FOMRHI Quarterly

FELLOWSHIP of MAKERS and RESTORERS of HISTORICAL INSTRUMENTS

Bulletin no.21 October, 1980

Your SUBSCRIPTION for 1981 is now due. The rates are the same as last year:
U.K. and elsewhere by surface mail: £4.50

Anywhere by airmail: £6

Plus, if you are paying in any currency except £ sterling (and including Eurocheques in £), £1 to cover what the bank charges us to exchange the currency. Why they charge us for Eurocheques, I do not know, but they do, so we have to charge you.

If you are paying by Bank Draft (a cheque from your bank instructing a London bank to pay us), by GIRO cheque (no, we do not have a GIRO account, but GIRO cheques go through quite easily), by Postal Order or Mandat, do not add this extra £1.

I was asked last year to tell you our Bank Account no., so that your bank could pay the money straight over; this led to great confusion, with money going into my account and not FoMRHI's (I use the same bank), and payments arriving for anonymous members, so it obviously isn't practicable. A few members put currency notes in an envelope and send them; this is not to be recommended as a) it is illegal in several countries, and b) if it gets lost in the post you have no redress. In emergencies it works, but only if there really is no other way.

There is another way for members in USA or Canada. As last year, Theo Miller is willing to collect and send over in bulk. If you are paying through him, please make cheques out to him (Theodorus Miller) for whatever amount your pocket calculator says the dollar is worth to make either £4.50 or £6.00, plus 50c or so to cover what the bank will charge him and any currency fluctuations, and send it to him at: R.R.1., Pender Island, BC, Canada VON 2MO. Send me the renewal form (enclosed herewith) saying that you've sent him the money.

Everyone else: Send a cheque for the right amount (exchange rates seem to whizz up and down; please be generous in your guess rather than mean, as otherwise we don't get the full amount FoMRHI costs), made payable to FoMRHI, to me. Preferably as soon as possible. If you wait to be reminded, it costs money.

Last year for the first time, we sent no reminders after the January one (anybody who hasn't paid by the time that the January FoMRHI appears gets a note of what they are missing). In previous years, I have sent another reminder, which picks up a few absent-mined members, but costs about £20. This year, I thought that FoMRHI was better off with £20 than absent-minded members, most of whom would probably remember sometime during the year. But even the January reminder cost nearly £60, which is 17 subscriptions (when one has deducted the postage cost) totally wasted. So please send it now.

LAST BULLETIN: For some curious reason, Bulletin 20 was listed on the title page of Quarterly 20 as Bulletin 18. Some of you were puzzled, but I hope that none were misled into thinking we were running backwards.

MAILING: The new arrangement, with Enzo Puzzovio doing the mailing, seems to be working - I've not had any complaints, so presumably you're all OK and happy. We are very grateful to him for doing this. One thing that would make it even better is a porter from Manchester to Sheffield; it took about a week to make the journey because we had to book a carrier and then wait for him to call. If anybody travels that way and could pick up the bulk stock from NRI four times a year (mid January, April, July and October) would they please get in touch with Djilda?

ANTHOLOGIES: The Fellows have been discussing these for some time and have come to the conclusion that they would be a mistake. This is not what FoMRHI is for. FoMRHI is designed as an informal interchange of information; members can slap stuff out without worrying about proving theories, stepping on other people's toes, formal writing and so on. If they thought that they might be anthologised, they would write more carefully (ie slowly) or more likely not at all. Most of us don't mind fellow FoMRHI members reading our theories, but would hesitate to write what we do if we thought that we were going to wind up republished more formally. If we want that, then we rewrite for GSJ, Early Music, Consort, etc, etc. So if any of you have been hesitating to write for fear of permanence or of being read by outsiders, relax and get out the typewriter - what appears in FoMRHI is only for FoMRHI.

FURTHER TO: Comm.247: Gianfranco Facchini writes on glues: Wine spirit is excellent with animal glues [I am summarizing him slightly, jm]. A very strong glue used by fine cabinet makers for marquetry is made as follows: 4 oz of best fish glue are reduced to small pieces and soaked for 24 hours in a vessel filled with good brandy. In another vessel, 1 oz of mastic gum and 1 oz hide glue, both reduced to powder, are melted with brandy. All are then put into a copper vessel and set on the fire until every component is dissolved. The glue is then filtered through linen and preserved in a glass container hermetically sealed. One can take what one needs from this and heat it in a double-boiler. The wood should also be heated. He has used this successfully for ten years.

Bull.19, Guest-Friends: Gianfranco says also that he has always a bedroom for FoMRHI fiends in Ravenna (address in the last issue). This is an idea that only works with a bit of warning, though. I'm not sure whether I owe Gianfranco an apology or whether it's the other way round. I was just getting dressed to go out for a heavy two days' work, when he rang the door-bell. A) I'm not really with it at 9 am, and b) I couldn't have done anything at that notice, and this is probably true of most of us. Write first and/or ring up from the airport - otherwise you are taking very much of a chance. Or ring up from home - it's expensive but cheaper than a hotel, and then one can say yes or no, or I'm out till 10pm that night but come down then, and so on.

Bull.19, p.7, Paint: Graham Cooper sent a page from the 1979 Woodcraft catalogue, advertising 'Old fashioned milk paint' at $4.05 a pint, $7.05 a quart, $20.50 a gallon (all American measures, of course) including postage (presumably not overseas, though). He is told that these are very good copies of the American Colonial colours and hard-wearing. However, they have a minimum invoice of $5 in USA and $25 overseas. He offers to buy smaller quantities for anyone who wants to try it, and post it over (he has an English bank account which anyone over here can pay into). He also offers to do this for anything else that members can give him exact details of. See also below, under Tools.

David Way of Zuckermann Harpsichords writes (see also his Comm herewith): The search for decent paint has lead us to Turco Paint & Varnish Company, Wheatland and Mellon Streets, Phoenixville, Pennsylvania 19460, who make a line of oil and earth pigment paints widely used for restorations in America. The range of colors has been taken from examples found in Colonial Williamsburg and Sturbridge Village. Two coats usually do a completely professional job on an instrument, and the special varnish they make allows you to achieve any desired gloss.They are a small company, with only one mill, so they are sometimes out of stock on a particular color, and they do not welcome orders for single pints. But we keep a stock on hand here, and can supply color cards for those interested. We also carry a compatible oil-based 'gesso'; these products used together allow a completely professional job of harpsichord painting with greater ease than any other products we have tried.

Comm.272, Styll Shalmes: Neil Buckland wonders whether anyone is likely to respond with any arguments to his Comm. He hoped that it would stir up some controversy. I told him that I only know of one Comm in preparation on the subject, but that I hoped there wouldbe others. Many of us have ideas on the subject, but they're not always sufficiently formalised to put on paper. I have always had a suspicion that the only difference between the loud and the soft shawm may have been the player's lips on the reed, which reduces the volume enormously; however, that doesn't fit with Tinctoris's statement that the quiet shawm was imperfect, whatever that means (and there are a number of theories about that). If, as I do, one regards the position of the lips as the diagnostic between shawm and oboe (and that remark should stir a bit of controversy!), then the Indian shanai is now an oboe (or, if you prefer, a styll shalme) - I'm waiting to see whether they start to develop keywork for it.

Bull.20, p.6, Temperament, etc: Ed Kottick writes:

A comment on Marcel Glover's observation on his virginal and Werckmeister III.

I was on a research leave last semester and spent 4 months recording harpsichord response curves and ramining modes of vibration. All in all I examined close to 40 instruments, about half of which were antiques; several were virginals.

Harpsichords have many resonance peaks, but these peaks are all relatively broad; that is to say they usually extend over several semitones or more. Differences in tuning have no effect on the resonances of an instrument (or visa-versa). Similarly, the differences in string tension from one tuning to another should not affect the resonance patterns of an instrument.

My guess is that Mr. Glover simply had the sound of Werckmeister III in his ear and "something else" translated itself to him as something wrong, different, and worse.

So my idea (jm writing now) was up the creek.

Comm.286a, Laminated Soundboards: I was up the creek here, too. John Rawson writes:

Plywood soundboards have been extensively used in harpsichords in the past. The Zuckerman Straight-bentside kit harpsichord, which was as you might say the 'Model T' of kits had a ply board, allowing it to posted rolled up in a tube. Many instruments since then have also had them, in fact a special ply was made veneered in planks of spruce, so that it looks like a solid board. Morley used them extensively I know - I should think any other factories which exported heavily would have also.

I think the problem is that the characteristics of the plywood are not subject to the control of the instrument maker. You get guaranteed mediocrity, as it were. In a solid board the maker alters the thickness from place to place to control the vibration. Bars are added across the grain to add stiffness, local thinning reduces stiffness. The quality of the actual piece of wood being used affects the decisions that the maker makes about the thickness. Plywood is generally more flexible and heavier than solid wood. This is not necessarily a good thing. And it cannot really be thinned much locally.

As people have done more research and made more close copies of old instruments it has transpired that most modern materials, including glues, have some serious defects, and that better results are normally obtained by using the old methods. Nowadays plywood soundboards (and metal ones eg Challis's) in harpsichords are considered about as

David Way has sent a note on the same subject, which you'll find elsewhere as a separate Comm.

Comm.294, Arching jig: Paul Kemner writes that anyone using this jig could save a lot of time by using a set of drill collars, which are metal rings with a set-screw which slide over the drill bit. He says that Woodcraft (313 Montvale Ave, Woburn, Mass.01888) sell a set of 7 diameters for $3.25 (remember their minimum invoice charge - see p.3 above, under Paint), and assumes that other suppliers do also. He suggests making a block with slots of the various depths one is going to drill, and then all that one has to do is put the drill into the relevant slot, slide the collar down till it rests on the surface of the block, and tighten it on the bit. He also suggests that another way of producing the archings would be to modify a router-duplicator. These are designed to duplicate small carvings; as they are sold, they could duplicate a treble viol and could be modified for a larger instrument. They can duplicate either an existing top or a clay or plaster model. He has seen one sold by Sears called Router-Recreator, selling at about $60 plus the cost of the router. They can also be used to produce scrolls or carved heads and could be useful to anyone who is mass-producing viols.

More general points: David Way had three other comments:

A dozen or so times it is repeated that strings must be brought 'close to their breaking point' for the best sound. This can lead to some nasty sounds. The string must be tensioned until the elasticity of the wire is invoked. On much wire (including, I dare say, wire used by the old makers) the elastic limit and the breaking point were quite close together. If you try to bring high-tensile modern wire close to its breaking point, you are going to break the instrument. The brass and bronze wire we use is so carefully made that at A440 we can be three halftones or more below breaking point; if we were to heavy the wire to come closer to the breaking point, we would get a nasty sound indeed. As Hubbard said, you string by ear.

There is evidently a tendency among amateurs of early instruments, necessarily autodidacts all, to rattle around among themselves for technical information. Piano makers won't tell us how to make harpsichords, but they certainly know all about curing tone wood. Modern woodwind makers know about oiling wood. Cabinet makers know about gluing wood. Some secrets have been lost--but many are to be had for the asking of living professionals.

British instrument makers imagine that they live in a damp climate, and I have heard them talk about how they must build their instruments 'dry' to stand the climate in the States. It is true that for a few brief days in winter our humidity can get very low, and that central heating can dry things out to a crisp. But on the average, the climate over most of the eastern part of the U.S. is much damper than Britain (compare annual rainfall for New York and London). British harpsichords have had more trouble here from the dampness than from the dryness. Dry boxes should never be brought below 45 percent relative humidity.

(one of these days I'll learn how to do a paste-up straight, jm)

NOTES & NEWS: Luis Pereira (new address in this issue) tells me that he is restoring the organ of Braga Cathedral, which has never been significantly altered since it was built in 1737, except for installing a Vox Humana in place of a Nazardos (4 rank mixture based on the 12th). He is going to reinstall a Nazardos and an electric blower, using two of the original six bellows as reservoirs, and apart from that stick strictly to the original construction and voicing.

There was a brief note in some papers a while ago about the discovery of a shawm in the wreck of the Mary Rose, a Tudor ship which is being excavated

by marine archaeologists off the Isle of Wight. Lewis Jones is trying to find out some details about it for us, and hopes to be able to report in due course. At least it was recognised as a musical instrument and it is being properly conserved, and with any luck it will eventually be fully published, I hope in GSJ; as the only, so far as I know, 15th century shawm in this country, it is of considerable importance.

TRADE SHOW: I went to the Musical Instrument Trade Show that was on in London recently (Bill Lewington kindly got me a ticket). As you'd imagine at a show for the normal commercial trade, there wasn't a great deal to interest us. It was apparent, though, that the majority of big firms include lutes and viols of a sort as a matter of course in their stock. They are never likely to be interested in the one-off, waiting-list, sort of instruments that most of our members make, and oddly none of the big makers were represented. There were a few odds and ends, though. Anyone looking for really strong cases (rectangular only, not shaped externally) could find it worth getting in touch with C.P.Cases Manufacture Ltd, Westwood House, 979 Great West Road, Brentford, TW8 9DN (tel:01-568 1881). They produced rigid aluminium cases, foam-filled, with recessed handles and so on, the sort of thing that not even airline baggage loaders and carousels can bend. Their basic price is (in metres) length plus width plus height times 57, coming out in pounds, with discounts on quantity. They also have a number of other lines, including vulcanised fibre which looks a great deal better than the rather tatty cases I carry my drums in.

For anyone willing to try modern materials, Sonor (the Orff-Schulwerk percussion people) are making timpani with transparent acrylic shells with either square block tuning bolts (loose-key) or a cable mechanism, almost exactly hemispherical and the nearest thing I've seen outside a museum to early baroque timps (not that they recognise the similarity!).

There were various tuning devices on show, including the Korg, which I seem to remember has been recommended here; it did not seem to me to have the flexibility most of us would need. More impressive (and much more expensive - $405.00 in USA and over £200 here) was the Strobotuner (the full range, 12-semitone Stroboconn is no longer available). This has a single strobe window, a knob to select any one of 12 semitones, and a tuning knob which goes from 50 cents sharp of A-440 to 50 cents flat, in other words is continuous over the whole range (unlike the Korg and others, where you can't tune A down till it meets the highest position for G sharp). If you know, for example, that your desired F sharp should be 7 cents flat of the equal-tempered position, set one knob to F# and the other to 7 cents flat and then tune till the strobe is still; if it drifts to the right, you're sharp, and if to the left you're flat. Their address in UK is C.G.Conn (UK) Ltd, Travellers Lane, Welham Green, Hatfield, Herts AL9 7HL (tel: Hatfield 66711) (Idid note the UK price and now can't find that bit of paper - sorry); in USA, it is 616 Enterprise Drive, Oak Brook, Ill.60521. They make an American model (ST-11), 120v, 60hz, and an export model (ST-12) 240v, 50hz. Cases, covers etc cost extra, as usual, but microphone is included,of course. I should add that the dial is calibrated in 5 cent steps - they are big enough to scratch extra lines in between and it is guaranteed accurate to 1 cent.

One or two stands had some interesting tools and gadgets. They promised to send me catalogues but haven't done so, so I can't tell you anything about them; more in the next issue if they ever turn up.

TOOLS, MATERIALS, ETC.: Stellavox, who make portable tape recorders, sent me their latest list. The latest reel-to-reel machine will operate at 3.75, 7.5 and 15 i.p.s. and will take reels up to 12" diameter. It can record whole-track, half-track mono or half-track or quarter-track stereo. It is one of the two portable machines that can be used for professional recordings (and it's both cheaper and more versatile than the Nagra). They didn't

send a price list, but I'm told that it's hair-raising. If you're interested, their address is Jardillets 18, 2068 Hauterive, Switzerland, and the UK agent is Allotrope Ltd, 36/38 Lexington Street, London W1R 3HR.

Glue-pots (to return to matters more in our line and more within our means). Luis Pereira (new address in this issue) writes:

Glue-pots - This piece of equipment which is still available in my country, may be obtained quite easyly. I have one, made of zinc but I believe that some of the metal-work artisans who make a lot of objects in zinc, copper or galvanized iron-sheet, may receive orders for glue-pots. Mine is of about 2 dl capacity in the glue--pot itself and about 3/4 litre in the water jacket. I think that cast iron is out of question because it needs moulds and an iron foundry (and a substancial quantity of pieces ordered). If Geoff or any other member wants me to obtain one, I will be but very pleased to help. He must say what kind of material he prefers.

