in line with the flat of the wheel, and using the flat of the wheel.

The second is good for all woodboring, and unrivalled for drilling angled fingerholes. What you have to do is grind away the slopes of the cone shapes formed by the standard drill tip. The same amount of backing off can be used. Keep the tip central by eye; it helps to use the same pressure for each pass, and count the number of passes on each side. The front faces will end up essentially flat.
except for backing off, and ideally the side tips should lead. Thus assuming you are using the right hand edge of the wheel, hold the handle of the drill off to the right a bit to allow the side tips to lead, and down a bit relative to the radius of the wheel so that as you rotate the drill through about 90 degrees clockwise on each pass, you get backing off. Be careful as you do this not to run the other side tip into the front face of the wheel.

7. Routers

I find a small router of the type which can be demounted from its frame (e.g. Bosch POF 50) extremely useful for diverse jobs. It has a substantial motor mounting flange or collar. You can use an improvised collar to mount the motor in various ways.

Either in a stand made by Bosch (expensive) or in an old heavy stand for a handdrill you get an overhead router, good for say, roughing out windows in large recorders, or what it is perhaps best at, drilling the small holes for the rosettes in fontanelles extremely cleanly. For this I mount the fontanelle on a mandrel on the lathe; the router goes in a press mounted on the lathe bed on centre line. The rosette holes are pricked out on the fontanelle using a template. The router bit is located along the bed over a set of holes on the same radial line; this can range from seven per rosette on the central line, to one per rosette half. Then looking along the line of the lathe bed, I align the hole position to the router bit turning the lathe spindle with my left hand on the sanding disc mounted on the outboard end of the spindle, and operate the press with my right hand. This way, the holes have only to be lined up in one direction, and can be set out and drilled extremely precisely. If you want to drill holes of a size which does not match a standard router bit, a twist drill works really well as follows: take a 25mm length of silver steel to fit the router collet (in this case, 1/4") drill it through with twist drill the same size as the desired fontanelle hole size; hacksaw it down the centre line leaving about 5mm uncut; this will be a sub-collet; put the shank of the drill in a vice and break off most of the fluted section by hitting it with a hammer; grind the tip as for the lip-and-spur drill in 6. above, but omitting the central point. This may be awkward on a large grinding wheel with a radiused edge, so use one of those small shank-mounted wheels mounted in the lathe chuck; these can have quite sharp edges and can be kept so for this purpose. The modified drill is mounted in the sub-collet in the router collet, and can drill cleaner small holes than a proper router bit.

You can also mount the router in the toolpost of an engineering lathe, with the body of a wooden reamer between centres. A quadrant can then be quickly routed out. This leaves the body stronger than sawing it in half. (See Comm. 180).
This system is also good for roughing out tapered recorder block blanks. A half-inch two-flute bit cutting on its bottom is suitable. Set off the top-slide to give the required taper. Take off the handwheel and move the top-slide through its travel by hand. With the lathe on its slowest speed, turn a square blank into a truncated cone. Make it sufficiently oversize to leave room for the raised shoulder which will form the floor of the windway. Mark out the position of the shoulder. Advance the crossslide using the calibrated handwheel and cut a small circular portion at each end of the blank. These will serve as a guide for later hand finishing (See Comm.146). Then turning the headstock spindle by hand a few degrees each cut, rout out the waste. It only remains to cut out the two small prisms described by Bob Marvin in Comm.146 and finish the floor of the windway (Did I say 'only'?). A lot of roughed out blanks can be made quickly this way.

PS I see that I have indiscriminately spelled a long-hole boring tool 'augur' or 'auger', yet I will avoid the puns.

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Diagram for 6. above

Fig. 1. It helps to enter drill in Fig.1 into a cone as described in 1. above. That way the outside tips start to cut first, and the drill is supported by its outside surface by the time it is cutting fully, thus there is less vibration on entry.
1985 FoMREI List of Members - 3rd Supplement as at 5th January 1986

<table>
<thead>
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<th>Address</th>
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<td>Raymond A. Abbotson</td>
<td>'Dovecot', Kirby Mills, Kirkby Moorside, York</td>
<td>0751-31649</td>
<td>Dulcimer, Hpschd, P</td>
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<tr>
<td>Gillian Alcock &amp; Terry McGee</td>
<td>25 Woodgate Street, Farrer, ACT 2607, Australia</td>
<td>(hpschd, P)</td>
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<td>Librarian</td>
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<td>Claire Y. Barlow</td>
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<tr>
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<td>Robert W. Bramley</td>
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<td>(lute, ww)</td>
<td></td>
<td></td>
</tr>
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<td>Ralph Bryant</td>
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<td>Mark Lindsay, Music Department, The Chinese University of Hong Kong, Shatin NT, Hong Kong (tuning &amp; tempaments; L.W)</td>
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</tbody>
</table>
Members are asked to send me any changes, corrections, and in particular Post Office Codes in good time for the next main List, deadline April 1st.

Museums: Haymarket: Applied Arts & Sciences

Organological Index

Tools: Geoff Mather

All Instruments: John Chambers Barbara Lambert

Ezzer Fontana Guy Oldham
<table>
<thead>
<tr>
<th>Instrument</th>
<th>Performers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percussion</td>
<td>Ian Edwards, Caroline Walker</td>
</tr>
<tr>
<td>String Instruments</td>
<td>A.P. Harris, W.J.S. Ovenden, Peter Stephenson</td>
</tr>
<tr>
<td>Psalteries</td>
<td>Myke Joyce</td>
</tr>
<tr>
<td>Dulcimers</td>
<td>Gillian Alcock, Howard Nelson, Randolph White</td>
</tr>
<tr>
<td>Keyboards</td>
<td>Philip Davies, Miles Hellow</td>
</tr>
<tr>
<td>Pianoforte</td>
<td>D &amp; M Crowe, D &amp; M Crowe, h, Marc Ducornet, h</td>
</tr>
<tr>
<td>Harpsichord etc.</td>
<td>Gillian Alcock, h, Stephanie Chambers, h</td>
</tr>
<tr>
<td>Clavichord</td>
<td>D &amp; M Crowe</td>
</tr>
<tr>
<td>Plucked Strings</td>
<td>James Tyler</td>
</tr>
<tr>
<td>Lute</td>
<td>Robert Bramley, Gerardo Parrinello, Anna Radice</td>
</tr>
<tr>
<td>Lauto</td>
<td>Thanassis Valavanis, 'Ud:', Thanassis Valavanis</td>
</tr>
<tr>
<td>Guitar</td>
<td>Myke Joyce, Gerardo Parrinello, June Yakeley</td>
</tr>
<tr>
<td>Vihuela</td>
<td>June Yakeley</td>
</tr>
<tr>
<td>Cittern etc.</td>
<td>Philip Davies, c, Peter Stephenson, c</td>
</tr>
<tr>
<td>Sowed Strings</td>
<td>James Tyler</td>
</tr>
<tr>
<td>Lyra</td>
<td>Thanassis Valavanis</td>
</tr>
<tr>
<td>Violin Family</td>
<td>Michael Fleming, Rod Jenkins, Dirk Jacob Hamoen</td>
</tr>
<tr>
<td>Viola da Gamba</td>
<td>Martin Edmunds, Sally Lucas, Margaret McKay</td>
</tr>
<tr>
<td>Hurdy-gurdy</td>
<td>Tony Barratt, William Nolan, Howard Nelson</td>
</tr>
<tr>
<td>Nyckelharpa</td>
<td>Jeffrey Hildreth</td>
</tr>
<tr>
<td>Harp</td>
<td>Philip Davies, Frances Trafford-Walker</td>
</tr>
<tr>
<td>Wind Instruments</td>
<td>Ian Clarke, A.P. Harris, Francis Tames</td>
</tr>
<tr>
<td>Woodwind</td>
<td>Robert Bramley, Andrew Godfrey, Peter Stephenson</td>
</tr>
<tr>
<td>Transverse Flute</td>
<td>Ian Edwards, Alice Granger, Joseph Greedy, Philip Gruar</td>
</tr>
<tr>
<td>Recorder</td>
<td>Tony Barratt, Stephanie Chambers, Marc Cromme, Andrew Godfrey, Alice Granger</td>
</tr>
<tr>
<td>Whistles</td>
<td>Terry McGee</td>
</tr>
<tr>
<td>Organ</td>
<td>Guy Oldham</td>
</tr>
<tr>
<td>Reeds</td>
<td>Eric Franklin</td>
</tr>
<tr>
<td>Capped Reeds</td>
<td>Bernard Thomas</td>
</tr>
<tr>
<td>Clarinet</td>
<td>Daniel Bangham</td>
</tr>
<tr>
<td>Oboe</td>
<td>Sally Lucas, Douglas Norfolk, Charlie Wells</td>
</tr>
<tr>
<td>Shawn</td>
<td>Jonathan Swayne</td>
</tr>
</tbody>
</table>
Bagpipes: Eric Franklin, s  Mike Lavis
Philip Gruar, slm  Attila Meszlenyi
Brass: Francis Tomes
Sackbut: Marc Cromme
Trumpet: Ralph Bryant
Cornett: Ralph Bryant

Geographical Index

Australia: Gillian Alcock, ACT
Terry McGee, ---
Philip Davies, NSW
Mus.Arts/Sciences, ---
Canada: Joseph Greedy, Ont
France: Marc Ducornet
Greece: Thanasis Valavanis
Hong Kong: Mark Lindley
Hungary: Attila Meszlenyi
Italy: Gerardo Parrinello
Anna Radice
Marco Tiella
Netherlands: Dirk Jacob Hamoen
H.G.Laarman
Sweden: Jan Danielsson
Instrumentenmakarna
Switzerland: Ralph Bryant

United Kingdom - Avon to Kent:
Michael Lavis, Avon
Andrew Godfrey, Chesh
John Chambers, Kent
Victoria Helby, Bucks
Randolph White, Corn
A.P.Harris, ---
Claire Barlow, Cambs
D & M Crowe, Dorset
George Lawson, ---
Robert Bramley, ----
Myke Joyce, Hants
V.J.S.Ovenden, ---
Duane Lakin-Thomas, ----
J.Kane, ---

London:
Ian Edwards, E1
Kari Tomter, N14
Francis Tomes, SV19
Sally Lucas, --
Philip Gruar, N17
James Tyler, W3
Caroline Walker, --
Martin Edmunds, SE3
Guy Oldham, V4
Simon Lambert, E14
Douglas Norfolk, SE6
F. Trafford-Walker, V9
June Yakeley, N1
Howard Nelson, SE15
Miles Hellen, N7
Alice Granger, SV16

Middlesex to Yorkshire:
D.W.Murray, Middx
William Molan, Sussex
Charlie Wells, SYork
Nigel Morgan, Suffolk
Bernard Thomas, ---
Barry Holder, WYork
D.R.Thomas, Surrey
Michael Foster, Worcs
Barry Lloyd, Sussex
Raymond Abbottson, NYork

Northern Ireland:
Sam Murray

Scotland:
Graham Wright, Glasg

United States of America:
UCLA, CA
A.H.Schlick, IL
Peter Stephenson, KS
Barbara Lambert, MA
FURTHER TO CARY'S COMM. 655

There has been no response to this Comm of Cary's, so far as I know, from any of you, unless you have been writing to him direct, so I thought that I would put something in this Q myself. As you see here, and perhaps, if all the machinery works, as you'll already have seen in the Bulletin (which I have not typed yet, hence the complicated conditionals), I have responded to it practically (with Cary's help, for which I'm very grateful).

I have bought myself a computer. This is a fairly simple one, but all that I could afford, the new Amstrad PCW8256, which comes complete with word processing and a printer for under £400 (but plus VAT, which takes it well over that figure). So far I have only used the word processing side of it, chiefly because I don't understand any of the rest of it, nor have I as yet any other software than what comes with the machine (Can anybody within reach of Oxford be kind enough to tell, or rather teach, me how to use a computer?) (It's great fun to be able to do that sort of thing, but it's not really what the machine is for). One snag is that this machine is sufficiently new on the market that there isn't yet much equipment for it, nor is there much, as far as I know, in the way of software. Sooner or later there will be all the usual gadgets, such as a modem and whatever one needs to plug in extra bits like that, and then, perhaps, it will be possible for FoMRHI to go in for some of the activities that Cary has suggested. That is, of course, if any of you are interested in such activities.