Carving-Planes, etc: Geoff Mather, whose tools I've mentioned before, has sent me his latest list. It includes a small spoke-shave (£8.20), which I'vegot and like, very well made of brass with hard-wood handles, a variety of small planes on what look like chisel handles (not a very accurate description), the point being that you don't have to grip them between finger and thumb and scrape your knuckles on the wood (from £10.50 upwards, depending on the type of plane and the hardwood used for the handle; there is also a choice of handle shape). There is what he calls a right-angle carving plane, which looks like a small hammer with the plane as its head. I ordered one (£14,05 for .375" blade; £15.50 for .562" wide) which handls very well. There are many more and all that I've seen were beautifully made and a delight to handle. Address in the main list.

Wood tools in general: Graham Cooper (see under Paint on p.3) says that Woodcraft list finger planes, palm planes, purfling cutters, instrument calipers, reamers, peg shavers, clamps, gouges and hide-glue as well as paint. Paul Kemner gave their address (first paragraph on p.5) and Graham would be willing to order for you if you're below their minimum invoice figure.

REQUESTS: Peter Little (address in supplement herewith) is looking for information (books, articles, plans, etc) on shawms, rackets, crumhorns, etc. He has our Qs from 10 onwards, so no need to repeat anything that's been in them, but anything else would be gratefully received. He was trained as a woodwork and metalwork teacher and is now in the Merchant Navy; he doesn't say how far he travels nor whether he would be in a position to bring back any exotic materials, but it might be worth asking him, especially if you can give him any information in exchange.

Paul Kemner writes: "I would very much like to see the V&A drawings of the 1667 Jaye viol, but I can't afford them right now. If anybody has them and would be interested in making a temporary trade for any plans I have, or trading copies (which wouldn't be as dimensionally accurate, but would save wear) write to me. I have the Paris drawings of the 1627 Jaye, various keyboards, etc". This seems to me to raise an ethical problem. What is the copyright position on plans? Are purchasers entitled to copy them and exchange them with each other? I would have thought not. We would welcome correspondence on this, both from makers and from those museums which issue plans. It seems to me that if purchasers are going to pass plans on among themselves, there is going to be little financial inducement for museums to publish them. On the other hand, we have second hand book shops, second hand music shops, so why not second hand plans? Copying them does seem to be going too far, though.

OFFERS: Paul also says that if anyone in US or Canada is getting lute drawings from Berhard Soehne and would like to save on postage by sending

in a mass order, contact him. He offers drawings of Bayerisches Museum, München, Mu10, Mu16, and Vienna C32, C33, C34, A35, C36, C37, C39, C40, C41, C45, C47, 616, GdM56, GdM60, N.E.48, AR969 at a price of £12 each plus postage of £12 for up to 18 drawings.

Chris Isbell says that when the equipment referred to in his Comm. herewith is more complete (which may not be for some time) he would be willing to lend it to anyone who could use it to help untangle some of the unknowns in early music. He thinks that it would be fair to do this if the research is for publication and would not charge for this in these circumstances. He wonders whether other "boffins" in FoMRHI would also be willing to do this sort of loan as well, and asks if I or any of us have any comments on the idea. It seems to me to be a good one with experimental equipment, particularly if it results in a general review of the equipment. If there are any faults, they can be quickly passed on to the maker and rectified, and if the equipment is a success, there would be a number of people willing to say so. We review books and records; we would also be happy to review any equipment any of you felt it was worth sending us a review'copy' of; as well as that, if any of you could persuade any firm to give you a review specimen, then by all means write it up for us. I would repeat something I said quite some time ago: we can only review material that is sent to us for that purpose. Anything that we have bought, or acquired in other ways, we can only point out its existence and say any nice things we like to about it. Thus I described the tools I bought from Geoff Mather above because I liked them - if I had not liked them, I'd have kept quiet because, as he did not invite me to review them, he could have sued me for libel if I had said anything bad. We have never had any comments from any of you about not liking something, but if we had, we would not have printed them for that reason. So please don't send unfavourable comments about books, tools, instruments, etc, unless you have been specifically invited to give your opinion of them; if you have been invited to do so, then you and we are OK. And on that basis, I think Chris's idea is an excellent one.

Gianfranco Facchini says that he has at his disposal the book published in 1720 by Padre Filippo Buonanni "Trattato sulle vernice ad imitazione delle lacche Chinesi" (Treatise on the varnishes to imitate China lacquers) in which there are numerous recipes related to wine spirit and oil varnishes (see the first Further to on p.3). Is anyone interested in it? Presumably he is offering notes from it or xeroxes.

MEASURING INSTRUMENTS: Marco Tiella writes that he suggested in 1969 the use of photogrammetric processes for measuring instruments, which have been carried out since then by Vittorio Gai and W.Ferri. He says that the method is wholly satisfactory, but expensive, and intends to write a Comm. on it.

COURSES: He says also that "I don't know if you are informed about the courses for 'ancient' instrument making I am carrying in Milano as a regular shcolastic training. The aim is to prepare musical instrument museums assistants, or instrument makers assistants. Each course lasts about 4000 working hours in 4 years." I have asked him for further information, and meanwhile if anyone is in a hurry to learn more, they can write to him direct (in the main list of members).

The Early Music Centre list of courses for 1980-81 has arrived. There are none for makers this year. There are two professional courses (£1,350), one for lute and one for singing; a series of lectures on history of instruments from 600-1900AD by Mary Remnant (I'm doing woodwind,brass and percussion for her as she has to be away) and a series on history of medieval & renaissance music by Neil Saunders, both as part of the London University Extramural Studies, and evening classes in recorder, viol and lute playing, singing and dance. There are also a series of weekend courses, most on singing and dance, but one on pitch in renaissance and baroque music, a conference rather than a course, in May (16th and 17th) might interest you.

FURTHER TO Comm.289: (missed this earlier, sorry) Paul Kemner says: "further to paragraph 5, could it be possible that instead of re-bending using a banana-shaped iron, it was done by clamping the top between two forged iron plates, and setting the assembly over the fire for a while? (sort of an iron maiden for viol tops!). An old country fiddler I know has a 19thc or early 20thc french violin; he claims the factory that made them stamped the tops to retain their arching from a flat piece of wood in a heated press. It does look as if it was done that way." JM adds: some of the modern school violins etc are made like that, and some have been known to spring flat again when they got wet and melted the glue.

COMMENT ON FoMRHI: Tom Savage writes: "...the controversy that arises from time to time creates a healthy awareness to newcomers to instrument-making like myself, that because a statement is made or put into print, by even well-known instrument-makers or organologists, 'it ain't necessarily so'." JM adds: if we have achieved that, we are fulfilling what could well be our main function. Let's have lots more controversy (but remember Geoff Mather's Comment on Comms on p.3 of Bull.18).

MY MOVEMENTS: I'm lecturing on early percussion in Canterbury on Nov.15th and would be happy to see any of our members who are in that area (at the King's School for the Kent Wind Society). Also at Benenden School on Oct.23rd, but I doubt if you'll have this by then.

More important, I shall be on holiday, and doing a bit of lecturing, in Israel from the latter part of January to after the middle of February. As a result, if you have not paid your 1981 subscription before Q 22 goes out in January, and have to be reminded, you won't get it for quite a while, as I won't be at home to process the late payers. So please get it off to us now.

DEADLINE FOR NEXT ISSUE: Tuesday 30th December, if possible, please. The January one is always a rush because of subscriptions coming in, and I'd like to knock it off over the New Year break.

Jeremy Montagu

PS: URGENT REQUEST: Geoff Kime has just rung up; he's been made redundant, poor chap, and as well as being out of a job, he has lost access to his cheap xerox facility. Can anyone else offer copies at (or below) his rate of 2p a sheet in this country? If not, we shall have to quadruple the price of out-of-print issues (he can get them done in town at 8p, which is better than I can do), or esle refer people to Portugal where Luis Pereira can get them done for 1p a sheet. Any volunteers to me as soon as possible, please, because there is already a queue of orders.

OLD TECHNIQUES: A note just arrived from Paul Hailperin saying that over the past year he has been getting even more old-fashioned, not just from antiquarian interest but because he keeps discovering how convenient the old techniques are, at least for those who are building small quantities and not 2000 per day.

OIL: He has found a source for boiled linseed oil (Leinölfirnis), produced with non-poisonous vegetable additives: Livos GmbH & Co.KG, Neustädterstr. 23-25, D-3123 Bodenteich.

VISITOR: Lukáš Matoušek will be coming over from Prague on a British Council Scholarship in November or so. If anyone would like to meet him, let me know as he will be coming here when he arrives for some information. He makes most instruments, including ala bohemica, and runs an ensemble in Prague.

PoMRHI BOOK NEWS Jeremy Montagu

Da Capo Press sent me their catalogue and invited me to choose some books for review. We can't cover them all in one issue, for lack of both time and space, so over the next issue or two reviews of the following will appear:

Hortense Panum, Stringed Instruments of the Middle Ages

Frances Densmore, Handbook of the Collection of the Musical Instruments in the National Museum (Smithsonian)

Praetorius, De Organographia (English translation)

Orcutt, Stradivari Memorial

Mabel Dolmetsch, Personal Recollections of Arnold Dolmetsch

Reese & Snow, Essays in Musicology

Tinctoris, Dictionary of Musical Terms

Droz, Trois Chansonniers

Burney, An Account of Musical Performances in Westminster Abbey

Hewitt, Petrucci's Harmoniche Musices

Adam Carse, Musical Wind Instruments.

Some of the titles I knew were relevant to us, but others I was guessing on. One that I can't find anything about instruments in (to my surprise) is the Karl Geiringer festschrift (H.C.Robbins Landon & Roger Chapman, Studies in 18th century Music), though there is a lot about music. If any of you would like to review it, please let me know - first one here gets it. You will need to be well up in Bach, Haydn and their contemporaries to do a decent job.

BOUWERSKONTAKT: August 1980 issue has arrived, with a list of their members. Like us (and unlike the Galpin Society, whose latest list is now nearly two years old) they believe it important to keep members in touch with each other by keeping the list up to date. There is a detailed description (with three pages of plates from the original) of a tabel organ from Dom Bedos by Wim Krijger (5pp in all); 5 pages, including some drawings, on the hurdy-gurdy by Toon Moonen; a number of short notes on such subjects as stringed instruments with loud-speaker as resonator, a clamp for guitar bodies, 'De gulden snede'(neither word is in my very poor Dutch distionary) in flute making, titebond glue, harpsichord strings, each about half a page.

TIBIA 2/80: A number of interesting articles. One by Francesco Luisi on ficta in 16th century. One by David Lasocki on the theories of acoustics and playing technique of the flute of Jacques Vaucanson (1738). One by Wolfram Waechter, Das Gemshorn - ein neues "altes Originalinstrument"? One by Heino Jürisalu on the Leningrad collection and its flutes; the article is very short (about 6 inches) buthere are photographs of treble recorders by Bressan, Lot and Parent and tenors by Hotteterre and Bizey. A very detailed article, with a number of photographs by Harry Vas Dias on reed making for baroque oboes. An interview with René Clemencic. An obituary of Otto Steinkopf.

ZEUGNISSE ALTER MUSIK XII: Uta and Rudolf Henning's 1981 calendar is now available (DM 19.80 plus postage from Uta). It is illustrated with drawings or engravings of musicians and instruments, one for each month. Artists include Dürer, de Vos and van Cleve and Bosch (and engravers after these) and our best friend Anon, who ranges in date from 820 to 1658; the latter is the musical instrument plate from Comenius's Orbis sensualium pictus. For organological reference, 1981 is a much better year than 1980 - see Comm.262, and if you'd like 13 pictures (one extra on the cover) or a calendar, this would be well worth having.

FOMRHI Conference on Pitch and Transposition

Report by Eph Segerman

No-one thought about a report during the conference, and, as this quarterly was being put together, Jeremy suggested that the membership had a right to know what happened. All I can attempt to offer here, (except for my own contribution), is a few of the highlights that impressed me. Let us hope that the inadequacy of this account induces the contributors to offer more competent summaries of their contributions in future issues.

1) To get things started before the latecomers drifted in, I gave my contribution on transposition practices in sets of 16th century viols, which was more a commentary on and reinterpretation of a paper by Howard Brown, then a piece of independent research. I'll leave the summary till the end since what I'm writing here is what I might have said if I had the benefit of hearing the other papers first, instead of what I actually said.

2) Andrew Parrott followed with another contribution on viols. He was concerned with the pitch standard at which English music for voice and viols was performed in the early 17th century. He was trying to reconcile his conclusion that the standard was a semitone higher than modern (with a semitone leeway either way) from studies of and experience with vocal practice with the statements by Mersenne and Praetorius on English viol pitches. He showed that Mersenne's statement of " a tone lower " for the English compared to the French could be translated to refer to transposition (the English preferring to play in keys with more flats) rather than to viol tunings. Parrott then interpreted Praetorius's statement of English tunings about a half-octave higher than his own German tunings as meaning a different set of viols, with the English tenor and bass being equivalent to the German treble and tenor respectively. Praetorius further wrote that when playing by themselves, for sweetness of sound, English viol players used the same pitches as the Germans. Parrott interpreted this as meaning that English players then changed instruments, with the treble player pitching up a tenor and reading as if it were a treble, the tenor player doing the same with a bass and the bass player a double bass. As support for this hypothesis, Parrott cited Hume's calling two viols tuned a fourth apart both as 'basses'.

These interpretations differ from those given by me in Comms 37, 38, 65, 158 and 187 and from the other writers such as Bessaraboff. A proper detailed evaluation of how well each of these hypotheses fits the historical information remains yet to be made.

3) Dominic Gwynn raised some issues concerning the pitch standards of organs early in the 17th century. Unfortunately I can't recall them now.

4) Lewis Jones presented his analysis of the dimensions of 15th century keyboard instruments, including the one surviving example and a group of depictions. He assumed constant octave span on the keys to scale the depictions. This let him measure vibrating string lengths to associate with the pitch names derived from the key patterns. He then assumed the

same string stress relationship to breaking stress, and the same string properties as are accepted for later instruments. An estimate of the approximate pitch standards these instruments were tuned to was then possible. A variety of pitch standards resulted, but a standard slightly higher than modern featured prominently.

5) Nicolas Meeus presented a myriad of ideas, most of which I thought that I just about grasped at the time, but I'm not sure how accurately I can reconstruct the part that I can recall. Early musicians considered that modes with B flat and B natural were equivalent in basicness and familiarity. As a result, transposition of a mode with B natural up a 4th or down a 5th, or one with B flat up a 5th or down a 4th, was considered as a different manifestation of the same mode, equivalent to transposition of an octave. Meeus explored how some vocal repertoires of wide total written range could be compressed into a comfortable total range for the performers by judicious use of these transpositions on certain classes of composition in each repertoire. As monophonic repertoire he picked a standard collection of plainsong melodies andtransposed some modes. He also studied a book of polyphonic pieces and transposed down the pieces in 'high' clefs (i. e. those with treble or baritone clef). The expected effect was clearly present but not so dramatic as to convincingly prove that these transpositions were always routinely made. Other factors must sometimes have been involved in making the decision as to whether to transpose or not. It is also quite likely that pieces with two flats or one sharp were often transposed by a 4th or a 5th to get into one of the basic modes or keys.

6) Grant O'Brien reviewed the evidence for different pitch standards on Ruckers harpsichords. If R is the 6 voet instrument pitch standard (as on the largest virginals and the upper manual of a normal transposing double) there are instruments or manuals of instruments at a 4th and a 5th lower than R, and a tone, a 4th, a 5th, an 8^{ve} and a 9th higher than R. He argued against Ian Harwood's speculation (Early Music April 1980, p221) that R was 'organ' pitch, a 4th lower than R was 'choir' pitch and a tone higher than R was the 'one tone higher" pitches that early writers spoke of. Harwood's family was extended by instruments an octave higher than each of these. O'Brien indicated that Harwood's scheme had no place for the instruments pitched at a 5th lower than R and a 4th higher that R. He offered his own scheme for organizing these pitches into two families. The first includes a 5th lower than R, R, a 4th higher than R and an 8^{ve} higher than R. The second family is a tone higher than every member of the first family. The most-often-found pitches are R and a fifth higher than R, which would be the basic pitches for the two families. The fact that the two keyboards of a transposing double are members of different families is an advantage.

7) The last contribution was very exciting for me. Malcolm Rose reported some research on early harpsichord strings he has been doing in collaboration with a metallurgist colleague. They are in the middle of reasearch which could lead to determining the actual pitch standards that original harpsichords were tuned to if some of their original strings survive. The method is as follows:

The vibrating string length of such a string is evident from where on the harpsichord it comes from. The diameter and density of the string are not easy to measure to the required accuracy, but these measurements can be made. Therefore if the tension can somehow be measured, the actual pitch of the string can be deduced. The pitch-name of the string is written somewhere on the instrument and comparison with the actual pitch gives the pitch standard.

The trick is in the measurement of tension. It involves careful study of the way the string stretches when tension is put onto it.

At relatively low tensions any string stretches proportional to the tension. That is, add half a kilogram and it stretches a certain fraction of a millimetre, then add another half kilogram and it will stretch further that same fraction of a millimetre. In this so-called 'linear' or 'Hooke's Law' region of the relationship between tension and elongation (far away from the breaking point) the string suffers no permanent stretch, and a given tension gives the same amount of elongation regardless of it's history of tension and relaxation.

As one gets close to the breaking tension the string starts stretching further for each bit of added tension than it does at low tension, the extra bit of stretch being permanent elongation that remains when the tension is all relaxed. The crucial phenomenon here is if such a string has been given a permanent stretch by such a high tension which has subsequently been relaxed, and then one puts tension on it again, it has the low-tension Hooke's Law proportionality between tension and stretch right up to the highest tension it had previously experienced. Only at higher tension does it start acquiring more permanent stretch.

So the trick to find out what the highest tension such a string previously had is to restretch it and find out at which tension it starts to stretch more per added increment of tension than it does at all lower tensions.

For this theory to be applicable it needs to be established that on the original harpsichord the string was tuned close enough to its breaking point to have suffered permanent elongation. This Rose did by using this method to show that the tension on a piece of original string that was wrapped around the tuning pin was considerably lower than another piece of that same string taken from its vibrating part. If the original tension had been not enough to give permanent elongation, then Rose's measurement of the tension at which permanent elongation starts would be the same for both pieces of the string.

Rose and his colleague are not yet prepared to quote specific pitch standards for particular original instruments, but they hope to in several months. We all wait with bated breath. My guess is that if a harpsichord was an 18th century domestic instrument, it would be at a standard rather lower than today's a' = 415 "baroque" standard.

1) My contribution should have started by discussing why instrumentalists would have transposed. Probable reasons include: to play with other instruments on a different pitch standard, to play in a range that is more comfortable or has a more appropriate tone quality (or quantity) for the occasion, or to play in a key that is more (or possibly less) comfortable or resonant or in tune. Transposition can be accomplished by several mechanisms: The music can be transposed (so one reads different notes that those written) using normal fingering. A different way is to read the music as written, but to finger the notes in different positions based on an alternative assumption of the instrument's tuning. Another way is to read as if one is playing one instrument of a family but actually play on another tuned to a different pitch level. A special technique for transposing upwards available on fretted instruments involves putting the index finger across all of the strings at the appropriate fret and pretending it is the nut; one then uses theother fingers to play the music as written while maintaining one's usual tuning assumption. I shall call these the 'music', 'fingering', 'instrument-substitution' and 'barré' methods of transposition.

The most widespread practice for transposing part music was transposing a fifth by clef substitution. Let us list the commonly-used clefs with letters for the clef types and numbers for the line of the stave (counting from the bottom); G2, C2, C4, F4, C1, C3, F3, G2.* To transpose down a fifth, replace whatever clef the part is written in by the one on the right and add a flat or subtract a sharp. To transpose up a fifth replace the clef by the one on the left and subtract a flat or add a sharp. It seems that transposing down was much more common than transposing up.

Transposing the music a fourth instead of a fifth can have the advantage of getting into a better key or avoiding a bad key. It can be accomplished by transposing a fifth in the opposite direction and then back an octave. Transposing an octave is more straightforward on some types of instruments than others, and if the player was more comfortable transposing in one direction than the other, transposing the music a fourth in the desired direction could become difficult.

And now to my main topic, viols in the second quarter of the 16th century, and specifically the tutors by Gerle and Ganassi. These authors deal primarily with viols tuned in the usual way (i.e. in fourths with a third between the 3rd and 4th strings).

Gerle assumed low tunings for his viols, with the first (highest) string of the treble being a', the tenor and alto d', and the bass a. The music he played lay high on his instruments, often going to the highest

* Other clefs, occasionally used, are equivalent to these by the relationships C(n) = G(n+2), F(n) = C(n+2) and G(n) = F(n+3).

fret on the highest string. He so rarely had occasion to use a 6th string that he preferred 5 strings on his instruments. Occasionally he found that the music went past his frets on the highest string and transposition down was appropriate. I presume that he decided between a 4th and a 5th on the basis of which led to the more comfortable final key. Down a 5th would be by simple clef substitution and so needed no discussion. Down a 4th was not so simple by music transposition, so he presented tables for accomplishing this by fingering transposition. These tables give viol-tuning assumptions a 4th higher than his normal.

Ganassi normally assumed tunings with the first string of the treble being d'', the tenor and alto being g' and the bass d'. These tunings are identical to the ones assumed by Gerle to transpose music down a 4th. The music Ganassi played lay lower on his instruments so all 6 strings were retained.

For each viol in the family, Ganassi presented fingering charts for different keys (he called such a chart for such a key an 'ordine'). The first ordine was for when the key has no flats or sharps, the second for one flat and the third for two flats. The first two ordines assume the normal tunings but the third (which he called 'musica ficta') involves a fingering transposition up a tone (from 2 flats to zero flats) by assuming the viols were tuned a tone lower. He wrote that the transposition was for easier fingering. The effect is to include an open string in the scale, and this will ease fingering primarily on fast scale passages and in graces involving the open string.

Ganassi also gave fingering tables for viols tuned with different pitch relationships to one another in the set. He called such a tuning relationship an 'incordatura'. The first incordatura was the normal one discussed above. The second was the same but with the tenor and alto first string at a'. The third incordatura was the same as the first but the treble first string was c''. Since the treble part was particularly prominent and c'' tuning leaves an open string not in the key in the first and third ordines, he presented an alternative set of assumed tunings for the third incordatura which shifts this burden to the bass viol in these ordines. In this alternative set the second and third ordines are the same as the first and second of the original set. But the first ordine involves a fingering transposition with the assumed tunings one tone higher than in the original set. This makes the bass first string e'.

Ganassi indicated that if viols were not properly matched for his standard incordatura, they could be adjusted by shifting the bridge towards or away from the tailpiece and/or changing the string thickness. I presume that the purpose of the other incordaturas was to make the set viable when the above remedies were not good enough. The second incordatura would then be for when the tenor was too small and the third for when the treble was too big.

There was also a fourth set of viol tunings that Ganassi stated was used by most people. The three viols of the set had assumed tunings a 4th lower than his favorite tuning (the first incordatura). These are the same tunings as Gerle assumed. Yet Ganassi called them the 'fourth higher' tunings. This is probably because if one played the same music it would finger a 4th higher on each instrument than if his first incordatura was used. And if the sizes and real physical pitches of the viols being played

in the two incordaturas were essentially the same, which is most likely, then this music would sound a 4th higher.

I want to note two other points concerning transposition discussed by Ganassi. When one's treble strings are broken and one has run out of replacements, he offered different tunings (and, of course, wrote fingering tables for them) to best exploit the remaining strings. To bring the music down to the range the instruments now had, he outlined the method of music transposition a fifth by clef substitution. Another problem a player might face is having to play with others who are playing at a pitch standard one or two semitones higher than his own. He recommended and described the barré method of transposition.

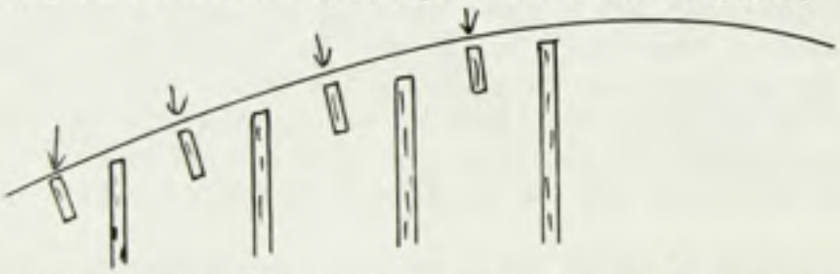
A good time was had by all. I'll repeat my request that the other contributors write more authentic reports of their stories than this very secondary source offers.

FoNRHI Comm. 300

LUTE SOUNDBOARDS - HOW WERE THEY FITTED?

Bill Samson

All lute makers, I am sure, must have seen the little bits of bar material glued to the underside of the soundboard of most old lutes, between the bar ends, and pondered their function:

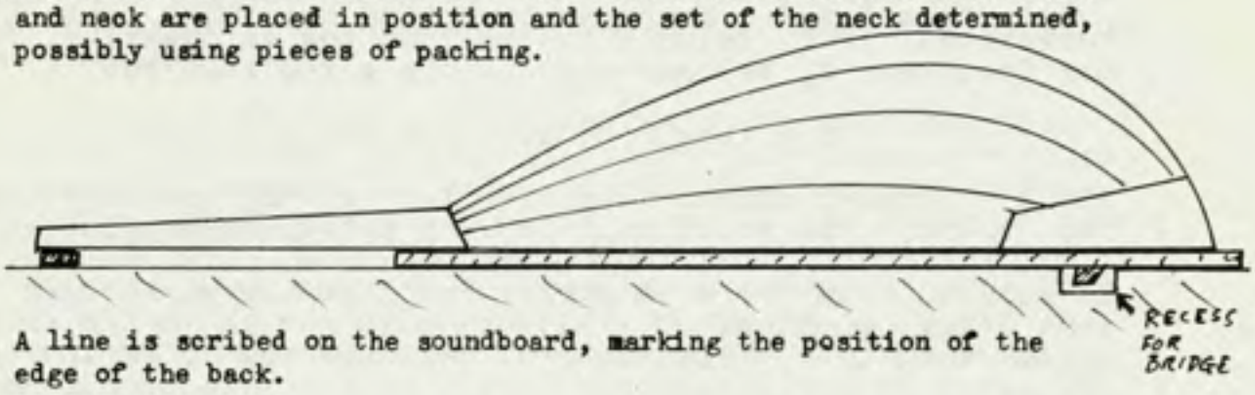


Accoustically, I would guess their effect is negligible. Structurally, they might inhibit splitting of the soundboard edge - important when there is a half-depth edging strip around the soundboard. I have another hypothesis about their function:-

When the soundboard is glued on, the set of the neck is fixed, and with it the action of the lute. It is important then, especially with hot glue, that the soundboard goes on right first time. I suggest that the old makers followed the steps outlined below:

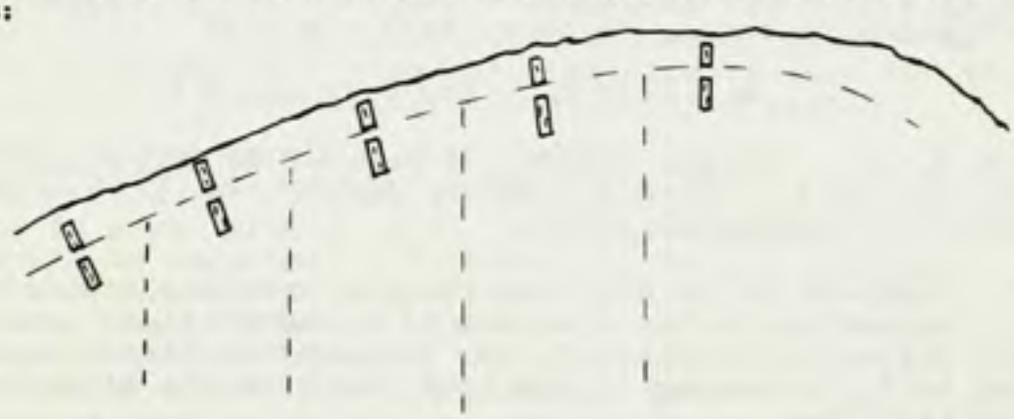
1. The soundboard is planed to thickness, the rose cut and the bridge glued on.

2. With the oversized soundboard laid face down on the bench the back and neck are placed in position and the set of the neck determined, possibly using pieces of packing.



A line is scribed on the soundboard, marking the position of the edge of the back.

3. The bar positions are scribed on the soundboard then little blocks are glued inside and outside the scribed outline to fix the position if the edge of the back. These blocks are positioned between the bar ends:



4. The soundboard is temporarily fixed in position and the action checked.

5. When the action checks out, the soundboard is barred, then glued on and finally trimmed.

This is, of course, only a suggestion as to the origin of these bars and I keep an open mind on the subject. I hope that other makers will communicate their views on the function of these enigmatic little bars.

CLASSIFICATION SYSTEM OF THE PITCHES
WITH VARIOUS ABSOLUTE HEIGHT.

We would like to consider certain features of I2-degree equal tempered tone rows. The tone row is organised in such way that if f_o -the frequency of one tone is known, then f_n -the frequency of any other tone is equal to

$$f_n = f_o \cdot 2^{\frac{n}{12}} \qquad (I)$$

where n - any integer number. If $n > 0$, then $f_n > f_o$ and if $n < 0$, then $f_n < f_o$. Hence an important condition could be formulated: if f_x belongs to the tone row in question, then any frequency f_y belongs also to the given tone row, if

$$n = (\log f_x - \log f_y) / \log 2^{\frac{1}{12}}$$

and n - integer number, positive for $f_x > f_y$ and negative for $f_x < f_y$. We would call it as <u>n integrity condition.</u>

It follows from the n integrity condition in particular that height position of arbitrary tone row is so far determined, that if f_x frequency of one tone row so refers to f_y frequency of other tone row that n is not integer number, then both these tone rows cann't occupy one and the same height position.

If f_x frequency belonging to one tone row so refers to f_y frequency belonging to other tone row that

$$m = (\log f_x - \log f_y) / \log 2^{\frac{1}{12}}$$

and m - not integer number, than m always may be represented as $m = n + i$, where n -integer number and $|i| < I$. We would call i as <u>frequency shift</u>.

The frequencies in any tone row can have any positive values corresponding to the equation (I). Hence in one tone row the value of frequency f_x can be always selected so corelated to f_y belonging to the tone row with the other height position that

$$m = (\log f_x - \log f_y) / \log 2^{\frac{1}{12}} \text{ and } |m| < I$$

In other words the frequency shift of two tone rows with different height position couldn't be more than half tone (always $|i| < I$). (*)

(*) This statement is true only in the case if it is determined to which tone row the shift is evaluated. Otherwise $|i| < 1/2$.

The circumstances considered permit to base the classification system of the pitches with various absolute height. The musical pitch is the tone row whose degrees have note denominations. From the point of view of n integrity condition fulfilment the pitches can be divided into those for which this condition is implemented and those for which n is not integer.

The first of them belong to common tone row, i.e. they enter the common class by the relationship indication. The relationship degrees inside the class are determined by semitones number, by which the height position of the classified pitches disperse. As a matter of fact the differences between such pitches is reduced to the differences in tone denominations.

If with respect to the given tone row for some pitch the integrity condition of n is not fulfilled, then this pitch can be attributed to the other class. Thus the non-fulfilment of n integrity condition can serve as the index of classification difference. For such pitch always the tone row can be find with respect to which the n integrity condition would be fulfilled. And so it will represent the class in which the given pitch enters according the relationship indication.

If the relationship degrees could be distinguished inside the class, then the establishment of classification difference has a categorical character. The difference with infinitesimal frequency shift is the difference to the same extent as that with the frequency shift of any other value. The value of frequency shift has the significance only for the determination of order in the classification system.

It has been shown above that i couldn't exceed I. In other words the different classes of relationship are determined in value interval from 0 to I. Strictly speaking the tone rows should be regarded as different by height position always, when the shift is not equal to zero, i.e. there could be as much different classes as one wishes. On the other hand, the more classes, the more inconvenient is the classification system for utilization. Therefore it is useful to determine such value of frequency shift by which the classes may be approximately considered as distinguishing.

At present I do not see foundations for the strict determination of the magnitude of such elemental classification frequency shift. Instead the estimation of such degree of inaccuracy can be used, which is considered admittable in music playing and instrumentbuilding.

I can illustrate this by examples. The major third in just pitch differs from that equally tempered by I4 cents. The

corresponding difference for minor thirds comprises I6 cents. When air temperature changes by 5 C - quite real situation - the pitch of organ labiale pipes changes by I5 cents. Modern flute of Boehm's system is regarded as well tuned instrument, if the deviation of its tones frequencies from pitch frequencies does not exceed 20 cents (see e.g. John W.Coltman, Acoustics of the flute, in Phisics today, vol.2I, II, p.25-32). Early woodwinds for utilizations in different by height pitches managed with five unterchangeable middle parts for semitone - i.e. the same 20 cents pro middle part. I do not speak now about the change of stringed instruments pitch in connection with alterations of air temperature or about those great number of accidents and carelessnesses which are inevitable in the play of large symphonic orchestra - even if the most classy one.