In addition, it should be possible to do the Members' List on it (I'll have a bash in this Q, but it may not work because I'm not sure whether I can persuade it to print things out in columns, and of course without the necessary programmes it won't save me any time in doing the indexes).

I find it difficult to understand why there has been no response to Cary's Comm. When we started FoMRHI ten years ago, back in 1975, one of our prime concerns was the rapid communication of ideas. We were an international Fellowship from the start, and we were very firm that there was no option for overseas members (including Europeans) except to have an airmail subscription; there was no point in thinking of rapid communication and allowing things to meander across the water at their own speed, which would mean, as it so often does today, that people are responding not to the immediately previous Q but to the one before, simply because they do not get the Q in time to catch the next deadline. With airmail, everybody would get the Qs at about the same time, whether they were just down the road from whoever was sending them out, or in Honolulu. It was the Post Office that put paid to that idea; postage rates went up so far and so fast that we felt that we had to give overseas members the option of the same cost as UK members, and so we gave them the choice of air or surface. I think now that this was a mistake, and we should have stuck to our guns, though I have been very pleased that a good many of you agree with me, and do pay the exorbitant extra amount that we have to charge to cover airmail postage.

In 1975, this was rapid communication. A deadline at the beginning of January with the Q in members' hands before the end of that month (well, we tried to keep it as slick as that) meant that what you wrote while digesting your Christmas dinner was being read by your colleagues within five weeks, or at
worst, what you wrote just after the October deadline was in print four months later. Today things could be very different, as Cary has pointed out. You could write, let us be hopeful that Amstrad won't take too long to produce equipment and say on April 1st, and your colleagues could be reading it on April 2nd. It will, of course, still get printed in the April Q, and the whole membership will read it before (we hope) the first of May, but those of you who are computerate, and I know that many of you are, and who are interested in knowing what's going on and what's new, could have called up my machine and read it the same day that it arrived here down the line from the author.

Perhaps I should put in a caveat here. I am NOT going to start typing your Comm into this machine. What comes in here on paper stays on paper (this may be a complication with the Bull; it may get trickier than it's worth leaving spaces for the usual cut and paste, and so the Bull may be done the old way, on the typewriter, misprints and all; an advantage, and at the same time a disadvantage, of this machine is that it is so easy to correct; it's an advantage that I do correct my lousy typing, but it's a disadvantage in that the whole job therefore takes longer because I actually reread what I write, and this takes time).

I am, to some extent, anticipating things. As I've said, the necessary machinery for this is not yet available (modems are available; what isn't is the pipework to get the modem into this machine), and I don't know what it's going to cost to wire up in this way, and I don't know either whether we'll be able to afford the cost. Apart from the computer end of it, it means putting in a new phone outlet in my study. However, subject to the permission of the controller of the domestic budget, I do intend to go ahead with this. One reason is that FoMRHI is not the only organisation that I belong to, and another one, in the musical museum world, is also thinking along these lines, and because this machine, although for the moment living at my home, is being used for Bate Collection work (Advertisement: the Bate Collection now has the first of a set of Guides to the Collection and should have more before this vacation is over; these are the first steps towards a new and comprehensive Catalogue), I hope to get linked into their communication system through the University mainframe, and in due course persuade the Faculty to buy the Bate a computer of its own. Indeed it is possible that if I can do either or both of these things that it will be to FoMRHI's benefit, because we might be able to latch FoMRHI into any University CBBS that may exist.

So, if you are interested in such ideas and such activities, please write in and say so. If you can send copies to Cary as well as to me, it will expedite matters, since he has the know-how and is willing to produce it if there is sufficient interest. Also, if you can get hold of a copy at this late date, the December issue of BYTE has a large feature on just this sort of thing. Cary told me about this, too, and I bought a copy today, but have not yet got down to reading it. Most of it, as he warned me it would be, is above my head, but those of you who are already computerate should be able to understand it.
In Comm. 655 I suggested a couple of ways that we might use computers to zip up the speed and utility of FoMRHI communication. Although this hardly triggered an avalanche of response, those people who did contact me were both enthusiastic and encouraging. In particular, the idea of setting up some sort of computerized bulletin board system (CBBS) was regarded as a very promising means for enhancing the value of this Quarterly. As I otherwise might have suspected, there are people who would be willing to make contributions but refrain from doing so simply because the Quarterly, despite any initial intentions, is now being kept on many public library shelves. (If memory serves, Jeremy told me that the thing now also must be sent to the English copyright libraries.) Obviously, the thought of permanentizing half-baked ideas in this manner doesn't bother everybody -- but there are a good sized number who are bothered and therefore keep quiet. A CBBS has the appeal of being a good medium for posting spontaneous comments, questions, and suggestions. Material is added and deleted as seems fit, without any unsettling risk of anyone's words going to posterity.

I also suggested using computers to speed up the submission of material to the Q editors, and in general to ease and hasten the task of its being edited and published. Both Eph and Jeremy are now preparing their own material by using personal computers as word processors. If they were also able to link these computers to the telephone system, they would be able to exchange information both with each other and with contributors. The consequences of this for shaving days, if not weeks, off of publication deadlines should be obvious. Last minute news, if nothing else, would be far more last-minute. The benefits of this would therefore fall to both the computer users, and the non-computer users among us. As hopefully will be seen below, the CBBS idea can also be of direct use to all FoMRHI members.

Both the CBBS and the Q-preparational suggestions require the implementation of simple and commonplace telecommunications technology. Although most computer users have an easy time discovering the delights and potential of their equipment when used for word processing, far fewer make the same discovery about telecommunications. The purpose of this Comm is to explain the basics of getting set up for telecommunication, and then to expand upon my two basic suggestions in more specific terms.

Even the simplest, least expensive games-type home computer is capable of sending text to a visual display unit such as a television screen or a video monitor. (A monitor is essentially a high resolution TV without an actual TV receiver.) It can also send the same text to a printer to produce 'hard copy'. Almost without exception, computers are also capable of what is called 'asynchronous serial communication'. This simply means that the same text that can be displayed or printed, can also be sent as a stream of individual letters and numbers to another device without any need for synchronization of the transmission and its reception, wherever that might take place. This type of serial communication is sometimes used to control a printer, and virtually all computers will therefore have, either built in or as an accessory, what is called a serial communications port. (Also called an RS-232 port, since this is a very widely used standard specifying the actual electrical details of this type of communication. In terms of physical appearance the port is a socket on the rear of the computer.) The serial port is also capable of receiving information from a source outside of the computer.

Two computers with serial ports can be connected to each other and thereby exchange information. Here is an example of the utility of this.
have two computers which both use floppy disks as a storage medium. (A floppy disk is a magnetic medium commonly used for mass storage of data by microcomputers.) Unfortunately, the machines use different sized disks and I cannot transfer information between them simply by writing to a disk on the one machine and then reading it on the other. (Disk swapping is otherwise a very useful means for communicating between computers. There are, however, a number of different sized disks in common use, and a very large number of different formats in which computers store data on the disks. This problem can often be dealt with satisfactorily since many computers are capable of using different sized "disk drives" and a variety of formats. The question of disk swapping within the FoMRHI community may well be worth pursuing.) The file transfer can easily be accomplished if the computers are hooked up to each other via their serial ports. If I want to transfer a file named OBOES, I tell the transmitting machine to print the contents of that file to its serial port (for all it knows, it really could be attached to a printer). The receiving machine is told to take all information which comes in through its serial port and store it in a file called with the same name.

This type of file transfer is also possible even if the two computers are not located anywhere near each other. The signals used for serial communication can be converted into signals which can be transmitted by an ordinary telephone. The device used to do this is called a "modem" (which means, MODulator-DEModulator). A modem is a small box which is attached to the serial port of a computer and which is either directly coupled to the telephone, or has a receptacle into which a telephone handset is placed. (You've probably seen this type of "acoustic coupler" in spy and adventure films.) Thus the wire connecting any two computers can literally span the world, as long as both computers are attached to modems between which a reasonably good telephone connection can be established.

The file transfer procedure described above can easily be carried out when both computers are in the same room. If they are in entirely different locations, each one will require its own operator if the file transfer is to be performed. However, it is also possible to run a program on a computer which will allow it not only to receive files through its serial port, but also to receive instructions in the same manner. The one of my computers is cheapo desktop unit which came with a communications program which allows the computer to be controlled remotely via its serial port. It is coupled to a modem which is capable of automatically answering the telephone (a very common modem function). If it hears the carrier frequency from another modem, it sends out its own answering frequency and hands the line over to the computer. (Otherwise it just hangs up.) My other computer is a so-called "lap size" with a built in modem, and is quite useful for taking with me on trips and to libraries and such. If I leave my home modem switched on in auto-answer and leave the computer on for remote control, I can then call home from wherever I happen to be and instruct my home machine to receive files from my portable. It is also possible to instruct the home machine to transmit files which are then received by the portable.

In this situation the portable computer is being used as a remote "terminal" to the home machine. Since there is an operator at this terminal it does not require any of the fancy remote control functions which the home machine must have. In fact, a terminal can function without many of the features normally found on a microcomputer. Computer terminals of the type used in banks and travel agencies are often called "dumb terminals", since they lack more than the most rudimentary ability to process locally any data which they have received from the actual computer to which they are linked. (But they do have visual displays which run circles around anything in the microcomputer world.) The various communications programs which are available for microcomputers will "emulate" one or another of the


various dumb terminals which are on the market. (Terminals differ in the
way they process the control codes which computers send to tell them, for
example, where on the screen text is to be written, how to erase text, etc.) In addition to this terminal emulation, a microcomputer has its full
capability for processing the data which it receives (as, for example, by
using a word processing program to have a further go at the OBOES file).
Amazingly enough, a normal terminal will often cost far more than a garden-
variety microcomputer with all its emulation and word processing software
(i.e. programs). It should also be noted that several models of the light-
weight electronic typewriters which now flood the market, have quite sub-
stantial built-in terminal and word processing capabilities.

The subject of telecommunications software is worth further discussion. A
typical communications program will emulate one or more terminals (the
actual choice is virtually without consequence for the purposes described
here), and support serial communication at various rates. (The speed of se-
rial communication is an important consideration and is measured in terms
of the amount of data transmitted per second. Normally dialed telephone
lines are not capable of high speed data transmission. Modems in common use
will transmit either 30 or 120 characters (i.e. letters or numbers) per sec-
ond, with 240 character per second modems slowly appearing.) It will also
support a number of communications "protocols". A protocol is a scheme
which is used to detect errors in the transmission of data. This is not
much of a problem when transmitting straight text, as the odd letter which
might get turned into garbage will easily be detected when the text is exa-
mined. The only protocol used in this case is deciding how to indicate the
beginning and end of each transmitted character. A transmitted program,
however, will appear as a mess of illegible code, and error detection by
simple examination is not possible. Various protocols will therefore be
used which first transmit a small packet of data, whereupon the receiving
machine will send back information about the data which it received. If
this checks with what the originating computer expected the next packet of
data is then sent. This process takes time, and is therefore only used when
necessary. The most common protocol used for data exchange between micro-
computers is the MODEM protocol devised by Ward Christensen. It is used in
various programs containing the word MODEM, such as MODEM7, XMODEM, YAM
(= Yet Another Modem), and others. A common protocol used for communication
between microcomputers and large computers is called KERMIT. The best part
about communications programs of this type is that they are available free
of any cost from numerous sources. Various computer users groups, and per-
haps even the odd computer salesman, will be able to put you on to sources
of supply for any particular machine. There are fancier commercially avail-
able programs, as well, but these contain features which very often can be
done without.

In other words -- with the cheapest computer you can find which can support
serial communication ($100 or less, although this route will require a TV
for display and less luxury than you might desire), the cheapest modem
(less still), a telephone, and scroungable software, you're all set to go.