Basing on this it can be admitted that in the pitches classification by absolute height the frequency shift, whose value is less than I0 cents, can be considered as insignificant. Thus the system discerns I0 classes. It is useful to organize the system in such way that its zero class would contain the frequency of 440 cps in it. It will give a possibility to compare the classification ranks of the system with psychological categories developed in conditions of real musical practice of contemporary investigator.

In order to determine the position in the classification system of the absolute height value (A=x) of whetever pitch, the logarithm of A first octave tone frequency of this pitch by the base of I,059463 should be found (for this it is sufficient the decimal logarithm of this frequency to multiply by 39,86319). I02,37646 should be substracted from the found value (this operation is conditioned by the above cited requirement to organize the system so as the frequency of 440cps would enter the zero class; the substracted value represents by itself the logarithm of 369,994 cps frequency by the base of I,059463). The result should be approximated to the first decimal sign (since the precision level of I0 cents has been assumed). The result in form of characteristic and mantissa with one decimal sign is the pitch classification index. The value of mantissa (from 0,0 to 0,9) determines the belonging to one of ten system classes, while the characteristic value indicates the pitch position in the class. ( )

I am sure that no doubts will arise in the reader as to the usefullness of pitch classification by height position, though I entirely assume that the better systems, than that described here, could be devised. Realizing how much such classifications are necessary, I hope that the discussion of present papper will be fruitful. In conclusion I want to cite the examples showing some advantages represented by the system utilization.

We would like to picture a woodwind about which it is impossible to say, when and where it has been made or in what tone was it determined (in C, or in D, or in E etc). If the frequencies of its tones are known, then there couldn't be less than 7 answers about absolute height of its pitch, depending in what tone of the scale it is determined. Nevertheless these data permit to establish simply the class of system to which this instrument belongs by pitch height position.

It is expedient to indicate the index of instrument pitch in museum or trade catalogues. It would allow, for example, to decide easily the problem concerning the suitability of the instruments for joint playing and immediately to represent the transposition necessary for this. The establishment of pitch belonging of several historical instruments to one class, for example, permits to base a number of suppositions which are often so necessary for attributions and other similar investigations. It is useful to put the pitch indices on the manufactured instruments and there is no necessity to enumerate all those conveniences which are represented by realization of such measure. Finally the cumbersome and uncontincing frequency data are replaced by easily observed and recognised sort of indications.

(Appendix on next page) Felix Ravdonikas

Comm. 314, continued from page 51.

pegbox. Anyway, since there are no surviving gyternes, neither Eph nor anyone else can know; that is what I mean by hypothetical.

The problems with the gitterns is mainly over the use of words. What does Eph mean by 'the end strings'? Presumably the highest and lowest, or the outermost. He refers to a 'fiddle body' without any definition of this meaning, I think, waisted, a shape that antedates the use of the bow, which fiddle usually implies (the earliest fiddles in Europe seem to have been spadeshaped), and then talks about a waist cut-out for bowing, as something distinct from giddle shaped, and then about 'the gently curved waist of the original fiddle', which, if original means what I think it means, wasn't waisted. All right, I'm nit-picking, but some nits unpicked can lead to confusion and misunderstanding.

One could go on like this elsewhere, but I don't want to take too much space. Obviously, if you are a potential customer of NRI, you want a copy of this Catalogue, but if you are into early string instruments at all (it runs up to and includes Jacobean viols and 18th century viola d'amore) the text is well worth reading. It seems a bit much to suggest that you should ask for a catalogue because it's worth reading as a book - after all it costs something to produce a 32 page booklet with stiffish covers (and a six page supllement on strings). Perhaps NRI should offer it as a Catalogue to prospective customers and ask those who just want to read it for a 50p or £1 donation, and hope most of us are honest enough to say which they are.

APPENDIX

EXAMPLES OF DIFFERENT PITCH CLASSIFICATION
(Data ~~by~~ pitches are cited by W.ELLERHORST, Handbuch der Orgelkunde. Einsiedeln 1936, p.72.)

A= cps	Pitch index	Place and time of pitch existence
415	2,0	Organ G.Silbermann, kath.Hofkirche Dresden
440	3,0	Modern world standard
494	5,0	Organ of the church St.Jacob in Hamburg 1879
zero class		
377	0,3	Low pitch of Arnold Schlick 1511
423	2,3	Händel camerton 1751
447	3,3	Pitch of Vienna Opera 1878
474	4,3	Old Englisch A-foot organs
504	5,3	High pitch of Arnold Schlick 1511
504	5,3	Mersenn's "ton de chapelle" 1636
563	7,3	Mersenn's "ton de chambre" 1636
third class		
425	2,4	Praetorius "rechte Chormass" 1619
506	5,4	Organ from Halberstadt 1361
567	7,4	Praetorius' „Kammerton" 1619
fourth class		
403	1,5	Spinett of Mersenn 1648
428	2,5	Pitch of Paris Comic Opera 1823
452	3,5	Pitch of British Army 1879
fifth class		
408	1,7	Matteson, Hamburg 1762
432	2,7	Pitch acquired by congress in Milan,1880
458	3,7	Big organ in Franciscan Cath.,Vienna
seventh class		

Classification indices, for example demonstrate indirectly, that such pitches as those of Schlick (0,3 and 5,3), of Praetorius (2,4 and 7,4), Mersenn (5,3 and 7,3) are attributed to the same classes. The characteristics indicate directly the interval which separates such pitches one from another (in first and second case it comprises 5 semitones, in third - 2 semitones). The indices reveal the interesting circumstance, that the pitches of Schlick and Mersenn belong to one class and could be mutually transposed. As for the frequency pitch designations, they cann't say themselves almost anything definite.

A Simple, Safe Method for making Pine Resin Varnish

John Duncalf &
Eph Segerman.

(devised by J. D. ; E. S. watched J. D. make it, made it himself and wrote it up)

Equipment: A reasonably powerful electric hot plate, a long extension cord to power the hotplate outdoors, a large, low-sided iron frying pan with clean iron surfaces inside (or any frying pan with a small wad of steel wool in it), a sauce pan of any material with a larger capacity than the frying pan, a metal object for stirring, a thermometer that reads up to 300° C, a funnel for filtering, a piece of lint-free, close-woven cloth to use as a filter (kitchen paper towel will do in a pinch), kitchen scales for weighing, and bottles with tight covers to keep the finished varnish in.

Materials: Pure turpentine, raw linseed oil and rosin in ratios (by weight) 5:3:anything between 8 and 20.

Method: Set up hotplate outdoors on a not-too-windy day. Weigh empty frying pan (including steel wool if used). Fill frying pan with rosin chips. Weigh frying pan with rosin. Heat frying pan and maintain it about 250° C.

The rosin melts and then gently boils off smoke. The smell is a bit chokey nearby but can be pleasant at some distance. While this is happening calculate the amount of rosin by taking the difference between the two frying-pan weights. Check every hour to see if everything is O.K. while the rosin boils down, and give it a quick stir. Then, after about six or more hours, when the rosin has been reduced to somewhere between 1/4 to 1/10 of the original amount, one will find that the rosin near the edges of the pan (not directly over the heat) becomes quite viscous and a dark, cruddy skin develops over the center of the pan so one cannot see the boiling. Stir till the contents are homogeneous and cook a bit more until this state is re-established.

Remove frying-pan from heat and weigh it. Calculate the amount of material that is left by taking the difference between this weight and that of the empty frying-pan. None of the weighings mentioned so far are really necessary. They only let you keep track of what is going on, and we don't want to let on how ridiculously simple this procedure is, do we ? Reheat to 250° C and stir. Meanwhile, weigh the empty saucepan (this is necessary).

Pour frying-pan contents (which is now the pine resin) into the saucepan. Weigh the pan again and calculate the amount of pine resin by subtracting the two weights. Multiply this amount by $2\frac{1}{2}$ and add this figure to the empty pan weight. Now add raw linseed oil to the saucepan while on the scale until it reads the result of the last addition. Put pan on hot plate and heat to as high a temperature as it will go (but don't go much over 300° C). As the linseed oil gets hot we get rather a fishy

smell, decidedly less pleasant than before. While the mixture is heating, stir and try to squash viscous blobs into smaller blobs to speed up dissolution.

After reaching final temperature, check every ten to fifteen minutes to see if the varnish (as it now is) has reached the 'pill' stage. The test is to drip a drop from the stirrer onto a cold metal surface. It cools almost instantly. Touch the top of the drop with a finger and pull away slowly. When a string between $\frac{1}{2}$ and 1 inch long can be pulled between finger and drop, the pill stage has been reached. When this happens turn off the hotplate.

When the varnish has cooled to about 100°C, weigh the pan and it's contents. Subtract the weight of the empty pan, giving the weight of varnish. Multiply the weight by 2 and add the product to the empty pan weight. While on the scales, add pure turpentine until it reads the result of the last addition. Stir, and filter into storage bottles, leaving a minimum of air space in each. Cover the bottles and then clean up the equipment with turpentine.

Using infra-red spectroscopic analysis, Reg Lawrence has found that pine resin made this way is practically identical to that made from turpentine by Fulton's method. The rest of the above method is essentially the same as Fulton's. This varnish dries faster than one made completely by Fulton's method, probably because of a little residual unconverted rosin. (Fulton's varnish can be made to dry faster by the addition of a little rosin). This varnish is finger-touch dry, ready for another coat, within about a day without ultra-violet and about an hour in an ultra-violet cabinet. Multiply by about 5 for it to be hard enough to rub down. The varnish takes one to two months after putting on to reach full strength and resistance to chipping.

The smells of making varnish this way carry a long way for a long time. Relations with neighbours may be strained by it. This is the main danger, so beware!

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1980 LIST OF MEMBERS - 2nd Supplement, as at 6th October 1980

* in left-hand margin denotes a change of address from previous lists

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* Rowan Armour-Brown, Templar Cottage, 79 Bridge End, Warwick, UK; tel: Warwick 42856.
David Blott, 4 Oxford Grove, Rhyl, Clwyd, N.Wales, UK; tel: Rhyl 36634 (harpsichd, clavichd, spinets; M,P).
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John Odom, 72 Blenheim Crescent, South Croydon, Surrey CR2 6BP, UK; tel: 01-688 4586 (harpsichd, clavichd, spinet; M,P).
* Luis Artur C.M.Esteves Pereira, R.Manuel Pinto de Sousa 266, 4760 Famalicão, Portugal.
P Mary Remnant, 15 Fernshaw Road, Chelsea, London SW10, UK; tel: 01-352 5181 (pfte, vln, rbc, fiddle, pos.orgn, med.gtr, recdr, bells, psaltry).
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* Melanie Spriggs, 44c Wickham Road, Brockley, London SE4, UK; tel: 01-692 7059 (viols, lutes; M,P).
Jonathan Swayne, Lower Rockes, Butleigh, Glastonbury, Somerset, UK; tel: 0458-50737 (flute, recorder, whistles, bagpipes; M).
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Lorraine Wood, 246 Shrewsbury Road, Forest Gate, London E7, UK; tel: 01-471 6121 (oboe; M,R,P).

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Geographical Index

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Belgium:	Guy Maclot	Austria:	Winfried Eggenweber
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(apologies to some of you - my alphabet has gone a bit haywire, but it's late at night, jm)

BUILDING LUTE BACKS WITH A FLATTENED SECTION

1. General Observations

1.1 Lute backs of flattened cross-section rather than a section based on a semi-circle seem to have appeared in the 1580s and been in vogue until the middle of the next century. I am not sure why makers should prefer this type of back, but it must have been for positive reasons as these backs are more difficult to make than those of a semi-circular cross-section. Was it dictated by accoustical reasons, practical reasons, or fashion? I have heard it said that large chitarroni and bass lute backs were flattened to make them easier to hold (particularly I would imagine for those players of similar cross-section to the instrument!) if so, why are small instruments flattened? Or was it because the smaller instruments were part of sets of instruments, or did it just become fashionable? I would welcome an analysis of the differences in the accoustical properties of the two back types by one of our members with a more detailed and scientific knowledge than myself.

1.2 However, what we do know is that flattened backs vary from 13 stave to 35 or more (refer to the series of drawings by Stephen Murphy). The great preponderance of backs with a multitude of ribs (i.e. narrow-rib type) were made of yew, but that broad rib backs were often of exotic materials, e.g. ivory, ebony, snakewood, rosewood (e.g. instruments by Sellas, Choco, etc.).

1.3 Unlike semi-circular backs where each rib is the same and is symmetrical about its centre-line, most of the ribs of a flattened-back are a different shape, varying from the symmetrical centre ribs, through a banana shape, to what is practically an 's' shape. In theory, corresponding pairs of ribs either side of the centre are of identical shape, but in practice they work out slightly differently.

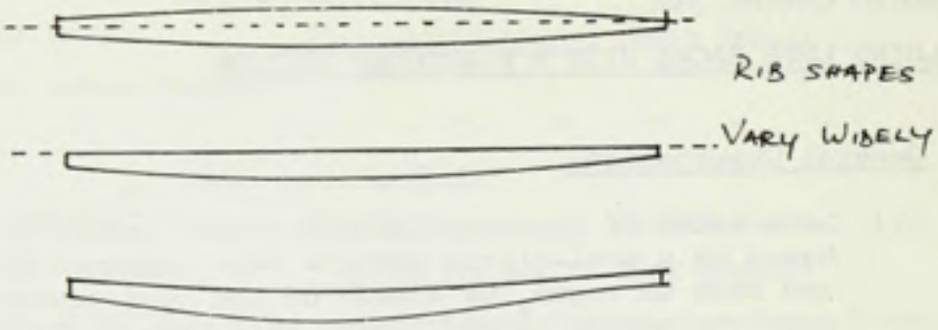
1.4 All the ribs of a semi-circular back come to a central point at each end, but the ribs of a flattened back do not, otherwise the shapes of the ribs would be extreme and it would be impossible to pull them across the mould without distortion.

2. The Mould

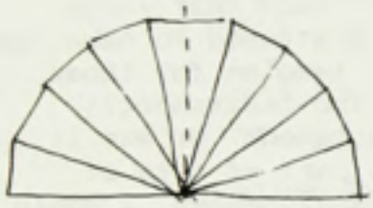
2.1 We don't know historically exactly what type of mould was used, modern makers have arrived at a variety of solutions for semi-circular backs some of which would be innappropriate for flattened backs.

continued:

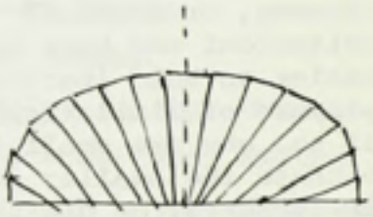
1.3.



1.4.

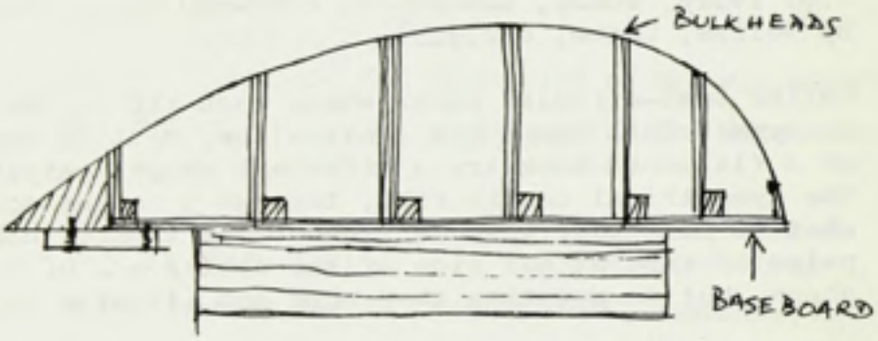


SEMI-CIRCULAR SECTION.
RIBS ARE POINTED AND
COME TOGETHER AT
CENTRAL POINT.