** Go where?? **

Well, for openers it will be both fun and instructive to start snooping
about on local BBSs. (Now may be a good time to take another look at Comm
655, or at least the second page in it.) There are loads of these all over
the place and many are listed in computer magazines, or to be discovered
through users group grapevines. In fact, many fancier BBSs are excellent
sources of free software. Any BBS will contain a large listing of other
BBSs, and once started you may find the whole thing entertaining and addictive. This is also an excellent way to ask for, and get help, about general computer headaches and problems. For nothing more than the cost of local telephone calls you will also gain necessary familiarity with typical command structures of remote communications systems. This activity could be extended by opening an account on a commercial conferencing and message system. This will allow you to send and receive electronic mail, as well as to access distant computers via a substantially less expensive alternative to directly dialed telephone connection. More on this below.

Another enjoyable and productive activity will be swapping programs and information over the telephone with other computer nuts. It's not difficult chatting for awhile and then agreeing as to who will send what to whom. The modems are switched in, and then out again when the file has been transferred. (I understand that this type of telephone communication is not permitted in all countries, separate lines being required for voice and modem use. Never heard of anyone not doing it for this reason, though.)

This latter sort of communication is exactly what I've got in mind as far as speeding up the Quarterly production goes. Assume for example that someone had submitted a note to Jeremy's Bull stating categorically that J.C. Denner could never possibly have made any two-keyed clarinets. However, on the afternoon of Jeremy's getting around to fixing things up to send to Manchester, the same specialist turns up a box full of J.C. Denner two-keyed clarinets. Her present options would be either to make a fool out of herself and/or spread misinformation (remember that the Q is no longer an ephemeral family rag), or to call Jeremy and ask him to pull the note out of the Bull, possibly replacing it with notice of exciting new developments to be reported next time. If Jeremy had a modem (now that he has a computer), the news could be written up locally and then phoned in to him for easy electronic incorporation into the electronically edited Bulletin. If it was too late for Jeremy, there would always be Eph, if he also had a modem. (In fact, although we all will be digging into our own pockets to pay for our hardware, I think it reasonable to suggest that FoMRHI corporately invest in a couple of modems to be placed at its Quarterly editors' disposal.) As a point of reference, the cost for me to telephone this entire Comm from Sweden to England would be 21 Swedish crowns ($1.00 = SEK 7.60, at the mo). Airmail postage is 19 crowns including special delivery (which is necessary since the thing will be mailed a full week after the deadline), plus a few crowns for a stiff envelope. Although the telephone option would unfairly transfer the job of preparing the camera-ready hard copy from me to Eph, when dealing with truly time-valued material being able to do this could make a three month difference in publication date.

There is another potential use for being able to establish mixed voice and modem communication with another microcomputer and its operator. A number of musical instrument museums are now transferring their catalogues from index card files to computerized databases. Although there is no way that you can call a museum and leaf through its card file over the phone, it is entirely possible to search quite effectively through an electronic database from a distant terminal. Although it will be awhile before any such museum sets up a remote host catalog, any museum with a modem hooked up to its computer can manually connect a caller. During the present year this service is likely to become available from at least a few museums.

My other suggestion is that we somehow get a bulletin board or conference system going where specific FoMRHI matters could be discussed. Assume that this were to be started on a single microcomputer in Stockholm. For the cost of telephone time someone could call the computer and leave a message about a great new fiberglass substitute for arundo donax, saying that a detailed Comm will be in the next Q. Another message could be left asking if
anyone knows how to sharpen plastic reamers. Someone else could then call
and answer the question, pose two new ones, tell everyone that the fiber­
glass stuff isn't all that great, and leave a private letter for someone
asking for hospitality on a coming trip. The first person would then ask
about the problems with the fiberglass and modify the Comm text accordingly.
And so on and so on. The actual telephone technique would involve call­
ing up and downloading (transferring from the host into ones own computer)
all unseen messages as quickly as possible. (BBS software keeps track of
who has seen what, and doesn't show any user the same thing twice unless
specifically asked to do so.) Once off-line, the messages could be read at
leisure and any answers or new material written. A second telephone call
would then be made to upload this material and download the latest unseen
messages. Five minutes of telephone time can go a long way in this manner.

In fact, if there is any interest, I can set up a machine evenings and
weekends to get the ball rolling. Anyone without a computer who might want
a short text posted can send it to me and I'll put it up, and forward any
time-valued answers by return mail. Otherwise, it would probably make sense
to start a regular "off the wires" column in the Q, where the more generally
interestingly non-half-baked stuff could be published with permission of
its authors. (It's easy to leave a little Y/N sign in each posted message.)

A Stockholm-based (or anywhere else based, for that matter) microcom­
puter host, would have some serious disadvantages. First, it would only be
accessible to those within comfortable telephone distance. (In any case,
there would be problems caused by the fact that North America and the rest
of the world use two different modem standards. If the matter should arise,
the two standards could be used on alternate evenings.) Second, microcom­
puters are not all that reliable as unsupervised hosts, and unless an eye
were kept on the thing it could easily "go down" (= stop working; not at
all an unfamiliar phenomenon in the computer world) on Friday evening, not
to be noticed until Monday morning except by frustrated would-be users. A
final problem would become serious if there were a lot of traffic; it would
both be a nuisance waiting for the line not to be busy, and it would take
somewhat more than an easily affordable amount of time on-line for down­
loading new material.

One way of alleviating these problems would be to set up a network of
microcomputer based systems in various countries. The operators of each in­
dividual system could send disk copies of all the material which had been
posted on their machines to each other at regular intervals. Since this
would have to be done by disks through the mail if there were any more than
a very small number of computers, an unfortunate amount of the rapidity in
communication might be lost. Of course, various national or regional groups
within FoMRHI could have their own independent systems with general commun­
ication only of really important material; something which might be done by
telephone in some sort of relay chain between the systems operators.

Yet another alternative would be to use a mainframe conferencing sys­
tem as a host for our activities. Aside from the advantages of increased
reliability and ease of access, mainframe systems can be contacted through
"packet switching networks". These networks link computers by special tele­
phone lines which cost substantially less to use than the regular lines.
The user dials a local call to the nearest PAD (= Packet Assembler and Dis­
assembler) and gives it the network address of the computer with which com­
munication is desired. All data which then comes from the caller is sent
out onto the network in small properly addressed packets. (The PAD can deal
with calls placed to it from a number of different computers, and will mix
the packets of data from all of these sources and thereby utilize the net­
work lines quite efficiently. Since each packet is labelled with its des­
tination this usually causes few problems.) The mainframe which is being
addressed will answer by sending other data packets back to the caller.
It is possible to establish contact between a local terminal and a distant mainframe in this fashion. It is also possible to address "electronic mail" to both individuals and meetings which are registered on another mainframe system. Assume once again that there is a host system running in Stockholm -- this time on a mainframe with substantial conferencing and mail facilities. Someone in Paris might easily be able to afford extensive on-line participation in the system's FoMRHI activities. Someone in Los Angeles might not. This person would, however, be able to address a letter of inquiry about fiberglass substitutes for cane to the appropriate FoMRHI meeting. If a useful answer to the question appeared, the administrator of that meeting could forward the answer back to Los Angeles. For a shortish letter sent to a single person, E-mail costs about two or three times normal airmail postage. If a letter is addressed to a number of individuals, it will usually cost far less than normal surface mail.

Another major difference between a commercial service and a privately operated BBS is that the former charges, both for time on-line and the amount of data transmitted. As it happens, one of the major conferencing systems in Europe is located in Stockholm. This is the COM system run at QZ, which is Stockholm University's computer center. The COM system figures prominently in the December 1985 issue of "Byte Magazine", which is dedicated to the subject of computer conferencing. (Anyone planning on becoming vaguely interested in this subject should obtain a copy of this issue.) The publishers of Byte have recently opened their own European conference at QZ in Stockholm under the name of ByteCOM. In fact, anyone who signs up for this service as described in the magazine will automatically gain access to all the other conferences in COM. On the odd chance that anyone reading this would otherwise join ByteCOM, I've already opened a meeting named "FoMRHI Network" in the COM system. Anyone who turns up there can leave a note in my mailbox, and I'll sign them into the meeting. The same deal goes for anyone who already knows how to get to QZOM via the networks. Just to give some idea of the costs for all this, I have an account there which I can use on evenings and weekends. The total cost for this is an annual fee of 275 crowns, and a fee for on-line connection and a pretty heavy amount of input and output of about 30 crowns per hour. The ByteCOM charge is 200 crowns per year subscription and $6 per hour, telephone costs not included.

I would be quite pleased to negotiate with QZ for a joint COM account for FoMRHI members, and to worry about all of the administrative details of keeping our corner of the system up and running, including providing all of the services mentioned above for the non-computer users among us. The 30 crown per hour charge (an hour is a very long time) is probably the best we could get, and I have no idea about the subscription fee. A good guess is that it would be someplace between 100 and 200 crowns per year for each user. It would also be possible to use a few geographically spread mainframe hosts, and for the various conference administrators to forward generally interesting material from the one to the other via E-mail. This sort of an operation would, however, cost plenty.

Enough said for one Comm. If continuing interest is expressed I'd be glad to provide more info about any aspect of this which puzzles. A useful next installment might be a review of books and magazines relevant to the subject. (If anyone wants me to write something along these lines please let me know at my home address.) I'm convinced that things would start to happen by themselves if the computer users out there were to discover that a modem can be every bit as useful an accessory as is a printer. It would also be really great if comments or alternative suggestions were to be made. A useful FoMRHI network would certainly take a few years to set up. Even if we never quite get there, a lot would have been gained if we began to make at least some use of present-day telecommunications technology.
It is gratifying to note that the question of 18th-century Swedish music wire gauge numbering has attracted the interest of Rémy Gug. His ability to ferret out source references dealing with historical wire-drawing practice is most impressive, and he has aided me on several occasions by supplying such material. I had, indeed, not previously been aware of the Beckmann diary and am grateful for its having been called to my attention.

It is, however, hard to understand how this reference "re-opens the entire question" of Swedish gauge numbers as I had previously concluded them to have been. Despite Mr. Gug's apparent oversight, the documents which I had examined and about which I reported, quite clearly state that fine-gauged wire was being imported into Sweden in the mid-18th century. While commenting in 1772 on ways in which the Swedish domestic wire drawing industry could be improved, Sven Rinman wrote, "It is well known that iron can be drawn into wire which is useful for many purposes. It is also known that the facilities for doing this have still not developed past the point where they can do more than barely fulfill Swedish requirements. There is a particular shortage of finer wires from number 18 to 24 or 26, so it is still permitted to import these even if inadequate amounts of such material are made here." (The translation is taken from p. 68 of my booklet.) Since the gauge markings found on a large number of period instruments (with no contradictory material as yet having been found) are equivalent to Rinman's numbers 17 to 28, he is telling us that iron music wire was being imported into Sweden. Beckmann's statement adds to this by telling us that fine-gauged brass music wire was also being imported.

I would therefore have thought that Rinman and Beckmann corroborate each others statements. Mr. Gug, on the other hand, feels that Beckmann gives us cause to revise any conclusions that we might have made on the basis both of Rinman and others, and what I otherwise would have thought to be the very solid tangible evidence formed by the large numbers of instruments with old strings which have survived in Sweden. According to this reasoning, the fact that Rinman indeed did mention the import of strings into Sweden would mean that the evidence presented in my booklet had been misinterpreted (a possibility which I am perfectly prepared to accept). Is Mr. Gug saying that any imported wire would not have been labelled with the local gauge number which most closely fit it? Although he states that space would not permit an enumeration of all the questions raised by Beckmann's excerpt, perhaps he might nonetheless be prevailed upon to list at least some of them.

It is probably worth mentioning that I didn't make any effort to wade through the relevant commercial records, and that there surely remains much of value to be obtained from such sources (and, of course, many others as well). For anyone with the interest, time, and opportunity, this material ought not to be particularly difficult to locate. Swedish archives and libraries have survived under far more stable and tranquil conditions through the centuries than have many of their continental counterparts.
Richard Shann proposes in Comm. 665 a survey of the current theories concerning the Ruckers "transposing" harpsichords. I was rather disappointed with the presentation of his "Sixth Hypothesis", mine, which he says he does not feel he can summarize. I would like to come back on it here. Before that, a few general remarks should be made. Indeed, some of the hypotheses that Richard quotes and some of his arguments pro and con appear to miss the point and perhaps to make things unnecessarily complex.

Before trying hypotheses about how and to what purpose(s) the Ruckers doubles were used, one should first consider a priori what can be done on them, leaving for later to wonder which of the instrument's potentialities actually were used. The important and the most puzzling feature of the Ruckers doubles is that their keyboards were a fourth apart in pitch. Some of Richard's hypotheses appear to neglect this fact, or at least to consider it of less importance. Richard himself, for instance, proposes that the Ruckers doubles essentially were contrasting doubles and that the arrangement of the keyboards a fourth apart was but a secondary feature permitting to play on the lower keyboard pieces that would have involved a D-sharp at the pitch of the upper keyboard. The reason why the keyboards should not be aligned, if this were true, are far from clear: if a piece of music could conceivably have been written involving D-sharp's (or else the arrangement would have been pointless), then it should also have been conceivable to tune the note between D and E as a D-sharp. Aligned keyboards would have done the job equally well.

The consequences of the arrangement of the keyboards a fourth apart can be expressed in general terms as follows:
- any tonality can be played on a Ruckers double at two different pitches;
- inversely, any piece can be played at a given pitch in two different keys;
- in addition, any transposition procedure that includes passing from the upper to the lower keyboard involves one sharp less or one flat more than if one remained on the same keyboard (from the lower to the upper keyboard, similarly, transpositions involve one flat less or one sharp more).

These are facts, not hypotheses. John Shortridge hypothesis that the doubled strings were tuned with D-sharp on the upper keyboard and A-flat on the lower would result in that pieces involving G-sharp's or E-flat's would be playable only on the
upper or on the lower keyboard respectively: it introduces a possible restriction of the playability of keys and pitches, but does not affect the general validity of the facts just stated.

The hypotheses discussed by Richard must be recognized as expressing possible particular applications of these possibilities of the Ruckers doubles. The main hypothesis (Richard’s first) that the instrument was intended to facilitate transpositions of a fourth or a fifth merely expresses the fact that any piece can be played on it at two pitches a fourth or a fifth apart without change of key. Richard’s own hypothesis that passing from one keyboard to the other without change of pitch (that is without displacing the hands) permitted to ‘save’ an accidental that otherwise would have been unplayable merely expresses the fact that any piece can be played at one given pitch in two different keys.

There is no reason to suppose that these two cases should be mutually exclusive, nor that the usage of the Ruckers doubles should have been restricted to any one of them. The two hypotheses just quoted illustrate two possible purposes of transpositions: to change the pitch of a piece (for instance in order to adapt to the pitch of a voice that one is accompanying) or to change its key (for instance in order to ‘save’ otherwise unplayable accidentals). The potential advantage of the Ruckers doubles, in both cases, was that they offered two ways of achieving the same result, with or without changing keyboards. Whether this really was advantageous would have depended on whether the alternative way of transposing often enough was more convenient, or easier, than the one possible on a more normal instrument. It isn’t easy to figure out today what an early-17th-century harpsichordist may have thought easy or useful, but we might at least try some hypotheses.

For transpositions with the purpose of changing the pitch of a piece, we may consider that the easier transposition was the one that involved less additional accidentals. Passing from the upper to the lower keyboard shifted the key one step towards the flat side in the cycle of fifths, and therefore facilitated any transposition towards the sharp side (that is, transpositions down a fourth, up a tone, down a minor third, etc.). Passing from the lower to the upper keyboard similarly facilitated transpositions towards the flat side (that is, up a fourth, down a tone, up a minor third, etc.). There may be a conceptual difficulty of admitting that early-17th-century harpsichordists wanted to pass at times from the upper keyboard to the lower, as if the upper keyboard was the one ‘at pitch’ and the lower the ‘transposing’ one, and at times from the lower to the upper, as if the lower keyboard was ‘at pitch’ and the upper ‘transposing’. Let’s therefore state the argument otherwise: once he had ascertained the pitch at which a piece should be played, the harpsichordist on a Ruckers double had the possibility of playing in two different keys, one of which involved one accidental less than the other and as such may have been considered easier. More specifically, play-
ing on the lower keyboard permitted to play with one sharp less than on the upper keyboard; playing on the upper keyboard permitted to play with one flat less than on the lower one.

For transpositions with the purpose of 'saving' otherwise unplayable accidentals, we might consider that the better transposition was the one that involved the least change of pitch. As stated above, a piece involving one sharp too much (D-sharp) at the pitch of the upper keyboard could have been saved without change of pitch merely by passing to the lower keyboard. A piece involving one flat too much (A-flat) at the pitch of the upper keyboard could not have been saved in the same way: passing to the lower keyboard would have added an impossible D-flat. The normal way of saving such a piece would have consisted in transposing it up a fifth or down a fourth; however the same result could have been obtained on the lower keyboard a tone above the original pitch. (Say that the piece was in E-flat major, with an impossible A-flat: it could be played in B-flat either on the upper keyboard a fifth higher, or on the lower keyboard a tone higher). The arrangement of the keyboards therefore seems advantageous for the purpose of saving pieces with one impossible accidental. One could easily verify that pieces with two impossible accidentals need pitch changes of a tone remaining on the same keyboard, or of a minor third passing from one keyboard to the other, so that the transposing arrangement of the keyboards seems less favourable in this case. With three impossible accidentals, the pitch changes are of a minor third remaining on the same keyboard, of a semitone passing to the other keyboard.

It might be argued that pieces involving three impossible accidentals must have been rare; however the transpositions saving three accidentals a fortiori save two or one. In addition there is no reason to see the two categories of transposition just discussed as independant from each other. More than once the harpsichordist, having determined the proper pitch at which a piece should be played, would have experienced that it could not be played there because that would have called for impossible accidentals. The problem then would be of finding the playable key closest in pitch to the 'proper pitch'. As an extreme case, consider a piece the modulations of which call for two flats and three sharps: such a piece is utterly untransposable on a normal instrument tuned in meantone; the pitch at which it would be playable could be up to three tones off the desirable pitch. On a transposing harpsichord it could be played at two different pitches a fourth apart, one of which necessarily would be at most a minor third off the desirable one. With one accidental less the piece would be playable at the worst a minor third off the desirable pitch on a normal instrument, a tone off on a transposing double. For pieces with less accidentals, the transposing harpsichord similarly would permit better solutions in most cases.

Clearly, the possibilities offered by the transposing arrangement of the keyboards were numerous and they could have been
used to several purposes. It certainly would be short-sighted
to view the instrument merely as facilitating transpositions
of a fourth or a fifth, as Van Blankenbergh did: it facilitated
transposition in general. The harpsichordists may have made
use of this feature in a variety of ways, those described abo-
ve and possibly others of which nobody thought up to now. Ri-
chard's hypotheses all include something of the truth, but
they are all too particular. Some owners of a Ruckers double
may have found it more useful to tune the doubled strings the
other way around as John Shortridge suggests. The only thing
about which we can be sure is that the instrument was consi-
dered useful: this is why it was built for such a span of ti-
me. Whether its advantages justified the costs of building two
keyboards (apparently they did) is a point that we cannot
really discuss.

There seems to be no real need for my "sixth hypothesis" at
this point. Nevertheless, as I announced it in the title of
this communication and as the last sentence of the last para-
graph above raises some doubt as to whether the complexity of
the transposing double was enough counterbalanced by its ad-
vantages, a short word about the hypothesis. What I tried to
show with it, not very convincingly as it appears, is that the
advantages of the Ruckers doubles may have been all the more
real in their own time that they corresponded to some theo-
retical concepts of the period.

A first point to stress is that the Ruckers transposing
harpsichord by no means was a unique case in the late 16th or
the early 17th century. Other instances of pitch differences
or transpositions of a fourth or a fifth, often equally puzzl-
ing, include the following:
- Schlick, discussing organ accompaniments of plainchant,
envisages no other transpositions than of a fourth or a fifth
or more precisely states that most organists would find other
transpositions too difficult;
- the whole affair of 16th-century chiavette is about trans-
positions by a fourth or a fifth (cf. Mendel in MQ 1948);
- pieces by Palestrina and others, both vocal and instrument-
al, exist in versions a fourth or a fifth apart in notated
pitch (that is, exist both with 'normal' clefs and with 'chi-
avette');
- Praetorius, an important source on the chiavette, describes
the church modes in two versions one of which is transposed
either up a fourth or down a fifth with respect to the other;
- Praetorius also states that he published pieces in his
Terpsichore with two sets of clefs a fifth apart in order to
facilitate the task of those less skilled in transposition;
(which, by the way, does not necessarily mean less skilled in
transpositions of a fifth!)
- as stated by Praetorius and discussed in some of the recent
FoMRH1G, "the English, when they play something on viols
alone, make everything a fourth or a fifth lower", etc.;
- the members of the Ruckers dynasty made sets of virginals and harpsichords a fourth or a fifth apart in pitch;
- 17th-century English organ accompaniments often are notated either a fifth higher or a fourth lower than the music for the choir (cf. J. Bunker Clark)
- etc.

The existence of all of these instances roughly in the same period cannot be a mere coincidence. On the contrary, it must reflect some theoretical concept that apparently was widespread, since the instances quoted concern several European countries. What this concept said is, I believe, that pitch differences or transpositions of a fourth or a fifth did not have the same status as other pitch differences or transpositions. This particular status must have been similar to that of transpositions of an octave today: they were not considered as true transpositions.

We often make use of the special status of the octave when we transpose: up (or down) a seventh obviously reduces to up (or down) an octave and down (or up) a second; up or down a sixth is equivalent to down or up a third; etc. It is easy to figure out the consequences of a similar special status for transpositions of a fourth. Mainly, transpositions up or down a third would reduce to up or down a fourth and down or up a second. Praetorius explains that some transpositions, especially those of a third, are easier through his transpositum systema, that is through a first transposition of a fourth or a fifth. The Ruckers double materializes this special status of transpositions of a fourth: it makes them unnecessary. Once again a comparison with the transposition at the octave is possible: one might make use of a 4' stop to facilitate transpositions, especially by a wide interval, playing for instance down a tone on a 4' rather than up a minor seventh on an 8'; this, conceptually, is of the same nature as playing a tone higher on the lower keyboard of a Ruckers double rather than a minor third lower remaining on the upper keyboard.

A full discussion of the special status of the fourth or the fifth in medieval and Renaissance theory does not belong here. It may suffice to state that it is inherent in the solmization theory, which describes the musical system as consisting of overlapping hexachords a fourth or a fifth apart. The fact that Renaissance musicians usually received their first musical formation as chorists and as such were familiar to the solmization system may be one reason why they found use of an instrument like the Ruckers transposing harpsichord. The special status that we recognize to the octave today expresses the fact that the musical system repeats itself at the octave: solmization, like the antique tetrachord theory, stresses another aspect of the system's structure, namely that it almost exactly repeats at intervals of alternatively a fourth and a fifth. It is my conviction that this doctrine played a role when medieval and Renaissance musicians decided that instrument's sizes or vocal ranges should be distant by fourths or fifths, or when they decided that...
be tuned in fourths or fifths, much as it played a role when the Ruckers decided to build their transposing harpsichord. But enough of this now; I'll once find the time, I hope, to write a volume on the subject.

Summary

The following are some of the facilities offered by the Ruckers doubles:
1. The possibility of playing any tonality at two different pitch levels.
2. The possibility of playing at a given pitch in two different tonalities.
3. The possibility of performing transpositions involving one accidental less than on a normal instrument by passing from one keyboard to the other.