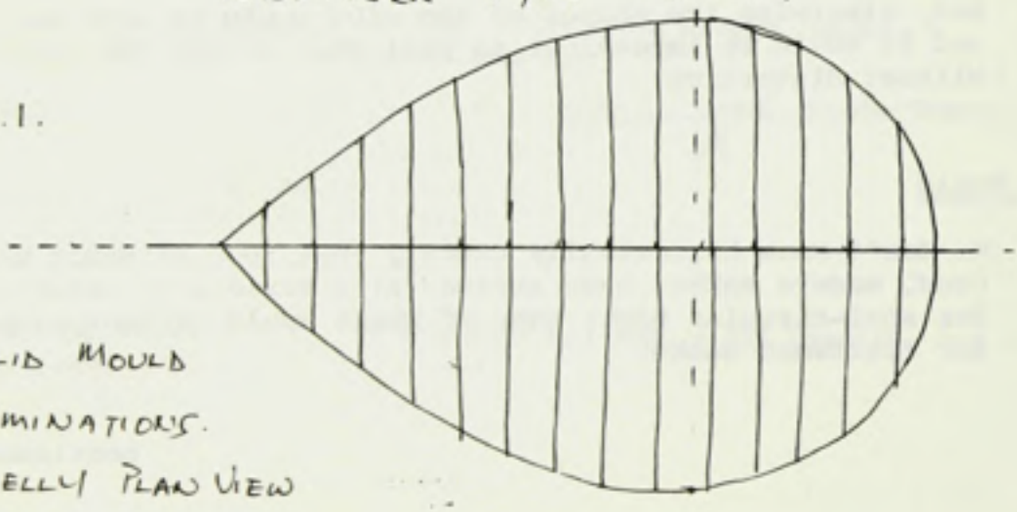
RIBS ARE NOT POINTED
AND RUN OFF PERIPHERY
OF MOULD AT EACH END.

2.2.



'TOAST-RACK' TYPE MOULD.

3.1.



SOLID MOULD
LAMINATIONS.
BELLY PLAN VIEW

2.2 The choice for a flattened back would seem to be between the solid and toast-rack types. Some makers are adamant that a solid mould is the only solution, but at least one maker I know has used the toast-rack type (i.e. a mould with a baseboard corresponding to the inside outline of the belly with bulkheads running across corresponding to cross-sections of the body). I prefer a solid mould, but let us look at the pros and cons.

2.3 With solid mould it is possible to see and judge the quality of the whole of the shape. It is easy to trace the shape of each rib direct from the mould which gives full support along the whole length of each rib. It is extremely strong and permanent. Against this must be set the time, cost, and amount of material it takes, especially if one is making a one-off instrument - then perhaps the permanency becomes unnecessary.

2.4 A toast-rack mould is easy, (depending on how elaborate it is) quick and cheap to make, gives access to the underside of the ribs, it is light and easy to remove from the finished back. Against that must be set the fact that there is not full support for the ribs - pulling the ribs tight over the mould tends to produce flats in between the bulkheads.

2.5 There are various articles and booklets on making the toast-rack type of mould so I will concentrate on the making of a solid wooden mould. One needs a light even-grained (i.e. not dense) wood which will hold a clean edge and cut easily. Yellow pine is of course excellent, lime and jelutong too are good. But I have made a mould from scrap red deal boards which has proved perfectly servicable.

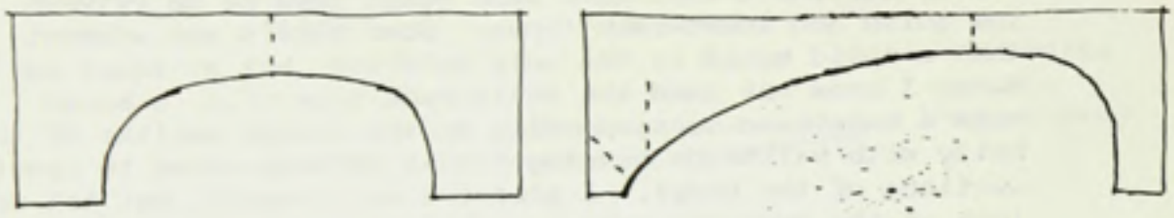
3. Making the Mould

3.1 My method was to laminate boards to run transversly in relation to the plan view. 1" boards are fine, thicker boards mean fewer laminations, but more work later shaping the mould.

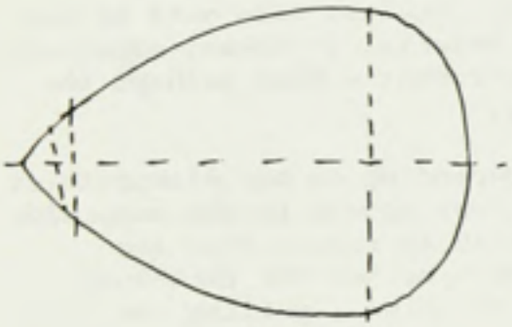
3.2 One needs transverse section, longitudinal section, and belly plan-view templates, with appropriate information marked on them, e.g. centre lines, neck-block joints, line of the greatest width of belly, etc. From the longitudinal section template, map out what height each lamination needs to be, and with reference to the plan, the length of each. Saw accordingly and glue together in groups of three or four and finally glue all together making sure that an accurate centre-line is maintained.

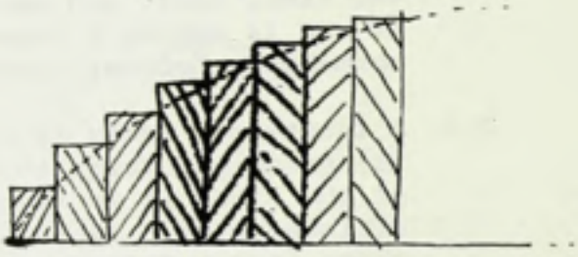
3.3 Chamfer off with a plane all of the leading edges of the laminations down to the back edge of the adjacent lamination. If this is done accurately the longitudinal shape should be nearly complete. Work down the edges of the boards in the same fashion and check with the plan template.

continued:

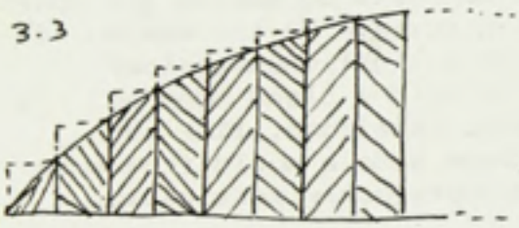


3.2 TEMPLATES.



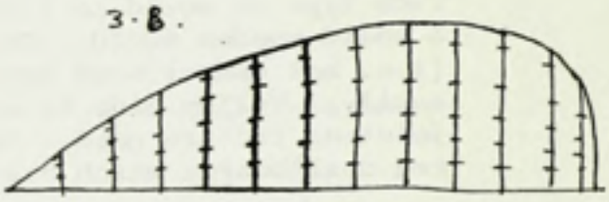


3.3



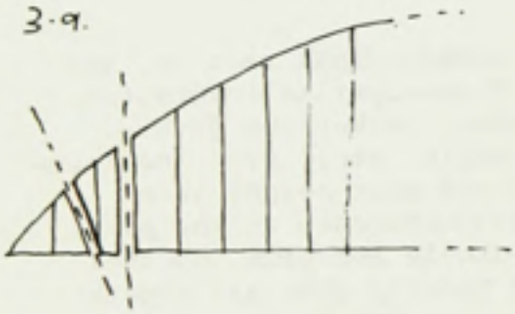
PLANE OFF CORNERS.

3.8.

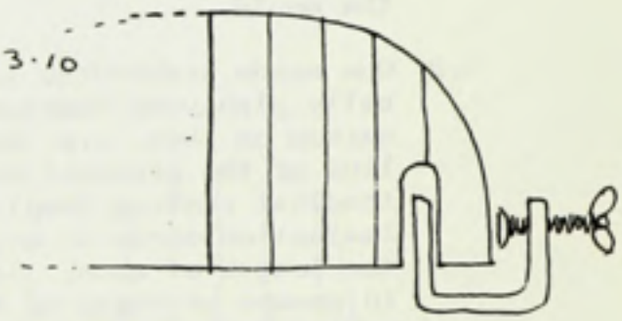


RIB WIDTHS MARKED OUT.

3.9.



3.10



3.4 Using cross-section templates, shape the whole mould to final rough shape. I have found an electric hand-planer to be very useful in removing material quickly and accurately, otherwise it is a question of judicious use of a saw, chisel and rasp.

3.5 Work over the whole mould sighting along against the light and remove high spots achieving a smooth and accurate final shape. Take time and care at this stage. Cabinet-scrape to a reasonable finish.

3.6 If thick boards have been used for the laminations it may be necessary to establish lines between the lamination lines to increase the accuracy of the rib shapes. Mark out around the lamination lines according to the number of ribs in the back. This is a finicky operation involving much adjusting of spring-bow dividers but accuracy is important. The bottom end of the mould is the more difficult to mark out and I have found it necessary to do it largely by eye. If one is working from an historical instrument then this is obviously the best guide.

3.7 On narrow-rib lutes the outermost rib on each side is considerably wider than the others so that when the edge of the back is levelled to receive the belly there is no risk of reducing the outer rib to too great an extent. Broad-rib backs do appear to have a slightly wider outer rib, e.g. on the Victoria and Albert Museum's Choco instrument, that rib is much wider at the junction of the neck-block and body.

3.8 Join up the points along each rib line as smoothly as possible making as clear a line as possible.

3.9 Some makers do not form flats on the mould for the ribs of the narrow-rib type, but it is certainly necessary for broad-rib backs. To form the flats, work from the centre-rib outwards, working the curved surface of each rib in turn with a flat-mouthed spokeshave down to a flat. Be careful to keep the spokeshave horizontally across and to cut up to the rib-lines but not over them. On the centre rib re-establish the longitudinal centre line as you go. Finish with a scraper sighting along and against the light and eliminate any lumps and bumps. Using a fine file is also effective. Some adjustment of the lines at the bottom end of the mould may be necessary to avoid a corkscrew twist along the rib. Shellac or varnish the mould all over to resist glue. But make sure all lines are very clearly marked before doing so. I suggest cutting off what would be the neck joint on the actual lute body, before cutting off the end of the mould to accommodate the neck block. This spare piece of wood can be used as a guide later on.

3.10 Check the base of the mould for level and adjust as necessary. Cut a slot underneath the bottom end of the mould concentric with the edge, deep and wide enough to accommodate small clamps and extending somewhat further round than the position of the ends of the capping-strip. Use a drill, chisel and gouge to do this.

continued:

4. Building the back

4.1 I have found that mounting the mould on some sort of universal joint helps enormously in being able to present any point on the mould to a suitable working position.

4.2 Rough-out the neck block and attach to the mould. Spokeshave the flats to run smoothly from the flats on the mould. Check centre flat with longitudinal template. The remaining flats will probably need adjusting as work proceeds on the ribs.

4.3 Trace off the centre rib - the rest can be traced too as a guide but each rib requires individual fitting, so I have found it helpful to make a fresh template for each rib as work proceeds.

4.4 Cut out rib slightly oversize, bend to shape carefully checking on the mould, then trim down to size with a block-plane either free-hand in 'mid-air' or by mounting a plane upside down flush with bench top and rubbing the rib across it. If a contrasting fillet is to be used, mark out each edge of the rib to take account of it. Half of the thickness of the fillet needs to be taken off from each side of this rib but it is adequate to take the whole thickness from the outside edge of ensuing ribs. I set spring-bow compasses to the appropriate width and using the side of the compass point as a guide I run the compasses along the edge of the rib leaving a line to plane to.

4.5 Use hot-glue to size the flat on the neck-block especially if a soft-wood has been used, as the end-grain sops up a lot of glue. When dry, glue the rib to the block and pin through the tip to secure it. Pull the rib against the mould and pin to the bottom end where the capping strip will be. I have found drawing pins (thumb-tacks) are most effective for this - the type with plastic covered heads are best.

4.6 Using the tracing of the next rib cut out a thin card template of the inside edge of the rib and pin tight and flat to the mould. Using spring-bow compasses mark line parallel to the edge of the rib. Cut along this line and re-offer the template up to check for accuracy.

4.7 Place template on prepared rib-blank and carefully and progressively score through the rib with a very sharp knife. Use the tracing to mark and cut out the outside edge of the rib leave it oversize by 1/16" - 1/8" (with practice one can be more exact about this).

4.8 Bend to fit mould - be precise about this particularly the bottom end of curve.

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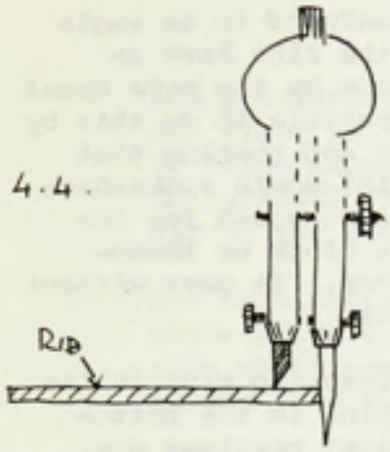
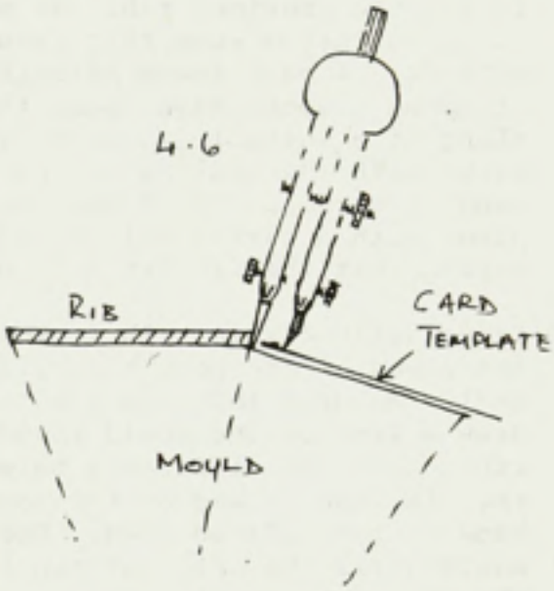
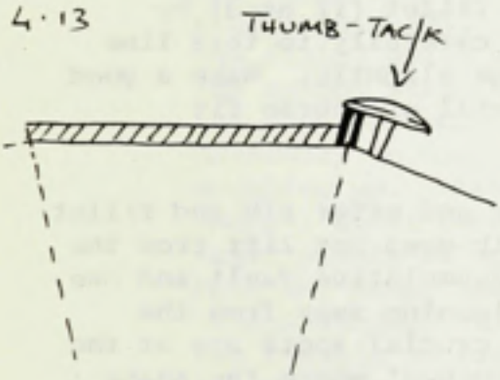
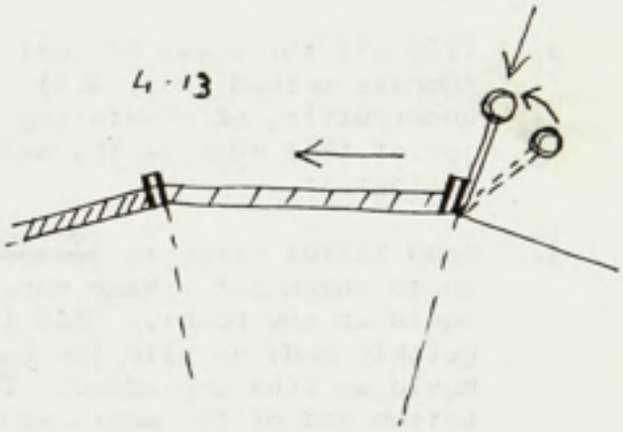
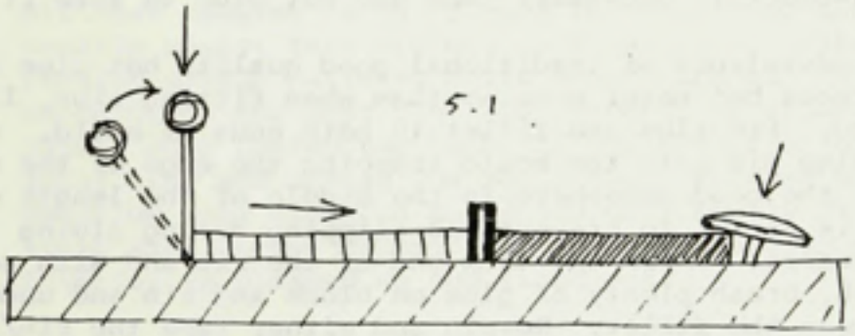

4.4.
RIB


4.6
RIB
CARD
TEMPLATE
MOULD


4.13
THUMB-TACK


4.13


5.1

4.9 The inside edge of the rib must be chamfered to an angle to fit the previous rib. As most of the ribs have an incurved inside edge this cannot be done by the more usual methods. I have found it perfectly feasible to do this by grasping a spokeshave round the middle and running that along at a suitable angle by eye, a flat-mouth spokeshave works with the shallow curves and a round-mouth for the tighter curves. But I dare say that a block or thumb-plane with a curved sole would be better. It goes without saying that the rib fit must be perfect.