The consequence of these possibilities is that once the pitch at which a piece should be played had been ascertained, it often was playable on a Ruckers double with one accidental less than on a normal instrument. If the pitch at which one decided to play requested playing in a key that was not available in meantone, the Ruckers double usually permitted to play in a key the pitch of which was closer to the desired pitch than on another instrument. These possibilities of the Ruckers transposing harpsichord are so obviously useful that there seems to be little need for any hypothesis about whether or not they were utilized. It might be shown, however, that some particularities of the theory of music, related to the solmization theory, may have made the transposing harpsichord even more convenient in Ruckers time than it would seem today.
Early Pianos at Ipswich

I was recently asked by Miss C Bennett, Senior Assistant Curator of Humanities, to advise the Department of Recreation and Amenities of the Borough of Ipswich concerning 8 early pianos at Christchurch Mansion. The Department is willing for details of these instruments to be published, and I think members would be interested to know what is there, so I have prepared this extract from my report. Some of these instruments are in store, so members must apply in advance if they wish to see them, and they should bear in mind that a general museum sometimes has difficulty in finding staff to supervise an examination.

The instruments are not particularly rare, but some are in substantially original condition and three of their makers were previously unknown to me and do not appear in the books I have consulted.

1. Square piano

Longman
&
Broderip
Musical Instrument Makers
London
(Oval metal plate, enamelled white, surrounded by a brass bezel and a painted band)

5 octaves FF – f³ cl790 No 97 stamped behind nameboard
English single action with lever dampers, hinged at back of case. Two handstops controlling dampers and a buff strip pressed upwards against the strings adjacent to the nut. The nameboard has a group of painted flowers either side of the inscription. Stand with four square tapered legs.

All the dampers are missing except the bottom 15 and the top one. The mahogany protective strip which runs along the front ends of the dampers, the shelf, castors and three of the four bolt covers belonging to the stand, and the music desk are also missing. The keys are in excellent condition and little worn. The soundboard is in good condition and nearly all the strings appear to be original. The case has a 6 mm twist, measured at the corners.

2. Square piano

John Broadwood and Son, London 1797 Patent
Great Pulteney Street, Golden Square
(Ink on boxwood inlaid into satinwood (?) nameboard)

5 octaves PP – f³ 1797 no 3899
English single action with brass lever underdampers. Stand with four square tapered legs, shelf and castors.

The dust-cover, the mahogany strip in front of the keys, one castor, one bolt cover for the stand, a few pieces of veneer, the two lid hooks either end of the case, and the lock are missing. The ivories are almost unworn, the lid hinges are separated, a few hitch pins are broken or replaced, the hitchrail has pulled 1 mm from the case in the middle of the right-hand end, but the soundboard is in good condition. Some of the covered and iron
strings appear to be original, but most have been untidily replaced. The lid polish is fairly good, but the polish on the sides of the case is in poor condition.

3 Square piano

New Patent
William Phillips
Manufacturer, Little Tower-Hill
London
(Ink on figured sycamore)
5½ octaves FF - c
C 1810 6955 stamped in figures 13 mm high and 245 stamped in figures 5 mm high, both on top of the frame member adjacent to the lowest key.

Intermediate lever escapement action. The case has large diameter rounded corners at the front, and does not have a protruding strip at baseboard level, both of which are also characteristic of pianos signed by Muir Wood of Edinburgh. The dust-cover is of wood covered with the same green silk that is glued below the triangular fretwork at the back right-hand corner, and is hinged at the back to the case. This appears to be the original arrangement, since there is a turn-button on the underside of the lid to hold the dust-cover up when required.
The nameboard has a pattern of inlaid stringing in place of the usual fretwork openings. The piano rests on a stand with three drawers and six turned legs with spiral reeding. A set of support blocks glued inside the case near the front, shows that the recesses either side of the keyboard which are uncovered by the lid flap were originally filled, probably with fretwork similar to the back triangle, or possibly by wooden boards covered by silk like the dust-cover. The music desk has an extension to support the lid.

Two keys, all of the dampers, some of the action hoppers, the pedal leg, all 6 castors, one of the 6 decorative brass discs on the stand and the two decorative inserts either end of the keyboard mentioned above are missing.
The keys are a little worn and the case has a 2 mm twist measured at the corners. The bridge is cracked near the treble end and there is a corresponding crack in the soundboard. Some of the strings appear to be original but many are broken.

4 Cottage upright piano

William Stodart
Maker to their Majesties & Royal Family
Golden Square London
(Gold leafwork on rosewood with brass inlay surround)
5½ octaves FP - c
C 1820 1249 mm high x 1084 x 514 mm
Notes 1 - 7 bichord covered copper on iron, 8 - 14 trichord covered copper on iron, 15 - 18 plain brass trichord. Keyboard shift pedal with latch on treble keyblock giving due- or una-cord, damper pedal controlling over-dampers. The piano is attractively decorated with inlaid black lines.

A small strip of mahogany veneer and the candlesticks are missing. A brass candlestick bracket is screwed to the side of the case either end of the keyboard.
The keys are fairly worn but in good condition. The action and all the interior is in very good condition, and most of the strings appear to be original.
5 Square piano 1957-33 ?
or 1957-36 ?
Richard Owen & Comp
Manufacturers
23 Hackney Road Shoreditch London
(Engraved brass plate, let into rosewood veneer)
6 octaves FF - f
c 1825 4158 stamped on left of keyboard G Holme or Holms
in ink at treble end of wrestplank.
The pedal, pedal leg and the music desk behind the
nameboard are missing.
The case has a 19 mm twist, measured at the corners. The
lid hinges are separated from the case. The keys are worn and
discoloured, but the action is in fairly good order. An extra,
on-original piece of leather has been added over each hammer.
Some of the strings appear to be original, but many are broken
and many have been replaced. The original silk under the
triangular fret in the back right-hand corner is in good
condition, but the similar silk which would have been behind
the nameboard frets (of a diagonal lines pattern) has been
replaced with paper. The piano never had a dust-cover under
the lid.
6 Cabinet piano
John Broadwood & Sons
Makers to their Majesties & the Princesses
Great Pulteney Street, Golden Square
London
(inset paper in nameboard of rosewood with brass inlay)
6½ octaves CC - f
C 1835 no 7309 Cock written in ink on bottom key
Sticker action, shifting with una-corda pedal, including
dampers. Bichord throughout. Notes 1 - 13 close-covered copper
on iron, 14 - 16 red brass 17 gauge, 17 - 21 yellow brass 17 and
16 gauge, 22 - 76 iron gauges 15 - 12.
Six covered strings and a few others are missing, also the
original cloth front and one ivory key head.
The ivories are somewhat worn and a few action hinges are
broken at the lower end of the stickers, but the hammers are
very good, the strings nearly all original and scarcely corroded,
and the interior is in excellent condition.
The cloth front is embroidered and is lined with pages from
the Daily Mail of March 24th 1913. The front is therefore
probably from this date.
7 Square piano
John Broadwood & Sons
Great Pulteney Street, Golden Square
London
(Paper inset in rosewood nameboard)
6 octaves FF - f
Dated 4 12 47 (1847) in pencil on bottom key. No 29633 (?)
This number corresponds with 1825. Perhaps it is 49633 and I
missed the first digit. Intermediate lever escapement action
with checks. Iron hitchplate with thrust bar, painted black
with cream streaks. Bichord iron with hitch pins in pairs, one
small and one large diameter in each pair, except first 11 notes which are single strung with close covered strings, copper on iron. Mahogany case with inlay round edge of lid. Lid hinged half-way across. Four legs and one pedal.

Dampers nos 1 and 49 - 55 are missing. Two horizontal fretwork panels, on either side of the keyboard and music desk are also missing.

The action cloth and felt hammer coverings have been badly attacked by moths, but the wooden action parts and ivory key coverings are in good condition and little worn. The strings appear to be original except for 2 or 3 replacements. The wrestplank, nut and damper-support rail have all been slightly attacked by woodworm at their bass ends, and there are signs of active woodworm in the damper rail support.

This piano belonged to Edward Fitzgerald, the translator of Omar Khayyán.

8 Upright piano

PATENT
Tarry
From Messrs Broadwood's
Pianoforte Manufacturer
No 6 Hampden Street Clarendon Square
LONDON
(Gold and black transfer on rosewood)

6½ octaves CC - a⁴ 1530 mm high
1881 written in ink next to bottom tuning pin. I would have expected a manufacturing date of c 1850 from the compass. The usual compass in 1881 was AA - a⁴. It is quite possible that 1881 was the date of manufacture, but more likely that it is a tuner's date.

Sticker action. The celluloid key coverings appear to be original and imply that the instrument is not top quality, confirmed by the quality of the soundboard wood. Bichord throughout. Left pedal shifts hammer-rail only for a una-corda effect, the action frame remaining fixed. Iron hitchplate at floor level. Rosewood case with oval front opening showing red fabric. Carved "animal" front legs.

Very little used, action is in good condition. The diagonal and horizontal hitchrails, the bass end of the main bridge, the whole of the bass bridge and the bottom front-to-back case runners have been severely attacked by woodworm. The soundboard boards are slightly shrunk and have parted at many of the glued joints.
My Comm 572, FoMRKI #38, was on making harpsichord bent sides with a large hot iron. I've continued bending and reading about others' bending using this tool (e.g. R Shann, C 592). Here I want to add to my first words on the subject. I assume that anyone interested has C 572, so that summary of it isn't needed.

First, continued practice and testing, different woods, thicknesses, severity of curves, woeful and serendipitous results. Since sending in C 572 I've bent bent sides for some ten instruments. Half this number were for my own instruments and were accompanied by related pieces like liners, hitch-pin mouldings, even bridges. I remain pleased to have made a "sophisticated" version of a large hot iron, one with a 10mm thick plate that opens spirally and is heated by a variable and predictable electrical system. Let me repeat that anyone wanting to construct such an iron might write me. At the least, have a competent electrician approve any plan for heating elements, controls, and their insulation against electrical shock.

I came closest to the level of large-shop production when a fellow builder brought four planks some 500 miles for bending. He unrolled his plan with his desired "Ruckers" curve—fairly large in radius and uniform. He had derived the outline from a museum plan: a practice I'd rather not follow, as it requires one to follow someone else's sense of regularity and irregularity. Anyway, after one hour I'd bent the boards to fit within the curving lines traced from the museum plan. These four bent-sides might have been accepted as 'close enough' by all but the most meticulous builders, the maximum deviation from plan being under 2 mm. I liked not only the speed of the process. The wood getting bent was American basswood (Tilia vulgaris), often used as a replacement in the USA for European poplar. Basswood is uniformly rated in wood handbooks as the worst possible wood to bend; good to knock out four 13mm bent-sides without trouble. For my own work I'd use Big-toothed Aspen as an American substitute for European poplar (both populus). I've used Cottonwood too.

Though I owe much to Richard Shann for his help to me when I built my iron, I've gone independently from him, I think. My technique seems to differ markedly from his. Although the concave faces of my boards being bent are darkened, they are never "charred" as are Richard's, a quality he advances as evidence of the use of the hot iron. I understand this to mean the carbon particles would rub away and leave black on the picky person's white glove. For me, this doesn't happen. Too hot if it did. I'd turn down one of my control dials. Next, it's really helpful to be able to unbend a curve by a trifle. I agree with Richard that there is some trick to doing this but it is by no means a difficult one to master. Often I get the proper curve along one section but a wrong lead into the next. Yes, it would be a bad idea to reverse the board,
placing it upside down on the curved iron, in order to straighten an overcurving. Rather, I’d pull the board upward against a cross-piece fitted through notches in the iron’s sidewalls. Thus the small section of the plank held on the iron will quickly uncurve. “Quickly” is important: this moment is the one at which another fellow builder using the iron pulled too hard and long with a 20mm board and broke it in half, like a twig.

Back to the four bent sides made within an hour: they were similar in shape but different, being made up of arcs from differing starting points on the iron. They varied not so much as wholes as they did when they were considered as being assembled from the details of their manufacture. Recall that the scribed lines on Ruckers’ bottom boards included an inner and an outer limit for the bentside shape. From the small amount of evidence I’ve seen, Ruckers’ workmen landed inside these lines. Like halves of the same face, the shapes of bent sides created with the hot iron are subtly different but recognizably correct.