4.10 Temporarily fix the rib to the mould (mapping pins in the spare-end of the neck block, drawing pins in the bottom end). Holding this new rib tight against previous one, draw a line on the mould round the outside edge of new rib. Use the difference between the line just made and the rib line marked on the mould to show how much the rib edge must be planed down. Keep checking rib against the mould until the original rib line marked is just visible when this new rib is offered up. Concentrate on getting a good smooth curve.

4.11 Trim off thickness of contrasting fillet (if used) by compass method (ref. 4.4). Plane carefully to this line undercutting or chamfering the edge slightly. Make a good job of this edge as the next rib will of course fit against it.

4.12 Bend fillet strip to ~~connect~~ correct curve and offer rib and fillet up to check fit. Make sure the rib does not lift from the mould at any point. This is an accumulative fault and one quickly ends up with the back ballooning away from the mould as ribs are added. The two crucial spots are at the bottom end of the mould and the 'corner' where the shape changes from flattened to curved. Scrape the flat on the neck-block if necessary then use hot glue to size it.

4.13 The advantages of traditional good quality hot glue are enormous but never more so than when fitting ribs, I have found. Pin ribs and fillet to both ends of mould. A drawing pin into the mould trapping the edge of the rib with the head somewhere in the middle of the length of the rib is useful to prevent rib slipping during gluing procedure. Unpin the neck end of the rib and with soft brush, brush plenty of glue on block and rib and under and between the fillet. Re-pin and either tape the rib/fillet across to the previous one, or push rib into close contact and use a mapping pin stuck in the mould bearing against the edge of the rib (the notch the pin causes will disappear subsequently, because being due to compression, hot glue will expand it when fitting next rib. The use of pins in this way has the advantage that the joint can be seen at all times and glue can be cleaned off as you work). Release the fillet from the bottom end of the mould and lift clear of the slot between the ribs. Brush glue on either side of the fillet for a length of several inches

continued:

and progressively push back into the slot, work in this way right to the bottom of the mould either taping the ribs together or using mapping pins. When the glue has set, ensure an intimate fit of rib to neck block by pressing the rib to the block with a hot iron.

4.14 Use this procedure for all of the ensuing ribs working alternatively on either side of the mould. The outermost ribs which overlap the edge of the mould will have to be pulled into contact with adhesive tape.

5. Capping Strip

5.1 Often capping strips were built up in strips of light and dark and had contrasting fillets running through them in a similar way to the ribs used in the rest of the back. I build mine up on a flat board. First shoot the edges of the strips straight. Place the first strip on paper on the board and trap the outer edge with several drawing pins (see 4.13). Have the other strip ready and glue up the fillet which is then slid into position and then press the second strip up to the fillet. Use mapping pins along the edge, or pull across with adhesive tape. It may be necessary to use a weight along the joint to prevent it buckling up. When set, scrape down to thickness (usually about 1 mm or even slightly less) and cut out to shape - leave plenty of spare along the outer edge of the strip. Bend the shape and glue to the back with cramps in the trough already cut in the mould (see 3.11). The strip can finally be pressed to contour with a heated iron and trimmed flush to mould.

5.2 All that remains is to release the back from the mould. I usually assist this process as I am building the back by running a thin pallette knife under each rib joint before sticking on the next rib. To prevent any separation of joints when taking the back off, use adhesive tape on each joint line and across the mould too. Release any screws securing neck block to mould and pull gently from capping strip end. Leave reinforcing adhesive tape in place while interior is cleaned up and lined out.

For heaven's sake, if anyone has any quicker, more accurate method please let us all know! I must thank many other makers for helping me so much and being so open-handed about their methods.

PHILIP LOURIE

FoMRHI Comm. 304 Jeremy Montagu

The Forked Shawm

Listening to the Moroccan shawm players from Jajouka (reviewed elsewhere in this Q), it seemed to me that this was an instrument that might be of interest, and perhaps of use, to FoMRHI members. Basically, taking the usual meaning of shawm as a double-reed instrument of conical bore, there are four types of shawm in the world:

1) A stepped cone made by inserting cylinders of increasing size into each other. Nazir Jairazbhoy recorded and collected a bamboo example in Orissa in India; others are known, and the Nigerian alghaita is transitional from this form to the next, being made of hand-carved wooden cones inserted into each other and covered with stitched leather to form an airtight seal. This type can be easily reproduced for experimental purposes with push-fit sections of polythene tubing; 3 or 4 inches is about the length of the Indian example, as I remember.

2) A hand-carved or burned cone, common over much of the world. I have examples from Mexico, Italy and Yugoslavia (this is either transitional to or more probably a back-formation from the 4th group) and elsewhere so for unidentified.

3) A lathe-turned cone. This is probably the commonest, found from China to Brittany, among folk instruments, and also the form most usual for art-music, again from China through India to our own renaissance instruments. Sometimes the bell is integral; sometimes it is an added metal element.

4) The subject of this Comm., an instrument that I have named the forked shawm. This is common over what might be termed the heart-land of the shawm. While the origin of the shawm goes back (as far as I have found so far) to around the 5th century BC, there is no doubt that its world-wide distribution must be credited to Islamic contact and influence. Even the name indicates this, the surna/zurna/zurla form leading to shawm, sona (Chinese), shahnai (Indian), etc, and the gaida form leading to gaita (many European areas), alghaita (Nigeria), wait (the English shawm band), etc. The forked shawm is common in North Africa, Turkey and the Balkans, the area of the Ottoman Empire.

The basic construction is a cylindrical body, from the top to below the lowest finger hole, with a conical bell, turned usually on the lathe, though occasionally (see 2 above) hand-carved. It is acoustically conical because a fork, like an old-fashioned wooden clothes peg, is inserted into the top of the bore. It seems to me that this form of the shawm, which appears simple, primitive, whatever you like, compared with either our renaissance instruments or such instruments as the Breton bombarde (due I think to our feeling that a conical bore presupposes a higher technology than a cylindrical bore) is in fact a technological advance over the instrument with a lathe-turned cone. Laurence Picken (Folk Musical Instruments of Turkey, OUP, 1975; pp.485-508) suggests that it may go back to the Middle Ages, citing a Luttrell Psalter miniature in Galpin's Old English Instruments (plate 33 i) as having a similar top. However, so does the one shawm in his own collection (his plate 41 n) which has a conical bore (X-ray on his plate 40 f) and which resembles externally those painted by Carpaccio in his picture of the Turkish ambassadors and resembles also, somewhat, Galpin's Luttrell miniature, which has a more flared bell than the one that I used in Med & Ren (my plate 38).

Thus, when I said at the beginning of this Comm. that such shawms may perhaps be of use to us, one would have to be rather cautious about using them in 14th century music - they may be right and they may not. However, they could certainly be of use to those of us who are making instruments

for modern folk use and for those who are not seeking complete authenticity (and how can they, when not one single 14th century shawm survives?) but who want a really loud instrument tuned to our scale, and therefore prefer not to go to Raymond Man, and other similar sources, and buy a Chinese instrument, good though these are.

I am not going into constructional details. Laurence Picken has already done so in copious detail, having watched them being made. Nor am I going to give measurements, since all those that I have got vary widely in all their particulars. Anybody who wishes to do so is welcome to come here and measure any of them, and alternatively can write to the Museum of Archaeology & Ethnography in Cambridge and see if they can get access yet to the large collection that Laurence Picken has deposited there. In fact most museums with ethnographic instruments are likely to have one or more, and the exact sizes are not material since any of us who make them are going to have to experiment to find the right length for a convenient key and the right finger-hole spacing for whichever of our temperaments is chosen. The only universal features of these instruments is the fork, which I will describe in some detail in a moment, since Laurence did not do so and since it is the element that makes such a shawm function, the seven finger holes and a thumb hole almost exactly equidistant between the two uppermost finger holes (also essential for over-blowing in tune), and the devil holes, a series of vents, usually seven or nine in number, with three prolonging the line of the finger holes and a pair of either two or three in line with these but 90° round the tube on each side. These vents vary considerably in diameter, in relation to the finger holes, and both determine the sounding length of the air column and have a marked effect on strength of the upper partials. The use of a pirouette, a lip-disc of bone, metal or plastic, is not universal,though it is common. What is universal, as with almost all known shawms and all cylindrical-bore, single-reed instruments outside Europe, is the use of circular breathing, breathing in through the nose while blowing out from the cheeks, sometimes called cheek-pumping, which is learned by blowing bubbles through a straw into a glass of water. In Europe, being perhaps rather lazier than other peoples, we use a bag of leather instead - the bagpipe was demonstrably invented to avoid having to learn this technique, which is trickier than it might sound because of the difficulty of maintaining the same pressure, and thus the same pitch, from cheeks and diaphragm, without noticeable changes on held notes.

The biggest problem in the use of these shawms is, as always, the reed. That used in the North African, Turkish and Balkan area, is described in great detail by Laurence Picken (pp.356-361) and is similar to, but <u>not</u> the same, as the Chinese. Both are flattened reed stems,not folded cane blades, and again experiment is going to be needed here to see whether a reed made by our usual techniques is going to be compatible with whatever size of shawm is decided on, or whether we are going to have to search for phragmites and learn how to make reeds in a new way.

Now to the fork. This is usually made of boxwood (instruments vary in their wood, often being a fruitwood such as plum or apricot). The length of the fork itself is very variable, as is the proportion of conicity from one step to the next. There is always a head (see sketch on the next page), the difference between its diameter and that of the rest of the fork being twice the thickness of the wood of the top of the bore, so that is an exact fit on the outside (or very nearly) and on the inside. There may be examples that have the fork lapped with thread to meet the inside of the bore, but I have never met one. All those that I know are simply a push-fit, and most of them are so exact that if you did not know how the instrument was constructed, you would think that this was simply a decorative ferrule; it can be quite an effort to extract the fork from a well-made instrument. Into the head fits a metal staple, usually quite

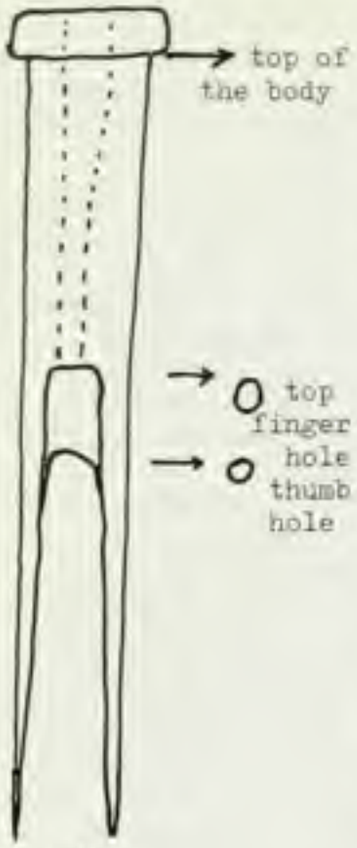


fig.1
The Fork

fig.2
Turkish
cross section

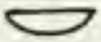


fig.3
Moroccan
cross-section

roughly made, though this of course will vary from one maker and one area to another; it is always conical. The staple seems usually to be thread lapped, though only on my Turkish instrument is it easily removable; I have not tried to remove the staple from the other instruments in my collection, since they are so firmly jammed as to suggest that they may be fixed. The Turkish instrument has a more or less conical socket for the staple, indicated with dotted lines in the figure. Apart from this conicity, the hole bored through the fork is cylindrical. It ends at the top of the forked part, exactly above the uppermost finger hole (at the arrow to the left of this line of text); the point is marked on the fork through the finger hole (Picken, p.491). Only the front half of the fork is cut away to this point; the back half is cut away in exactly the same way opposite the top of the thumb hole, at the lowest arrow in the figure. The length of the step between the two will vary, obviously, according to the spacing between the finger holes. The length and shape of the tines of the fork varies widely (see the X-rays in Picken's plate 40) even within one area; the differences between one area and the next are even wider. My Turkish shawm, for instance, has tines which taper from edge to edge, (fig.2), whereas those of my Moroccan shawm are flat on the inner side (fig.3) - obviously both taper, since the outer side is curved to fit the bore. The ends of the Moroccan one are cut of flat, whereas the ends of the Turkish one are neatly cut into points.

Thus the actual amount of conicity will vary, and with shorter forks, as in my Yugoslavian examples, vary quite considerably. However, the five stages of conicity (1, the conical staple; 2, the step between the cylindrical bore and the first cut out; 3, the step from the first to the second cut out and to a bore wider from front to back than from side to side; 4, (as in the figure but not invariable) tines tapering outwards and downwards; 4a (as in fig.2 and again not invariable) tines tapering outwards laterally and not tapering downwards; 5, the step (or sometimes as in my Turkish example, a short ramp) to the full diameter of the bore.) are sufficient to render the instrument acoustically conical, overblowing octaves, etc. It will be noticed that except for stage 1, none of these need show any conicity, and all can be sudden steps, without any adverse effect on the instrument.

It will also be noticed that a shawm made in this way needs only the most simple tools (Picken fig.49, plus fig.39), a lathe (Picken figs.37 & 38, or an electric lathe, of course), and skill. It does not require any of the reamers, simple or complex, whose source, shape and construction led to many Comms. and notes a while ago. The resulting instruments may or may not be authentic for mediaeval music (they are not authentic for renaissance music, the shawms for which have the very long body below the finger holes), but they are first rate instruments with a terrific sound when used with the reeds wholly pouched in the mouth and unrestricted by the lips, an usage which I suspect distinguishes the short mediaeval shawm (and all bagpipe chanters) from the long renaissance shawm (still to be heard in the Sardana coblas of the Catalan area of Spain, and most so-called mediaeval ensembles, and quite distinct from most true shawms, still to be heard in Morocco, Navarre, China and many other areas).

Chris Isbell

Electronic aids and their use in early music

This article is partly as a result of the reaction produced by a demonstration of some equipment given at the FoMRHI conference on pitch and transposition. This was the first public demonstration of the equipment

The reason for the demonstration was not to produce a "gee wizz this is so wonderful, I must use it" reaction, but to show people tools which might perhaps be of use to them, either in constructing accurate reproductions or in researching on original instruments. It was also to demonstrate some of the problems and limitations of the equipment and suggest how these might be overcome in the future.

The equipment demonstrated was a frequency meter and a frequency generator. The frequency meter was developed and constructed nearly three years ago and it has been in use since then. The frequency generator is still being developed. Considering the frequency meter first.

There are two main ways of producing a digital display of frequency:

1. Counting the number of cycles of the input wave over a known interval.

2. Finding the duration of an input cycle by counting the number of pulses produced by an internal high frequency generator during one input cycle.

Both methods have limitations when applied to musical instruments.

The first method will find the average frequency over the sample interval. Since the sample interval is long when accurate results are required, the process becomes very slow and also can not be used with non sustained tone instruments (eg:- plucked strings). If the instrument frequency is unstable over the sample interval then the result becomes fairly meaningless.

The second method can produce one reading per input cycle. For an input of an A at 440Hz (cycles or vibrations per second) this would mean 440 readings per second. Since the frequency of real instruments will vary (eg:- most players use some form of vibrato) the display will be changing very quickly which will make it unreadable.

Part of my work is on methods of getting round these problems and the frequency meter demonstrated is my first attempt at this. It uses the first (and easier) method, that is, counting the input cycles. If it is desired to measure a frequency to the nearest Hertz (cycle per second), the number of input cycles in one second may be counted. The reading will be within 1Hz of the correct value. (Almost all digital measuring devices produce a reading in which the last digit changes by one either side of the correct value.) A frequency meter using this timing interval will produce one reading per second and each reading will be the average frequency over the previous second. My own experience with frequency meters suggests that a one second sample rate is too long in this application. The situation is even worse if an accuracy of

0.1Hz is required. In this case the sample interval is 10 seconds. In this time the sound of most strings would have decayed to less than 1/1000th of its initial value and on some wind instruments the player would be in an advanced state of asphyxia or exhaustion.

On the frequency meter demonstrated, the input frequency is multiplied by a factor of four (ie: - raised by two octaves). This means that four readings can be made per second and the display will still be to the nearest Hertz (cycle per second). The problem is that the phase locked loop (PLL) used to multiply the frequency needs about 3/4 of a second to lock onto the input. Once it has locked then it will follow the smooth frequency changes while the instrument is tuned. The system could be changed so that it comes into lock more quickly, but then it would be less stable once it had locked.

Given a 'clean' input signal, the meter as it stands is a great improvement on the basic type of frequency meter in musical applications.

In theory the second type of frequency meter which produces one reading per input cycle should give much faster and more accurate results. It is however much more difficult to produce. This is because the raw output is not the input frequency directly, but the duration of an input cycle (the period). Since frequency (in hertz) is equal to one divided by the period (in seconds), the frequency may be calculated from the period. In practical terms this requires a micro processor (a silicon chip). This makes the system more difficult to produce at home.