Finally, on another kind of instrument, one more like the viols and other stringed instruments that call the hot iron to mind when one considers how to make them. I’m now finishing two large Italian harpsichords with case walls 4mm thick. The wood of these instruments is Cedar of Lebanon (thanks to North Heigham Sawmills). As I would for a Ruckers-style instrument, I first made the bottom as a builder’s template of each instrument. A great sensuous pleasure in bending their bent sides to match the curves set by the outline of the bottom boards: a heavy, musty odor of damp cedar wrapping around the iron, and the speed and ease of the bend. No “charring” at all. Though I had already put in place on each bottom a framing of knees and liners, it might have been both more historical and simpler to have constructed the bare case, mitering the joints of the walls, without relying upon any frame as a backing. I’ve had trouble springing these bent sides into shape where the treble curve gets tight. Even though Wubbard speaks of the bends in antique instruments unbending after he had freed the bent side from the case structure, I’d strongly hope to use an iron to bend such a board before assembly. As Richard has said, harpsichord makers could learn something from the makers of other instruments. This thought is even more strongly present in my mind as I realize how little I know about the antique practice of my craft.
Before I read Mendel's "Pitch in Western Music since 1500" (1979), I had not been seriously concerned with pitch after the time of Praetorius. After reading it, my reaction was "what a fascinating collection of information, and what a shame Mendel did so little with it". I thought about it for some time, collected some more information, and sorted it all out into a picture where all the pieces of the puzzle fit together remarkably well. The result was my Comm 442 published in the Jan '83 FoMRHI Q. As far as I know this achievement has received not a word of recognition. No-one has stated that it is at least a possible solution to the 18th century pitch situation, either as a whole or for any of the parts.

Instead, some people found that the conclusions in Comm 442 were not to their taste, and so they were inspired to generate pictures more to their liking. This would be most constructive if they were able to fit all of the pieces of the puzzle reasonably well into their pictures. They didn't, and worse than that, they didn't seem to feel that this was necessary. Pieces of the puzzle that did not fit were either ignored or dismissed as 'unreliable'. This can seem to be either a case of undertraining in scholarly practices, or a case of conformity to that insidious philosophy of committed scholarship in which the scholar's job is seen as that of a solicitor! that is he tries to make the best case he can in support of a conclusion which is not open to question. The traditional view in scholarship is to see the job as that of a judge, where he tries (in as open-minded a way as possible) to find the conclusion that best fits the evidence). A third possibility exists though. It is that the logical power of Comm 442 was not apparent in the way I wrote it, and subsequent writers honestly felt that they had fitted together the pieces of the puzzle at least as well as I had. In recognition of this possibility, the next section of this Comm is a review of Comm 442 with emphasis on the logic linking the information together. A Summary of Quoted Pitches at the end of this Comm shows their placement in chronological order.

Quantz (1752) wrote: Old Chorton, the pitch of old organs, was the highest. Venetian pitch, the highest pitch then currently used by instruments, was almost as high as Old Chorton. Twenty years previously the pitches of Rome and Paris were the same and were low. The current Paris pitch was beginning to approach Venetian pitch. The Old Chorton was being replaced by Kammerton, a pitch used by the most famous new organs, and more agreeable for the French woodwind instruments. The so-called German A-Kammerton pitch, the mean between the very low French chamber pitch and the Venetian pitch, was the best. A-Kammerton was a minor third lower than Old Chorton. These last two points are the only quantitative statements Quantz made, the others being quite relative.

Five years later (1757), Agricola was much more quantitative. He wrote: The highest pitch was the usual Chorton or Trumpet pitch. About a semitone lower was the pitch of harpsichords and other instruments in Lombardy, and especially in Venice. A-Kammerton was a minor third lower than Chorton. Roman as well as former French pitch was a major third lower than Chorton. There is no question about A-Kammerton being the same standard for Quantz and Agricola. Then Quantz's Old Chorton (of the old organs) was the same as Agricola's usual Chorton or Trumpet pitch, a minor third above A-Kammerton. The correspondence between Roman pitch and former French pitch in both reports indicates that they were writing about the same standard, and Agricola fixed it at a semitone lower than A-Kammerton. It is likely that Quantz's Venetian pitch corresponds with Agricola's Lombardy-Venice pitch, a tone higher than A-Kammerton. (Agricola seems to have thought that Venice was part of Lombardy, possibly because it is on the edge of the
Lombardy plain.) Then Quantz's very low French chamber pitch would be a tone lower than A-Kammerton. Very low French Chamber pitch and Quantz's statement about it were not considered in Mendel's interpretation, mainly because he could not accept a French pitch so low.

In these mid-18th century sources the highest pitch was Trumpet pitch, the usual Chorton reference pitch (but not much used any more in instrumental music) and the most common on old organs. Fifteen years after Agricola, Silbermann (1772) wrote that in the past the pitches of organs were mostly at Cornet-Thon, but that was too high for singing, so a semitone lower was currently called Chorton. It is difficult to imagine how the old organs Quantz wrote about were different from the Cornet-Thon pitch of old organs Silbermann wrote about. By this time, trumpeters did whatever Cornett playing there was, and Cornet-Thon seems to have been a pitch associated with the Trumpet Guild. Therefore it is difficult to imagine how Cornet-Thon could be different from Trumpet pitch. We can then identify the Old Chorton of Quantz and usual Chorton of Agricola with Cornet-Thon, and can claim that by the next few decades, recognition for the Chorton pitch reference shifted to a pitch a semitone lower—a pitch very close to what Quantz called Venetian pitch. The switch of recognition would not have been possible had there not been a considerable number of organs already at this pitch.

Silbermann mentioned two more pitches of organs: Kammerthon, a tone lower than Cornet-Thon, was used by all musical instruments. A semitone below Kammerthon was French pitch, seldom used any more. We can associate his Kammerthon with the Kammerthon mentioned by Quantz, and we can associate his seldom-used French pitch with the A-Kammerthon mentioned by Quantz and Agricola.

From the above we have five different 18th century pitches in approximate semitone intervals, all of which were well-served by French woodwind instruments. Quantz’s current Paris pitch was a bit more than a semitone lower than Cornet-Thon. Quantz’s Kammerton was a tone below Cornet-Thon. The relationship between these two pitches was discussed by Gervasoni (1800) who wrote that Paris pitch was very sharp to the Italian mean pitch which, according to Silbermann (1772), was the same as Kammerton. A semitone lower than Kammerton would be Silbermann’s French pitch (called A-Kammerthon by Quantz and Agricola). A semitone lower still is the former Paris pitch mentioned by Quantz and Agricola. Another semitone lower is Quantz’s very low French chamber pitch. Any argument about 18th century pitch standards based on the pitches of surviving French instruments is therefore fraught with the great difficulty of deciding which of these standards, ranging over almost a major third, is relevant. Many baroque wind-instrument researchers will probably be outraged by this statement, but I very much doubt whether they can offer an alternative which has the authority of respecting all of the historical information that survives.

Mendel listed the pitches of quite a few German organs that existed in the 18th century. The Appendix has a discussion of this information. It is shown there that these pitches cluster around -1, +1, and +2 semitones from modern. This total range of three semitones divided into semitone intervals corresponds completely with Silbermann’s reported range. In consequence, we can now place all of the pitches mentioned before onto an approximate absolute basis, with Silbermann’s Kammerton approximately equal to modern pitch.

This is where Praetorius comes in. According to Cammerthon, he wrote that trumpets were usually pitched in D. Trumpet music was written in C, so a D pitch implies a standard a tone higher. Praetorius’s Cammerthon standard is well established by the set of pitch pipes he drew, and it was slightly below modern. Further evidence supporting this is that Praetorius wrote that the Halberstadt organ was between two and three semitones sharper than Cammerthon. He also gave pipe dimensions for this organ, from which Ellis (1880) calculated the pitch of a'=506 Hz, which confirms that statement. Praetorius also wrote that the majority of old organs were tuned a tone
higher than his Cammerthon. Compared to the 18th century sources mentioned above, this all strongly implies that the pitches of old organs, trumpets and the primary Cammerthon were all constant during the interim periods. An alternative hypothesis would need to explain why each of these three changed, and all by the same amount in the same direction.

It is now appropriate to fit the writings of Muffat (1698) into the picture. To review, Muffat wrote that the pitch the French usually tune their instruments to is a whole tone lower than the German one (called Cornett-Thon), and in operas a half tone lower still. He preferred the former (i.e., higher) French pitch (called Old Chor-Thon in Germany). The only other situation we know of where a Chor-Thon was a tone lower than a Cornett-Thon is in the writings of Praetorius. There, Cornetten-Thon (presumably a cornet-led general wind pitch) was the same as Cammerthon, while a tone lower was the Chorthon that Praetorius preferred, which was mostly found in Catholic churches. Associating the terminology of Muffat with that of Praetorius has the confirming consequence of agreement between Muffat's standard French pitch and the previous French pitches mentioned by Quantz and Agricola. Muffat's French opera pitch would then be the same as Quantz's very low French chamber pitch.

It is not surprising to find that Muffat's terminology corresponds with Praetorius rather than with the 18th century north German writers on pitch. Muffat's German background was in the Catholic centres that Praetorius associated with the Chorthon he preferred. This pitch of about a tone below modern was a widely observed standard early in the 18th century. It was that of Rome, which was the spiritual centre of the Catholic world. Before about 1720 it was the French standard (Sauveur's harpsichord pitch measurement (1713) was a semitone higher, a different but popular pitch that eventually replaced this standard). As Taylor's harpsichord pitch measurement (1713) indicates, the tone-low standard was also observed to some extent in England. It had long been a widely used pitch level for sets of viols and for the usual or mean lutes since Elizabethan times. It is no surprise that the pitch measurements of 'choir pitch' by Euler (1727) and Bernoulli (1762) in Switzerland lead to the same pitch. There are indications that this was the main pitch that Rucker's harpsichords (made in Catholic Flanders) were designed for. By the 18th century, these instruments probably tuned to higher pitches by using thinner strings.

Radolt's (Vienna, 1701) instructions for tuning a trio of lutes, indicate that the large common lute was tuned about four semitones below 'Cornet'. If 'Cornet' was that of Praetorius and Muffat, this lute would be at four semitones below modern and if it was that of 18th century German writers, it would be only two semitones below. The latter is most likely because of the following: The bowed strings were tuned with the highest lute, at least a semitone higher than 'Cornet' and the ensemble was described as playing "a Quatro", implying a fourth higher than normal pitch. Therefore normal pitch in Vienna then was four semitones lower than 'Cornet'. This happens also to be the pitch of the large lute. It is much more likely for Vienna to have the pitch of Catholic centres, two semitones below modern, than to have a pitch two semitones lower still, below that of any other baroque pitch standard discussed.

Whenever this tone-low pitch was given a name it was choir pitch (Chorton in German). There is no evidence that it was ever called Kammerthon. But it would be foolish for an historian to claim that it was never called Kammerthon. It is probable that Chorton in some places in Germany was a semitone lower than Cornet-Thon in the first half of the 18th century. As Bach occasionally used 'tief Kammerton' (a minor third lower than Chorton) because it was practically useful, this would probably have happened in these places as well. But when a writer was addressing himself to a general German audience, he would use terminology that was widely accepted. So when a writer specified 'Kammerthon' in a published book, we can be fairly certain that he most probably meant a pitch close to modern, with a semitone lower rather less probable. No other possibilities need to be considered.
I would like to emphasize that the picture of German pitch standards presented here is complete. It accommodates all of the surviving information. There is a web of links that ties it together. Between Praetorius and the late writers Quantz, Agricola and Silbermann directly, there is the triple link of corresponding pitches of trumpets, old organs and Cammerthon. Another link is via Muffat. Between Praetorius and Muffat there is the multiple link of corresponding Cornett-Thon and Chorton pitches and corresponding association of Chorton with Catholic centres. Between Muffat and Quantz and Agricola, there is the link of the primary French pitch standard c. 1700. This web is anchored onto absolute pitch at one end by Praetorius's dimensions of pitch pipes and the Halberstadt organ, and on the other end by the association of the range of pitches of 18th century German organs given by Silbermann with the range of pitches of surviving organs summarised by Mendel.