A problem with any type of frequency meter for musical use is that of obtaining a clean input signal of the right amplitude (volume), and free from ambient noise. The ear perceives volume on a logarithmic basis, and can respond to sounds with a dynamic range of 1,000,000,000,000 to 1. (This is from the threshold of hearing to the threshold of pain.) The frequency meter has a limited range of input amplitudes which will produce a valid reading. The amplitude of a seemingly steady note on most instruments can vary by a considerable amount, often by a factor of three or more. (Most people can only just detect a difference in volume if the level is doubled.)

The amplifier on the frequency meter currently has a very high gain so that even a small input signal will cause it to overload. With a simple waveform the system works very well, but a complex waveform with more than two zero crossing points per cycle is no longer in the form required for the phase locked loop. There is a lot which can be done to improve the input stage to overcome this problem. The first stage is to add an automatic gain (volume) control(AGC), such as is found in many cheap cassette recorders. If the problem of wave shape still exists then some form of variable filtering will be required. It is intended to try and make the equipment easy to use. (The frequency meter currently has just two controls, one of them being the on/off switch.) I will therefore try and make any input signal conditioning automatic.

The easiest way of providing a musician with an tuner is to generate the desired frequency and let him (her) tune from that by ear. Examples of reference frequency generators

include pitch pipes and tuning forks. These are very effective for most modern musicians who only use one pitch standard and temperament. They have limitations in early music since there have been many pitch standards used in the past as well as a number of different temperaments. Tuning forks may be obtained set to a specific frequency, but this takes time and is expensive if sets are required at different pitch standards.

The frequency generator I am experimenting with overcomes many of these problems. It is almost as accurate as a tuning fork and can also produce a wide range of frequencies.(Any digital method of producing frequency will seem on specification to be less accurate, but if it is well engineered then the error will be too small to matter and the system will be more consistent.) The system works by counting a number of pulses from a very high frequency generator (one million pulses per second). When the count is equal to the value specified by the user, the count is set back to zero and starts again. This means that the system suffers from the same type of limitations as the second type of frequnncy meter described above. In this case the switch input used to select the frequency required is not set to the frequency, but is set to 500,000 divided by the frequency. Thus for an output of an A at a frequency of 220 Hertz, the switch value would be 2272. It is easy for me to get a computer generated table for any temperament I require. The best solution so far suggested is to store the information on a number of different temperaments in a small computer in the unit, and allow the user to select the temperament and the note required. Even a small computer could store many thousands of different temperaments.

Other ideas suggested at the conference included a polyphonic keyboard with selectable temperament, a frequency meter where the octave, note and temperament are selected and the meter indicates high, low or in tune. There was also a request for a system which could select a note from an instrument from a high level of background noise, for use in tuning keyboard instruments in a concert hall before and during a concert.

One reason for going to the conference was to see if my work of frequency measurement and generation would be of any use in researching or producing early musical instruments of all types. If anyone reading this feels that my work could assist them in research which they intend to publish (in FoMRHI?), then I will be only too pleased to help. Also if you have any ideas on what electronic equipment would be of most use for a particular application then I would also be interested to hear about it. All channels of communication are now open.

Laminated Soundboards for Harpsichords -- David J. Way

The original harpsichord designed by Wolfgang Zuckermann some 26 years ago was first built by him, and then marketed as a kit, using a plywood soundboard (Italian poplar from Italy). This might be called in JM's terms a 'folk' instrument--although in the context of the times it was used by symphony orchestras and the Metropolitan Opera Company. Such a soundboard did no particular harm to such an instrument, considering its primitive design--and since we no longer have laminated soundboard material, a number of these have been rebuilt with plank spruce soundboards, without a very noticeable improvement in the sound. Evidence again that design (areas, dimensions, thicknesses, shapes, etc.) is more critical to the sound of an instrument than perfection in materials (the soundboards we find in old Flemish instruments would be rejected scornfully by almost all modern builders).

For the first two editions my small Flemish harpsichord, I used a laminated board made of three layers (at right angles) of very fine 'airplane' spruce veneer. I saw one of these instruments in Paris recently and was struck again by how very good the sound can be from such a board. The harpsichord was developed in a region that enjoys relatively stable relative humidity--Western Europe. In parts of the United States and Canada, and in some other regions of the world, relative humidity varies drastically and for such regions, a laminated soundboard has much to recommend it. It does not split in the dry winters, nor does it swell so much when the dew point stays above 20 degrees C for eight or ten weeks at a time as if can do here in Southern New England.

Nevertheless, tuning stability is not one of the advantages of a laminated soundboard. Laminated wood stretches and shrinks in both directions, which plank wood (practically considered) stretches and shrinks only across the grain.Under the extreme conditions mentioned above, a plywood harpsichord case will stretch and shrink by as much as an eighth of an inch (3 mm), so you can imagine the effect on tuning stability. Since 1973 we have used only plank wood in our instruments, largely for this reason.

The sound produced by the laminated soundboard is slightly sweeter, mellower, with slightly less 'edge' to the tone. Laminated soundboards do not 'develop' (become richer and fuller in resonance) any where near as much as the plank boards do. For the first two years or so, the laminated board will perhaps sound better than a plank board--but the plank board will go on improving for many years.

Laminated boards should be inserted while their water content is rather high, so they will shrink after insertion; they give more trouble from enlarging in damp weather than from splitting (which they never do).

There are climates (ind institutions) where a laminated soundboard would better serve than a plank board. When we become sure enough of ourselves to build instruments for our own needs (as the old builders did for theirs), perhaps there will be a place for the laminated soundboard again--see Hubbard's Three centuries..., page 277.

Painting Harpsichords -- David J. Way

Once again (Comm 291) we read about the terrible necessity for many coats of paint to get a good painted surface. Analysis of the painting of old instruments shows that they used one or two coats of paint--how ever did they do it?

Of course, the old builders used glue, rather than oil varnish, to bind the pigments, and this method is still practical, not at all to be feared, but it requires experience, special working conditions, and techniques hat are not common today. Oil paints are now not at all available in many countries, and unless the pigments ground into the oil are the old earth pigments you may indeed have to use a dozen coats.But with the correct oil paints, very satisfactory results comparable to that found on old instruments can be achieved.

Preparation of the surface is more than half a good paint job. If you are using oil paint, you must use a base and filler compatible. Gesso (whiting in glue) was used by the old builders--I hate the dust of this in my nose, the pain in my sinuses. A surfacer compatible with oil paint has been developed by an American company for those wooden boat owers who want their boats to look like fibreglass. It sands easier than gesso, making a heavy dust which goes on the floor instead of into the air. We recommend stabilising the grain with a coat of wipe-on varnish, then a full coat of the surfacer--which should then be sanded down with fine dry paper (lubricated sandpaper is best), until the surface is absolutely smooth and translucent.

If the surface has been properly prepared, one coat of full-strength paint then can be applied with a good brush (forget synthetic fibers, or even Chinese bristle; you brush must at least be as fine as fitch hair), and then rubbed down with 500 lubricated paper, or 500 or 600 wet paper--and you should not have to break through the paint. If you do break through (from carelessness, or from not having 'broken' the sharp corners sufficiently, or from just job having achieved a flat enough surface with the surfacer), a slightly thinner coat of paint can be applied and again rubbed down.

Rubbing down should not eliminate the residue of very fine brush marks (as looking at old instruments will assure you). The idea is not to make the paint look like plastic, or sanitary plumbing. If this is what you want, then spray on lacquer (as so many modern builders do)--much the fastest way to go.

Your paint should not be enamel (paint made with a high-gloss varnish base). After rubbing down, you can add the amount of gloss you want by varnishing. If you have an absolutely dust-free environment, then flow on the varnish with a brush. If not, you can achieve good results with wipe-on varnish, using as many coats (and so getting as high a gloss) as you want.

Never, never apply this last varnish on top of gold leaf (except for special dulling effects). Gold leaf properly applied makes an amazingly tough finish. And I hope you will not use 'gold' radiator paint, of 'liquid' gold--better using no 'gold' at all!

All the materials described are available in kit form from any ZHI agent (The Early Music Shop in England). The painting and decoration of harpsichords is usually done badly--not only by my customers. I hope to correct the problem in some degree by making all the materials available in one package.

For those who want to study this matter to learn 'authentic' eighteenth-century practice, L'Art du peinture-doreur has recently been reprinted (Richard Rephann of the Yale Museum has borrowed my copy, so

I can't give you more than that--but any good bookseller should be able to trace it, or write Marc Ducornet--himself a distinguished harpsichord decorator--9 rue J.-J. Rousseau, 93100 Montreuil-sous-bois).

FoMPFI Comm. 308

Making Solid Bentsides for Harpsichords -- David J. Way

This is a luxury we cannot allow ourselves at ZHI, since a steam-bent plank will lose much of its curve after only a few months in the package. The reasons for preferring a solid, steam-bent plank have nothing to do with the sound of the instrument, nor with strength. But the case height of non-laminated members (cheek, spine, tail) will vary by almost 2 mm across extremes of relative humidity, causing problems at cheek-to-bentside and bentside-to-tail joints. For this reason, a plank bentside is to be preferred.

However, I think Malcolm Rose makes a very hard job of it. To soak a plank, and then wait weeks, or months, for it to dry out is surely not necessary! With that same trough he found in the junkyard he could make a steam box (such as until very recently boatbuilders always had). The source of steam can be as crude as you please, or for very little money you can buy small automatic steam generators. The object is to get the wood hot without drying it out--the natural moisture in the lumber, in the core of the lumber, which will run from 8 to 12 percent in air dried wood in England and Western Europe, will be quite enough for effective bending of most woods (boatbuilders working with oak preferred uncured wood, which held the fasteners tighter as the wood shrank in place). All that extra water from immersion is useless.

Considering the kind of joints the old Flemish builders used, I wonder if they did not steam bend their bentsides, then pop them into place, using the instrument (perhaps supported by an outside jig) itself as the 'form'. Or perhaps they used that type of joint because the bentsides were slightly underbent, and so could be popped into place. At any rate, the choice of joint is curious.

In any case, steaming, not soaking, is the way to go.

Review of: Trois chansonniers français du XVe siècle, ed. Eugénie Droz, Geneviève Thibault and Yvonne Rokseth on material originally prepared by André Pirro = Documents artistiques du XVe siècle, vol. 4 (Paris, 1927), reprint: New York, Da Capo Press, 1978, $ 25.

1927 was the year that saw the beginnings of serious study in the chanson literature of the years 1460-1480. It had recently been noticed that four of the surviving chansonniers were interrelated in all kinds of ways: three of them share a single scribe; two of them share another scribe; all four contain synoptic readings and presumably have the same ultimate provenance. Between them they contain some 250 songs with a consistency of style that could be called classical and with a spread of further concordances which show them to be fully representative of the song repertory at that time. These four manuscripts — that belonging at the time to the Marquis de Laborde (now in the Library of Congress) and those in the libraries of Dijon, Wolfenbüttel and Copenhagen — were the subject of two major publications in the same year.

The more famous of these books is Knud Jeppesen's truly extraordinary edition of the Copenhagen source, Der Kopenhagener Chansonnier. This is the smallest of the manuscripts, containing only 33 songs. Jeppesen's edition of the entire collection includes an exceptionally full listing of concordant sources for all the pieces (so far as I am aware he did not miss anything among the manuscripts that were known at the time), a detailed commentary on the music and poetry of each piece, and above all a masterly introduction which remains to this day the standard reference for any consideration of that repertory.

In the face of that terrifyingly thorough work, the contemporary French publication of Trois chansonniers must have seemed — as it still seems — somewhat lightweight. In a way its pretensions were higher. It was to be the first volume of a series planned to publish the entire repertory of the Dijon, Laborde and Wolfenbüttel chansonniers. (The editors point out in the preface that they are omitting Copenhagen because it has only four unique compositions, which they themselves have already published, and anyway their importance is minimal: I often wonder whether this comment was totally innocent or whether it was made with an awareness of Jeppesen's forthcoming book which itself contains some ungentlemanly comments about the publication of those four songs.) In the event, as often happens, circumstances changed and no further volumes of Trois chansonniers were published. Strictly, then, the title as it stands is quite misleading: it should probably be called Un chansonnier or Un demi-chansonnier for it includes only the first fifty songs in the Dijon manuscript.

But there are two reasons why the book still belongs in every serious collection concerned with medieval music. First, it contains an alphabetical concordance of all the songs in all four chansonniers. Second, about half of the songs printed have not appeared in any other publication.

Both these features are surprising. Scarcely a year passes without somebody publishing an exhaustive inventory of some fifteenth-century manuscript; but apart from a thumbnail inventory of the Laborde published when it was acquired by the Library of Congress there has been no list of the contents of any of these until a review of the recent beautiful facsimile of the Dijon manuscript (ed. Dragan Plamenac, Brooklyn, ca.1971) included

a list of its contents (Martin Picker in Journal of the American Musicological Society, xxvi, 1973, pp. 336-40). Equally, editions of fifteenth-century music published in the past thirty years are legion, but they have carefully avoided the areas mapped out in these two important volumes.

Of course there are easy explanations for this. One is that scholars are cautious of trespassing on territory so masterfully treated in Jeppesen's book; another is that the two major composers represented -- Busnoys and Ockeghem -- are the two fifteenth-century composers of substance who have, for various reasons, not yet been edited complete (and another, Hayne van Ghizeghem, was edited only in 1977).

But at the same time the almost complete neglect of those manuscripts since 1927 has resulted in some remarkable misconceptions which still turn up monthly in the scholarly literature. One is the assumption that the manuscripts are somehow related to the Burgundian court -- a matter easily disproved by noting that the minor composers (who are likely to be the significant ones for provenance) in the manuscripts are Convert, Baziron, Barbingant and Delahaye, none of whom ever had any connection with the Burgundian court, whereas minor composers in the Burgundian court such as Robert Morton, Simon le Breton, Constans van Languebroeck, Gilles Joye and Adrien Basin appear here hardly at all. To this day nobody has offered a convincing hypothesis about where these manuscripts originated.

Another misconception is the widely-held theory that the four manuscripts contain musical and textual readings markedly superior to those in other surviving manuscripts of the time. Certainly the verbal texts are often better than in other musical manuscripts, because most other sources were copied by scribes who knew little French; but several of the pure poetry manuscripts without music give significantly better readings in most cases. As concerns the musical readings, it seems to me increasingly that they are considerably poorer and less representative than those in several of the Italian manuscripts.

Yet a further misconception concerns the relative dates of these manuscripts. Jeppesen, on the basis of the look of the scribal hands, proposed a chronology that seems to me the reverse of the truth and is certainly the reverse of what is logical; yet everything else he did was so good that subsequent writers have accepted his view without question.

And then there is the music: most of it is still to be performed -- and all critics seem to agree that it is music of unusually high quality.

Quite a few reasons, then, for welcoming the reprint of Trois chansonniers, well reproduced (though without any modern introduction) on high-quality paper and handsomely bound. The 50 songs in it are sensitively edited, largely accurate, and given brief but interesting commentaries. They raise and will continue to raise many questions. And in fact, as so often happens in any field of study, one of the most famous repertories of medieval music is on closer inspection one of the most neglected.

5 October 1980

FoMRHI Comm. 310 Jeremy Montagu
(see Comms.171, 190, 210, 245, 261, 281, 298)

Review of: Will Jansen, The Bassoon, part VII.

Basically, this fascicle consists of two lists, one of tutors and allied works (fingering charts, studies, etc), the other a bibliography of works for and including bassoons (including, so far as I can see, the entire orchestral repertoire, since one category is 'bassoons with other wind instruments and strings' and another is 'bssoons with any other miscellaneous combinations', and I suppose also the entire brass and military (marching) band reprtoire).

This latter list is numerically coded, each of twenty categories (sorry - 26, six of them are either the number (eg 9 - trio for bassoon and two other wind instruments) or the number plus a P (eg 9 P, piano quartets, ie 9 plus a piano) for whether they are with or without piano. The one snag with this system lies in the standard of proof reading over the work as a whole. Thus, when we see a composer with 14 after his name, we assume that he wrote wind octets, and we hope that 14 is not a misprint for 13 (wind septets) or anything else. The categories are themselves curious. We have wind duets (also bassoon and piano, bassoon and harp but not specifically bassoon an one bowed string - there is no way of distinguishing bassoon and cello, say, from bassoon andstring chamber group or bassoon and string orchestra), wind trios, quartets, quintets, sextets, septets, octets, nonets, and decet and over; we do not have any category, except one that would also cover the symphony orchestra, for mixed wind and string (ie Schubert Octet, etc), nor do we have any distinction between types of groups of a size. This is confusing, since the earliest version of the wind octet was the quintet for 2 oboes, 2 horns, 1 bassoon (before the clarinet came into general use and when one bassoon was thought enough for the bass), and the final (up to the present) form of the wind chamber ensemble is the wind quintet, one each of flute, oboe, clarinet, horn and bassoon - both these come under 11: quintet for bassoon and four other wind instruments.