Some of these links are stronger than others. Let us see how they compare with an alternative set of links. A superficially attractive and popular alternative picture would associate Praetorius's rechte Chorton/Cornett-thon with 18th century Chorton/Cornett-thon. The old-organ discrepancy could be explained by Quantz's old organs being Praetorius's new ones. Everyone complains about the pitch being too high and prefers one a tone lower. The picture is very simple, with only two more pitches to consider. They are Muffat's two French pitches corresponding to the two 18th century German Kammertons. Muffat's links with Praetorius are fine, but the troubles start with Muffat's link with Quantz/Agricola. The report of French pitch in Muffat's time by the latter two authors is lower than both of Muffat's French pitches. And Quantz's very low French Chamber pitch is yet another semitone lower. We may try to link Muffat's two French pitches with the direct determinations of pitch frequency summarised by Karp, which fall on one and two semitones below modern. This runs into serious trouble because it implies that Praetorius's standard was a semitone higher than the clear evidence indicates that it really was, and Silbermann's range of organ pitches is one semitone lower than the range of surviving organ pitches as reported by Mendel. We can try to shift the absolute pitch of this picture to meet either the Praetorius or Silbermann levels, but the other will be violated by two semitones. This discrepancy will be very difficult to explain away. One would also have to explain why trumpet pitch dropped a tone. Mendel quotes Smithers as saying "it is very rare to find a natural trumpet that [without crooks] is any lower than D (where a' = 440 Hz)." While avoiding having to explain why Chorton and Cornett-Thon have gone up by two semitones between Praetorius and the 18th century sources, one now has to explain why Cammerthon dropped by two or three semitones.

The change of Cornett-Thon can readily be associated with changes in the fortunes of the cornet. In Praetorius's time, Cornett-Thon was a general wind pitch with virtuoso cornet players playing a leading role. In the 18th century, cornet playing was taken over by trumpeters and Cornett-Thon became a standard associated with the powerful Trumpeters' guild.

I explain the change of Chorton as a switch of recognition from the new organs of Praetorius's time to the old organs which Praetorius wrote were more prevalent. He recognised a variability in German Chorton but he never indicated a variability in Cammerthon. This stability in Cammerthon was eroded in the 18th century by allowing two versions a semitone apart, but for neither of these to be Praetorius's Cammerthon required a process more drastic than erosion. A switch of recognition to a pitch already widely in use in each particular area would be fine, but the tone-low Chorton that Praetorius preferred was not widely used earlier in the Protestant areas that used the term 'Cammerton' in the 18th century.

In many aspects of life it is quite adequate to focus one's attention on what one considers is important and one can ignore the rest, in confidence that it will take care of itself. This strategy is as wrong in good scholarship as it is in good instrument making. According to the rules of scholarship, a simpler picture is to be preferred, but only if it
fits the data equally well. This is far from the case here. From the early-music movement's point of view, a simpler picture would be preferred since it then becomes easier to play at 'original' pitch. It is therefore unfortunate that this picture cannot be supported by current scholarship properly done.

Appendix

Mendel’s list of German organ pitches

Mendel listed pitches of 24 German organs, presenting them to the nearest semitone away from modern. For 13 of them he gave the frequency in Hz for a' as given by the measurer. No figures for precision or accuracy were given for these measurements. For one (Freyberg Cathedral) the measurer gave the pitch to the nearest quarter of a semitone (+4 Hz). For one (Halberstadt Cathedral), Mendel did not give the pitch (derived from Praetorius's pipe measurements) to a precision greater than the nearest modern-pitch semitone. For the remaining 9, the measurer (Fock) only reported the pitch to the nearest modern-pitch semitone (except for the Steinkirchen organ where his report was to the nearest half a semitone).

In the category of one semitone below modern, all six of the organs had frequencies reported, and they covered a range of 7 Hz, from 408 to 415 Hz. There is then a gap of 40 Hz to the next organ pitch. In the category of one semitone above modern are seven organs for which three have frequencies listed. These cover a range of 11 Hz from 455 to 464 Hz. Then in the category of 1.5 semitones above modern is the Steinkirchen organ, whose a' would be 470 ± 7 Hz (ie to an accuracy of a quarter of a semitone). Between the ranges of organs at one semitone and two semitones above modern there is a clear 19 Hz in which the Steinkirchen organ may or may not be. In the category of two semitones above modern there are eight organs with frequencies reported for four, plus the Freyberg Cathedral organ where a' = 487 ± 4 Hz (ie an eighth of a semitone). These all cover a range of 12 Hz from 484 to 495 Hz. Finally there is the Rohrflute 4' stop of the Hamburg St Jacobi organ made in 1512, reported by Fock to be at three semitones above modern. Schnitzer made the rest of this organ in 1693 and most of it is at a' = 489 while the Gedacht 8' is at 411 Hz. The Rohrflute 4' stop was probably retained for special transposition and it is unlikely that it represents an independent pitch standard.

There is a clear bunching of the data here. It can be shown graphically by plotting test frequency on the horizontal axis and the number of organ reports giving frequencies that are within a specified range of that test frequency on the vertical axis. Since we want to resolve peaks a semitone away, data that is known only to an accuracy of ± half a semitone can only obscure the graph, so they are omitted. This includes the omission of four reports at one semitone above modern (a' = 466 ± 14 Hz), four reports at two semitones above modern (a' = 494 ± 14 Hz) and one report (of dubious significance) at three semitones above modern (a' = 523 ± 15 Hz). The remaining 15 organ pitch reports are given to at worst ± a quarter of a semitone, and this amount (± 7 Hz) is used as the specified range for calculating the number of reports on the vertical axis. The result is as follows:
On the question of statistical significance, all statistics can do is to compare the probabilities of different idealized models being represented by the given data. Hodgson’s model in Comm 662 is that the pitches represent a random distribution (presumably) about a mean. The probability of this would be some non-zero value. Mendel’s model is that the pitches tend towards -1, +1 and +2 semitones away from modern. This would have a higher probability than Hodgson’s model, while being just as sensible, and so Mendel would be preferred. I would suggest that a model that has the pitches -1, +1 and +2 semitones away from a' = 435 Hz would have an even higher probability. These statements about probability are to me obvious without calculation. If Hodgson insists, I’ll generate the numbers next round.

It is curious that the lists of German organ pitches given by Ellis and Mendel omit organs in the region of modern pitch. We would expect such organs since Praetorius, Quantz and Silbermann mentioned they existed. My guess is that they do exist but that records of their original pitches do not survive (as is usual for the reported organs as well), and it is obvious that their pitches have been modified. It is much cheaper and therefore more attractive to repitch an organ that is a small interval away from current pitch fashions than one that differs by a larger interval. As pitch fashions changed, particularly in the 19th century, these organs could have been repitched several times.

REFERENCES

A. Mendel Musical Quarterly (1955) and Acta Musicologica (1978, reprinted 1979 by Barenreiter as booklet) The most fruitful sources of information
E. Segerman Comm 442 (1983) My original reinterpretation of Mendel (1979)
H. Meyers Early Music (1984) He promoted a semitone-high pitch for Praetorius’s Cammerthoun
E. Segerman Comm 597 (1985) Includes information on English viol pitches
M. Hodgson Comm 662 (1985) Hodgson disputed my Comm 442, inducing me to write this one - I hope that a point-by-point rebuttal will not be necessary
### SUMMARY OF QUOTED PITCHES

(A: absolute pitch; Q: quantitative relative pitch; D: descriptive relative pitch)

#### Protestant Germany

<table>
<thead>
<tr>
<th>Year</th>
<th>Composer</th>
<th>Pitch</th>
</tr>
</thead>
<tbody>
<tr>
<td>1619</td>
<td>Praetorius</td>
<td>AQ</td>
</tr>
<tr>
<td>1713</td>
<td>Mattheson</td>
<td>O</td>
</tr>
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</table>

#### Catholic Germany and Austria

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**Approximate Semitones From Modern**

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</table>
Comm. 628 brings to light an example, which I overlooked in my Lutes, Viols and Temperaments, of a G# at the first fret occurring simultaneously with another note in Luis Milan's El Maestro. If the other note were a major 3rd, 6th or 10th below the G#, it would weaken my theory that Milan used a meantone fretting scheme in which this G# happens to be nearly a quarter-tone higher than pure (but would make a very euphonious Ab).

Actually the other note is a minor 10th above. This is consonant by the rules of traditional counterpoint, but in fact makes a relatively less consonant vertical sonority because the lowest unison between the harmonic overtones of the two notes is much higher and weaker than in a major 3rd etc. Indeed in the minor 10th there is a stronger unison at the seventh harmonic of the lower note than at its twelfth harmonic, and this will beat less in meantone than in equal temperament. The G# will still be exceptional melodically, but no more than the isolated G#s which I discussed.

I am grateful to Mr Hodgson for this example, and wish only that it had been offered with a better grace. Most of his remarks and innuendos are not worth responding to, being empty rhetoric; but I should like to assure anyone who may have been offended by the phrase 'any old geometrical device' in Gerhard Söhne's brilliant Appendix to my book (see Comm. 609) that it was not at all meant to disparage their work but merely to evoke the fact (brought out so clearly in Comm. 5) that given enough circles and no other restriction than the curve of the object, you can speculate as you will. The Appendix was too brief for a review of the literature, but Mr Söhne and I thought it might be useful to cite some things in English anyway. May we apologize sincerely to any author who took offence. As for Mr Coates' book, I am reading it with pleasure and plan to discuss it in Music & Letters.
Early Instrument News From Yugoslavia.

I have been in Dubrovnik. The Museum have some old instruments (not on display): a violin and 4-5 woodwinds, all early 19th century, plus a baroque harp. They were busy so they showed me nothing. The only instrument I have seen is a fortepiano, Anton Walter 1780, in the Rector's Palace. I have been told there that it was been bought at an auction in Vienna in last century and from that time nobody touched it. Somebody from Vienna have examined it few years ago, and have said that it is uncommonly well preserved (was not it had been restored in last century?), even the strings looks very old (all in number).

About firewood..... An acquaintance of mine told me that he had an old piano very primitive looking compared to modern ones, he thouht it was valueless and put it in the garden where the neighbour have cut it in pieces. Some keys remained (black natursals, Stoss mechanic)..... It was brought from a castle many years before by his father....

Nobody recognize the value of old instruments here. Some valuable private collections have disappeared in war, even today foreigners come and buy cheaply instruments (even stole them as I have heard many times). I wonder from where they get informations.....

Just appeared a book "Pipe Organs in Slovenia" (in English) with informations about 100 organs of historical interest (mostly single manual baroque but some great romantic ones, too) with 2-3 colour photos, the information about maker, present state, its history (who, when and how restored or altered it) plus full registration. No measurements or drawings, the purpose of the book is to let you know what is where if you wish to see and examine them. I hope some day a catalogue of Croatian organs will be available (there are some big unaltered baroque organs of South German and Italian makers). It is a pity nobody cares of them.

Is there a plan of the French harpsichord shown in EM July '83 p.368? It could be the right instrument for me. It is little and I have enough walnut.

About soundboard finish of lutes etc.... Is there a need for more than a coat of hide glue, it gives enough protection to moisture, it is thin and hardly visible. After some years you wash off the dirt and give a new coat (as a part of regular maintenance). No problems with varnishes.

Violin top and back archings.... I do not believe that they have been determined by mathematics or geometry. A piece of wood soaked and then clamped in this way; when dried tend to form an arching very similar of violins. There is difference in the archings of soft and hard wood (pine - maple) which are very close to violin top or back plates' archings. You can even determine the thickness gradation when you join two arcs: every kind between uniform or variable thickness. You just have to make a few pairs of arcs (lower, upper bouts, waist plus the two longitudinal profiles). Carve
the top and back to the shape till they will not fit exactly to the arcs. You may then throw the arcs because for every violin you will get different shape of arcs, except you use material of identical properties. For viols you have to bend the plates, you will give the arching close to parabola, with two arcs you will get the thickness gradation, too. Simple statistical problems.

I wonder how clear I was? Probably somebody with more time and nerves wish to experiment and compare the results with more violin shapes. That is enough.

Dear Mr Montagu,

I am always interested to read my copy of FOMRHI. Please keep the format and informality the way it is.

I am interested in building a symphony and read Mr Segerman's comments in the May issue. He refers to your comm 96. Please would you send me a photocopy of this as I do not have the early issues and I believe they are no longer obtainable? In response to another member's query on the same subject of symphonies you alluded to work by Marianne Brocker, please would you tell me where this was published and when?

In general when a member writes with a query to FOMRHI would it be possible for the reply from any other member to be directed through the secretary or editor, or at least a copy sent to them, so that the response could be published for the benefit of all members?

I have made several drums using information from your book on making early percussion. For the last I utilised Ian Gould's advice of Comm 545. It does make stitching much easier. My thanks to him. Do you know of any suppliers of drumskins or suitable hide for them? Not much is available commercially here in Australia to my knowledge.

I have made two rebecs with bridges which rest on the soundboard. I have seen a modern instrument from the Mediterranean area which is like a rebec but has one "leg" of the bridge passing through the soundhole to rest on the back of the instrument. Is this arrangement seen in any illustrations or carvings of historical instruments (other than the crwth) and has anyone any comments on its effect on the sound?

Members of FOMRHI might be interested in two articles by another South Australian member on making violin varnish which appeared in the Catgut Acoustical Society journals of May and November 1984. They are by Rex Thompson. Very specific and practical and his results look excellent.
As a mere amateur could I make a couple of comments on authenticity. "Authentic instruments" on a record label or concert promotion means roughly "instruments which are contemporary, or approximately so, with the music being played, are in their original condition or have been converted back to that state, or are copies of such instruments". Most people interested in concerts and records would understand something like that from the phrase "authentic instrument" and it is a useful term, as it's short. In the same context it also implies an attempt at a historically accurate way of playing.

As far as the average purchaser of an instrument is concerned I would think he or she would look for:
1) the right sound
2) ease of playing in the appropriate manner
3) durability and reliability
4) appearance
5) price.

Whether a trade or an electric powered lathe is used, for example, would be quite irrelevant to the customer provided the results were the same in the areas mentioned above. Please don't stop publishing modern ways of doing things. Many amateur players like myself have to compromise in the instruments we buy, as we simply cannot afford a different harpsichord for every different style of playing, or several complete consorts of recorders, for example. Some compromise designs are surely necessary and should not be decried. Please keep FOMRHI practical.

I look forward to hearing from you.

Yours sincerely,

[Signature]

Angled Bridges and J Bars on Lutes

In The Lute, XXV, part 1 (1985), David van Edwards mentions an explanation for angling of bridges in archlutes and theorboes which he credits to Peter Forrester and myself. It was to give greater freedom of vibration of the bass end of the bridge. He dismisses this explanation with two objections which he believes are powerful. These are that the J bar and the bridge placement closer to the bass edge of the belly on many examples seem also to restrict movement of the bass side of the bridge. According to David's argument, if this restriction was a problem, these other factors would have been treated differently, i.e. the J bar could be dispensed with and the bridge could have been moved farther from the bass edge of the belly. I shall here offer other explanations for the J bar and for the bridge asymmetry, and show how these factors have less of an affect on the soundboard bass response than might be expected without a proper understanding of how the soundboard vibrates.
The height of the J bar varies from considerably less than, to a couple of times its width. While it undoubtedly contributes to soundboard stiffness to some extent, this is small compared to other bars of a lute. It has another function though, which is enough to earn its keep. That is to inhibit splitting on the belly below the bridge. The string tension creates a torque on the bridge which causes a hump in the soundboard below it. Since the soundboard area below the bridge is held down at the belly edges, the hump goes both ways. Through the hump, the curve parallel to the bridge stretches the soundboard and so would tend to split it along the grain. With the J-bar in, this splitting is prevented, and the force causing the curvature is transmitted to the sides of the instrument. The sides are somewhat flexible and have to move in when the hump develops. We should notice that in practically all original lutes, a few soundboard grain lines are covered by both the straight end of the J bar and the bridge end of a treble bar. So the treble bars continue the anti-splitting affect. They also carry the soundboard stretching force to an area where that force will not tend to split the wood. The curved end of the J bar can straighten out slightly with soundboard stretch in that area, thus diffusing the stretching effect while stopping that stretch from being relieved by a split. We built a copy of the Brussels Buechenberg theorbo that doesn’t have a J bar, and a soundboard split at the hump developed quickly. We repaired the split and put in a J bar, with no subsequent splitting.

We can expect that the most respected early extended-neck (or double-necked) lutes were conversions from single-neck lutes retaining the original neck. To accommodate the greater number of courses while keeping the first course on the fingerboard at all frets, a bridge placement closer to the bass than the treble edge of the soundboard was necessary. Since this kind of bridge asymmetry was highly respectable, there could be commercial advantage for makers to include it in some new instruments of this type, as long as there was no acoustic penalty.

To assess this penalty, one needs to consider how the lute soundboard vibrates. From the study by Firth (GSJ, XXX (1977), 56) we have good reason to expect that vibration ripples don’t cross the bars until well over 500 Hz. In the low-frequency range that we are interested in here (below G or about 100 Hz) the bars are bending hardly at all and most of the soundboard is moving up and down as one unit. Practically all of the flexing to allow this to occur is happening below the bridge and along the soundboard edges. The flexing at the edges is facilitated by the shallowness of the bars there, the thinness of the soundboard at the point where the bar meets rib, and the flexibility of the top rib. Higher harmonics of the low string notes and the fundamental frequencies of practically all the string notes that can be fingered are responded to by ripples on the soundboard, with crests and valleys parallel to the bars. It seems clear now that a sideways shift of the bridge or the presence of a J bar will not seriously inhibit this vibration pattern.

We can now model the soundboard vibration as that of a thin stick clamped at both ends, with weights attached where the bars are. Simple acoustic theory will indicate (as with strings) that driving it near one end reduces the amplitude of the fundamental and enhances higher harmonics. Conversely, driving it farther from the end enhances the fundamental at the expense of the higher harmonics. We can now begin to understanding why the bass end of the bridge was shifted up the soundboard. As with fiddles, a mixture of vibration modes which gives a clearly audible fundamental is desireable, considered to give a rounder, more pleasant sound.
INDEX 1985

Apology C650
Archeology axioms C625
Atlas-piano C584(R)
Authenticity C624:C637
Axioms for archeology C625

Babylon-drum manufacture C588
Bachofen R 40.3
Bagpipes and hurdy gurdies C581(R)
Barnes J C601(R);C622(R)
Bavington P C615
Bentsides C591
Biber H C603(R)
Boalch D 39.14
Bohemia-wing C612:C634
Bone supplier 40.15
Boring recorders C648
Bouterese J C641:C653
Bow wood 38.10
Box-wood drying C641
Brass research C642
Bridge design 38.10

Carver-wood 40.4
Catalogue-Kunitachi College Tokyo -C645(R)
Cello spike baroque C595
Stradivarius C594
Chekker C614
Chiverton R C599
Clavicytherium checklist C615
Collection-Ascona C658
Barcelona C657
Bate 38.12
Eddy C644(R)
Kunitachi College Tokyo C645(R)
reed organs 41.4
Venice C658
Communication C655
Computer communication C655
Cronin R C587;38.4
Crookes D C589:C590:C611:C612:C635
-C636:C637:C638:C640:C656

Davies P C659
Dehumidifier 38.8:39.3
Delassus R C585
Drilling keypin holes C619
Drum-Babylonian manufacture C588
Greenland C656

Eddy collection C644(R)
Education-early music C643
Eunuch flute C638

Fischer H C600(R)
Flauto Bassano C651
Flute-eunuch C638
harmony C580(R)

Flute-Milhouse 39.4
tuning C653
Folkes C 39.7
Forrester C618
Forum-early music 41.6

Gauge-Swedish C666
Gaultier C609
Geigenwork 40.3
Gilding-practical C583(R)
Gili D C631:C660
Golden mean C664
Good E C644(R)
Gould I C588
Greenland drum C656

Grove C614
dictionary of instruments C578(R)
-C604(R);C605(R);C621(R);C646(R)
-C647(R)
Gudok C636
Gug R C666
Guitar-baroque stringing C663
Gusli C636

Hailperin P 39.2
Harmony for the flute C580(R)

Harpischord-authenticity C591
bentsides C593
electric 39.2
pitch C593
Ruckers C591
Ruckers double C665
Ruckers transposing double C623
The Historical H. C602(R)

Harris C C657
Hemp thread 39.2
Henning U 39.2
Hirshtalg 38.3
Hodgson M C628:C662:C663
Hope H 39.3
Huene F von 40.3
Humidifier 39.3
Hurdy Gurdies and bagpipes C581(R)

Instruments-Roman C589
Italy-visit report C658
Joannes P 40.4
Karp C C606(R);C627:C655:38.4
Keyboard pitch in 18c C627
pitch Swedish C606(R)

Kolberg S C620:C650:41.2
Leeuwen B van C619
Linley M C609
Linseed oil C617
Lute design C609
sizes C662
Lute—temperament C628

Mactaggart A C583(R):C616
Mactaggart P C583(R)
Makers—N. France C585
Marvin R C648;C649;C650;C651
—C652
Materials and tone C587
Matousek L C634
Mazzolari 39.2
McCormack L C610
Mean—golden C664
Measurement techniques C639
Meeus N C607;C608
Memling tromba marina C659
Meulen E ter 40.4
Microwave drying C641
Montagu J C578(R);C579(R);C580(R)
—C581(R);C582(R);C583(R);C600(R)
—C601(R);C602(R);C603(R);C604(R)
—C644(R);C644(R);C646(R);C658
Mother of pearl 39.2
Mould C 19.14
Museum—Paris Conservatoire 39.12
reed organs 41.4
Royal College of Music 40.11
Verona C658
Myers A C630
NEMA—early music in education C643
Notation—pitch C630
Oboe wood C587
Oil—drying C616;C617:39.3
linseed C617
Patents—musical instruments C579(R)
Pearl—mother of 39.2
Piano atlas C584(R)
Pitch—18c keyboard C627
English viol C597
lute C662
notation C630
Praetorius viol C596
range of gut strings C632
Ruckers C593
Plane—scraper C586
Plans—Bate collection 38.12
flute fourth Bressan 40.4
flute Milhouse 39.4
flute Potter 38.2
Metropolitan Museum of Art New York 40.14
oboe Rottenburgh tenor 38.2
Paris Conservatoire 39.12
recorder treble 40.4
Stradivarius cello C594
Praetorius C607
English viols C598
Praetorius—letter C608
viol C633
viol pitch C596
Reamer—recorder C648
Recorder—16c C651
flexibility C652
measurement C639
measurements C620
Terton plans 40.4
tuning C652
voicing C654
Roman instruments C589
Ruckers double harpsichord C665
transposing double harpsichord C623
Sackbutt—Renaissance S. and use
—today C600(R)
Schott H C602(R)
Scraper—moulding C586
Segerman E C596: C597: C598: C605(R)
—C606(R); C613: C621(R); C629; C632
—C647(R); C661; C664
Shakespeare stump C599
Shann R C591; C591; C593; C614; C622(R)
—C665
Sheehan N 38.3
Shortridge J C623
Skomorokhi C636
Smith M C594; C595
Spinet—making by traditional methods
—C601(R); C622(R)
Stacey P C581(R)
Stradivarius cello C594
Strings—pitch range of gut C632
Swedish gauge C666
Stroom C C639; 40.4
Stump—King Henry viii C599
Symphony 40.10
Tarr E 38.4
Taylor S C584(R)
Temperament—lute C609; C628
Thein H C642
Thein M C642
Thread—hemp 39.2
Tone and materials C587
Traverso—keypin drilling C619
Tromba Marina—Memling C659
Tuning flute C653
recorders C652
Varnish C616; C618; 39.3: 40.3
Varnishing techniques C618
Vihuela C610; C629; C631; C660; C661
Viol—early history C582(R)
English C607; C633
English Praetorius C598
English sizes and pitch C597
Viole d'Aline C611
Visit report-Italy C658
Voicing recorder C654

Wadsworth W C617
Way D C624:C625:C626
Williams K 38.2
Wing-Bohemian C612:C634
   harpate C635
Wire uniformity C626
Wishart S C581(R)
Woodfield I C582(R)
Woods T C654

Young A C586