As for the lists themselves, not being a bassoonist, I have no basis on which to judge their accuracy (since they are wholly uncritical, I would doubt their usefulness save to the Guiness Book of Records) or their completeness. I have told you that they exist; perhaps I might ask Bill Waterhouse to let us know in the next issue if there is anything drastically wrong that you should be specially warned about, over and above the general warnings that have permeated this series of reviews.

FoMHHI Comm. 311 (see also Comm.280) Jeremy Montagu

Review of: Malou Haine & Ignace de Keyser, Catalogue des Instruments Sax au Musée Instrumental de Bruxelles, suivi de la liste de 400 instruments SAX conservés dans des collections publiques et privées. Musée Instrumental, Bruxelles, 1980, 280pp, 34 fig, 9 pl & 6 tabl, 122 photos. 525 Belgian francs (c.£7.50) including postage.

I have included the sub-title above, although this is notnormal practice, so as to draw your attention to this invaluable list of all the instruments by any member of the Sax family known to the authors. I would ask you, at their urgent request, to send any details you may have of any other Sax instruments to them so that the list may be made as complete as possible in future, or supplementary, editions. This list is in chronological order (I'm very grateful - it has dated my saxophone) and while it is valuable for what is in it, it is fascinating for what is not in it. There is only one known surviving metal bassoon; there are only two known saxotrombas (confirming a suspicion that in fact nobody is quite sure how a saxotromba differed from a saxhorn and therefore whether an instrument is a saxhorn or a saxotromba); there is not one of Sax's cornets with the compensating device shown in his catalogues and in Kastner's Musique Militaire; there is not one of the flutes with which it is thought that Sax anticipated Theobald Boehm. What has happened to them all? Did they even exist? It seems that we are still only at the beginning of our knowledge of Sax. We know that he patented instruments (eg the timpani with key-covered holes like an ophicleide) but I, for one, am now beginning to wonder whether he produced them. Did he, perhaps (like some of the publishers of reprints that we know), list instruments in his catalogue and then wait to see whether enough people ordered them for it to be worth while making them?

The Catalogue begins with brief biographical notices of the Sax family. There is then a detailed section on types of keys, well and clearly illustrated, with definitions and often drawings of every technical term used, and a quadrilingual dictionary (French, Dutch, German based on Sachs in the Hochschule Catalogue, and English based on Carse Musical Wind Instruments. This is followed by a similar section on valve types, again with very clear drawings. This would be a very useful first catalogue for anyone, for it shows these details as they actually are, rather than schematically as in the modern German catalogues.

This is followed by the Catalogue proper of the 69 instruments by members of the family in the Brussels Museum (the occasion for the catalogue is the special exhibition of the Sax instruments at the Centre d'Art de Rouge-Cloître from 18th August to 13th October). Each one is clearly described and almost every one (perhaps actually everyone) is photographed, some better than others (is S4 a left-handed clarinet by Charles-Joseph, or is the photo reversed?). There are also a number of detail photographs. Some of the descriptions raise queries; if an A clarinet sounds C as the lowest note, it's either an A flat clarinet or the printer lost the #. The Basson Russe by Charles-Joseph, S14, is actually a bass horn.

Adolphe Sax certainly had some right funny ideas; as well as the well-known examples such as the valve-and-key and the seven-independent-bell instruments, there is a horn with six valves side by side - how did you know which one you have a finger on? And how did you move from one note to the next without a hiatus as a finger moved from one to another? And why did his son, Adolphe-Edouard, produce a trombone that could be played by either (and perhaps both simultaneously) valves and slide?

This is a must for all brass people (the vast majority of the instruments) and for those interested in the saxophone. What is more, it is very reasonable in price for such a production with so many photographs and other pictures in these days.

FoMRHI Comm. 312 Jeremy Montagu

Review of: Charles Burney, An Account of the Musical Performances in Westminster-Abbey, Da Capo Press, New York, 1979, $29.50.

The performances were on May 26th, 27th, 29th, and June 3rd and 5th, 1784 and were designed to celebrate the 100th anniversary (as was then thought) of Handel's birth and the 25th of his death. They were designed to benefit the Fund for the Support of Decayed Musicians or their Families, one of the most generous contributors to which had been Handel himself, a Fund which still exists and is now called the Royal Society of Musicians of Great Britain. Burney published his account also for the benefit of the Fund; whether Da Capo have donated a royalty on their reprint to the Society, I don't know - it would be a wonderful gesture if they did.

The Account is fascinating. It begins with a life of Handel, some of it based on first hand knowledge, and much on second hand, for Burney knew many people who had known Handel and who had played or sung for him. It includes much interesting, and entertaining, material, among others the original version of the well-known welcome home after the overlong cadenza, assigned originally to a singer, rather than, as one often reads it, to an instrumentalist. There follows a chronological list of Handel's works and a prospectus for the first complete edition, to be published by R.Birchall in 80 volumes, which, is I think, the edition that we know as Arnold's (none of my odd volumes in that edition have a ny colophon, but Arnold was involved in the Performances and the number of volumes and the dates corresponds). There is then a description of the preparations for the Commemoration, with notes on the rarer instruments, including the Sacbut or Double Trumpet, the Double Bassoon, made by Stainsby (sic), the Flute-maker, for the coronation of his late majesty, George the Second, with the approbation of Mr.HANDEL.....forwant of a proper reed, or for some other cause...no use was made of it at that time; nor...till now. One presumes that this was the Stanesby junior instrument, now in Dublin, and that Burney was confused, for Stanesby junior can hardly have been working at the date when George II was crowned; perhaps there really were some Stanesby senior contras, and if so of course we don't know which were used in 1784. The Double-base Kettle Drums are also described, and the description of those designed by Mr.Ashbridge fits perfectly the double drums that I have. Incidentally, the sizes of sacbut mentioned by Burney are tenor, base and double base, unfortunately without any more detail - presumably these were what we would call alto, tenor and bass (G bass? F bass?) but we cannot be sure. The organ, by the ingenious Mr.Samuel Green of Islington, was erected specially for the performance, and then went to Canterbury, for which cathedral it had been designed (can one imagine today, taking the trouble to erect a cathedral organ in another church, just for four performances? the second performance was in the Pantheon, and only four were in the Abbey). The keys of communication with the harpsichord, at which the conductor sat, were extended nineteen feet from the body of the organ, and twenty feet seven inches below its manual, quite a run for trackers. This Introduction to the performances is followed by a complete list of the performers, both instrumental and vocal, full of names that we know from other sources and contexts. Then follow the programme notes for each performance, and finally the accounts of the moneys received and expended and, as an Appendix, the Laws and Resolutions of the Fund.

The Account is essential source material for anyone working either on Handel and his music or on anything to do with English musical performance in the latter part of the 18th century. Original copies do turn up, but rarely and at a high price. We must be very grateful to Da Capo for making it available again for a sum which is not negligible but which is not unreasonable today for a very well produced, strongly bound facsimile printed on good paper.

FoMRHI Comm. 313 Jeremy Montagu

Review of: William Dana Orcutt, The Stradivari Memorial, Da Capo Press, New York, 1977, $12.95.

This little book (only 49 pages) describes and illustrates (black and white only) the three violins, a viola and a cello by Antonius Stradivarius, presented by Mrs.Matthew John Whittall to the Library of Congress in Washington. This was one of the books I asked for by guesswork, and it does not represent a must for your library, unless you are specialising in Strads. It includes brief descriptions, and the most basic measurements (length, upper middle and lower bout widths, upper and lower rib heights, and string length to the nearest sixteenth of an inch) of the Betts, Ward and Castelbarco violins, the Cassavetti viola and the Castelbarco cello. The photographs are the normal auction catalogue views, front side and back. There is also an even briefer description of the Tourte bows which accompany the instruments.

The instruments are, of course, all in modern state and there is, as is usual in violin books, no indication of any realisation that they were any different from this state when they left the master's hand. The most interesting point in the book is that Orcutt is one of the few who held the key to Stradivarius's mastery, that secret over which so much ink has been spilled - he was a better maker than the others.

FoMRHI Comm. 314 Jeremy Montagu

Review of: Mabel Dolmetsch, Personal Recollections of Arnold Dolmetsch, Da Capo Press, New York, 1980, $17.50.

This is much more worth having, full of interesting details of AD by his second wife, in fact I would say essential for anyone interested in the beginnings of the Early Music Movement. There are all sorts of details I did not know of - did you know that Dolmetsch, Chickering and Busoni were the three responsible for all the modern German harpsichords? Busoni admired Dolmetsch's latest instrument, the first to be equipped with a sixteen foot register, so Chickering gave it to him (Chickering appears to have been a wonderfully generous firm, giving Dolmetsch untold help and support) and Busoni took it back to Germany.

The book is worth reading, both for the early history of our Movement and to see how much we have learned and how much our attitudes have changed, as well as how much our aims are the same as they were in the beginning.

FoMRHI Comm. 315 Jeremy Montagu

Review of: Anon (but almost certainly Ephraim Segerman) Northern Renaissance Instruments, Catalogue of Instruments

It may seem odd to review a catalogue of instruments by an instrument-making firm, but in fact, except for those who are actually queuing up to buy, the list of instruments available is the least interesting part of the catalogue. Eph (and to anyone who has read his Comms in FoMRHI, there is not in fact any doubt as to who wrote the text of the catalogue) has written introductions, sometimes quite lengthy, to each type of instrument, placing them in their historical perspective, describing their use as well as their history, and has also provided full details of the models used as the basis for those which NRI produce and the procedure by which their instruments were derived from those models. There are also notes on the materials used and why, where this arises, these are different from those used originally (sometimes the poor quality of modern material, compared with that used originally, and the availability of a slightly different

material which is in fact closer in tone quality to the original; sometimes the excessive cost of a material, when a slightly different appearance but the same working property can be obtained more reasonably; sometimes for the sake of an endangered species, in that bone will always be available in a carnivorous society, whereas ivory...). One could take issue with Eph on that point, for it could be argued that meat-eating endangers a number of human societies, in that we consume far more than our share of food in order to feed animals to feed ourselves, whereas it is necessary to cull elephants, at least to some extent, if they also are not to endanger some human societies (often the same ones as we endanger by meat-eating). There are a few reputable ivory dealers who only buy from licensed sources. See Bull.15, p.4. I wonder, too, whether the use of boxwood instead of ivory for stringing has the same vibration-barrier effect.

The section on each instrument embodies the latest position of research, or in some cases of hypothesis. References are normally given for all research material (one or two exceptions: p.7, whose ud tunings and from which period? What standards were used for scaling from iconographic sources? etc). References are given to instruments used as a model, and these could often be better. To take one example, the large theorbo or chitarrone is based on Brussels 1570. Now it may be that anybody who wants a chitarrone has been to Brussels and knows just what 1570 looks like, but for those that don't, and who discover that Mahillon did not provide an illustration for that instrument, it would be useful to say that it is fig.184 in Baines, European & American Musical Instruments (Batsford, 1966). This is particularly important in this section where terminology is totally confused and where Eph manages to confuse it further. How does one distinguish a theorbo from an archlute from a chitarrone? Alright, maybe one doesn't, but there are two quite distinct instruments and it would do no harm to put in brackets, for one (PRaetorius: Roman theorbo) and for the other (Praetorius: Paduan theorbo) even if Praetorius's distinctions between the one city and the other are as hypothetical as those of Curt Sachs for mandolines (see Real-lexikon der Musikinstrumene). We would be no wiser as to what they used in Rome or Padua, but at least we would know which instrument Eph was writing about without having to pull museum catalogues off the shelf.

The two sections that I felt most uncomfortable with were those on the mediaeval guitar ('gyterne') and the renaissance guitar ('gittern'). The former is much more hypothetical than other sections. The gyterne, Eph says, had a round back. How do we know? All the iconographic evidence is frontal or slightly oblique. The latter suggest that the ribs were n ot vertical to the soundboard, but to say 'round' is carrying what little evidence there is much too far. Laurie Wright has a good deal of evidence on instrument backs from carvings, and since this is as yet unpublished, one should only say that, if the carvings are realistic, it would appear that instruments which seem the same shape from in front can have a variety of shapes of back. I would also say that there would seem to be very little, if any evidence, for backs that were round 'similar to that of the....lute'. I would also doubt Eph's statement that the back, neck and pegbox were usually carved from the same piece of wood. For one thing, it is and can only be hypothesis (very probable, but still only hypothesis) that the back was carved out from the solid - if the back were a plate separate from the ribs it would be almost impossible for it to be the same piece of wood as the neck. Since the pegbox is often (usually? anyway, certainly on the one that NRI use as their model) sickle shaped, it would seem structurally unsound, as well as grossly extravagant in wood, for it to be the same piece of wood as the neck, for if, as is likely, the grain runs along the neck, there would be a natural cleavage plane exactly at the point most under stress, the 'joint' between neck and

Continued on page 21.

NoMRHI Comm. 316 Jeremy Montagu

Concert review of: The Master Musicians of Jajouka at the Commonwealth Institute, London, 22-26 September.

Anyone who wants to know what a mediaeval shawm band sounded like should have gone to the Commonwealth Institute to hear these musicians from the Rif Mountains of Morocco. They were advertised as revealing an age-old tradition, but their instruments were the normal modern folk instruments of the area. What was incredibly exciting was the sound of eight shawms in unison, sometimes dividing so as to have four or six againdt a drone or to play in call-and-response counterpoint. Inside the Institute's concert hall, the sound was shattering, as one would expect, with resultants building up inside the ears. It must have been pretty powerful outdoors as well (Melanie Spriggs, who was also in the audience the night I was there and who heard them in Glastonbury, said that it was), and when one thinks of the architecture of a mediaeval town, with narrow streets and overhanging houses, the impact there must have been nearly as great as in the Institute when the town watch was on its rounds.

Some of the music the ensemble played was a bit tatty and seemed, despite the 'age-old tradition', designed to appeal to the tourist and the Western audience, but much is of a high standard, as is much of the playing. I bought a cassette they were selling there, and Melanie recommends a record (Brian Jones presents the 'Pipes of Pan', EMI ESS-63009), and if you get a chance to hear either the ensemble or the record, seize the opportunity. They are the biggest group of shawms I've come across (most Indian shanai and nagara gate ensembles are smaller) and, while pictures of mediaeval groups in Europe seem usually to include tenors and either basses or sackbuts, I have a suspicion that these may have been mainly city or court groups and that smaller towns may often have consisted only of trebles like these, and that this may have been what a Conductus or an Estampie often sounded like. After all, plenty of our 13th or 14th century music consists of one line that would go equally well by itself, against a drone, or in call-and-response, perhaps with one group playing the ouvert line and the other the clos. One interesting point was that the drone was often a super-drone, above the melody. Has anyone tried this? It can be much more exciting than the usual sub-drone, below.

The instruments were the usual Moroccan shawms (see separate Comm. in this issue if there's room for it), about the size of the one being blown for the dance from Constantinople in the Luttrell Psalter (f.164v - plate 38 in my Med & Ren) or Cántigas J.b.2, f.350 (my plate 31) but with flared bells, not the bulb bell of the Cántigas. They had a large bone pirouette and, like all shawm players (how many of our players use this technique today?) they used circular or continuous breathing so that the drone, and the melodic line except where they wanted it to, was never interrupted. Other instruments included drums (rope tensioned with counter-hoops and clearly copied from European side drums) played in the 'Turkish music' manner, with one heavy beater on one head and a light stick on the other; frame drum and tambourine (ie one frame drum without jingles and one with); narrow goblet drums (again like the Cántigas); bamboo duct flutes, stopped at the lower end, using the lowest finger hole as a constricted end (see Rainer Weber in GSJ 29 on the Dordrecht recorder for a suggestion that the constricted end was used in the Middle Ages in Europe); gimbri, a three-string gittern (Laurie Wright's terminology) with a rounded back carved from the solid, plucked with a long flexible plectrum as in so many mediaeval illustrations; violin, apparently a cheap Mittenwald type instrument, played on the top two strings only, held downwards like a viol and bowed underhand, in other words a cheap and accessible substitute for the traditional rebab. Unlike some of us, few ethnic groups seem to worry too much about the authenticity of their instruments, provided that they can play the right music on them. In sum, a group to be heard.