Cockatrice

Cockatrice drawn by THL Brian dorcha ua Conaill. This is the winning image in the Cockatrice Cover Art Contest. Congratulations!

January AS 47

Table of Contents

Articles

Columns

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	p. 10 Joanna Keenan
	p. 18 Nicholas Sheppard ©2013, Used with permission
	p. 28 Ben Paton ©2013, Used with permission
	p. 31 Vanessa Robb ©2013, Used with permission
	p..35 Scott Campbell ©2013, Used with permission

From the Kingdom Minister of Arts and Science

Welcome to Cockatrice, the Arts and Sciences Newsletter for the Kingdom of Lochac. Contained herein is knowledge from throughout the kingdom. These articles share the joy and knowledge people have for their various arts. The publishing of the Cockatrice relies upon the populace of Lochac sharing their joy and knowledge! Are you a group A&S officer who has noticed a particularly well written bit of Documentation? Encourage the person to submit to this newsletter. Have you noticed someone sharing their love of a particular art form to your group? Encourage them to write something up for Cockatrice so that they may share with the Kingdom. Articles written in the Cockatrice have inspired me in the past, let the Cockatrice inspire you!

Duenna Catalina de Gata

KMoAS Lochac

From the Editor

Welcome to the first edition of the new Cockatrice! I hope you enjoy reading it as much as I have enjoyed putting it together. I also hope you find something that inspires you either to try something new or to write an article for Cockatrice yourself! I am starting to seriously think Pictish clothing looks like fun.

Thank you to those who submitted articles and entered the Cockatrice cover contest. The judges and I had a wonderful range of Cockatrices to choose from and you will see some of them in later editions of the magazine. Thanks also go to my editing team who did a great job of checking over articles at relatively short notice. I must also say a big thanks to Lady Leonor, who as Deputy Editor has spent much time working on the fine details of editing and formatting.

My greatest hope is that Cockatrice can become a place for regular Arts and Science inspiration. This does of course depend upon you! For Lochac to have a quarterly A&S periodical we must have the content to support this. It is up to **you** now to send me in your contributions so we can maintain this very valuable resource for the Kingdom. For more information about submissions see the FAQ at the end of the edition or feel free to email me about your contributions at: elisabettafoscari@gmail.com.

En Servicio

Elisabetta Foscari

Introduction to Pictish Clothing as Depicted on Pictish Symbol Stones

- *Drusticc inigena Eddarrnonn*

The people known as the Picts flourished in the period between c. 400 and c. 850 CE in the place known today as northern Scotland. Living to the south of the Picts were Saxons and the early Welsh, to the west were Gaels or Scots, and Vikings appeared in the area a bit later on.

The Picts' most enduring legacy is the standing stones known as Pictish symbol stones. These stones are probably our best extant source for information on Pictish clothing, due to the severe shortage of information from other more usual sources. Archaeological finds of clothing have been disappointingly uncommon, mostly because Picts didn't often bury their dead with rich grave goods, and weren't in the habit of leaving lots of stuff in bogs. Descriptions of clothing in contemporary literature are usually vague, and Roman sources like to portray Picts as woad-covered savages. Use of woad by later Picts is not well supported by the evidence we have, instead Picts on symbol stones are usually dressed quite sensibly for the northern climate, even in battle scenes.

Depictions of people on Pictish stones are usually of men in various activities of daily life, and the people shown are often clerics. Women are rarely shown and children not at all. Despite these limitations, garments that we can make out on the stones include tunics and dresses, assorted cloaks and hoods, short jackets, short trousers, and a kind of long robe that opened at the front.

It is likely that Pictish clothing was made mostly from materials such as wool and linen, together with furs and hides for people who could obtain them. Silk would have been used sparingly by only the richest of people. For further information on techniques of construction for Pictish clothing, see the articles by Henshall and Wood listed in the Further Reading section, featuring the Orkney Hood – the only example of actual Pictish clothing that still survives.

Figure 1

The best example of female dress on a Pictish stone is shown in Figure 1. The woman shown is sitting side-saddle on a horse while hunting, and appears to be wearing a striped garment that opens at the centre front. It is fastened on the chest with a large penannular brooch, which may have been exaggerated in size by the artist who carved the stone, to emphasize its importance. The woman's robe has fallen open below her waist, revealing that she is wearing a long dress underneath that is not striped. Both the robe and dress reach to her ankles. It's not possible to see how long her sleeves are, but judging from the visible stripes they reach at least to her elbows. Her hair is hanging loosely and isn't covered by any visible headdress.

Figure 2

Men appear to have worn a variety of tunics. Figures 2 to 5 show them worn both belted at the waist and unbelted. Some reach to just above the knee, while others are ankle-length. Figure 2 shows a procession of men leading a bull. All the men have long ankle-length tunics that flare out at the bottom, but no side gores are shown to account for this. If they did in fact have gores, the person carving the stone may have omitted them for some reason. The tunic in Figure 3 is short and simple without side gores, but the one in Figure 4 has double gores on each side, even though the tunic is probably only knee-length. Figure 5 shows long tunics with gores of differing sizes, one of which probably reaches to the armpit. A variety of side gore arrangements appear to have been used by Picts, depending on the style of the tunic. Note the carefully executed hem decorations in Figures 4 and 5, including the use of fringing.

Figure 3

Figure 4

Figure 5

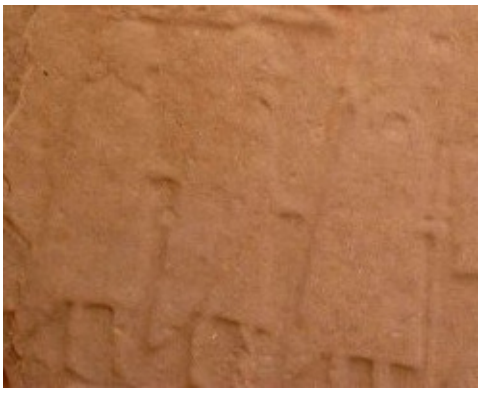


Figure 6

Figure 7

Figure 8

The Picts used several different styles of cloaks and hoods; these can be grouped into two main types. The first group contains short hood-like garments that cover the head, shoulders and upper torso, as worn by the hunter in Figure 9. For an extant example of this style, refer to the Orkney Hood articles by Henshall and Wood listed in Further Reading. The second group includes long cloaks that open at the centre front and cover much of the body. Those in Figure 6 are thrown back from the front of the body to trail behind. The clerics in Figure 7 wear all-enveloping cloaks with pointed hoods. The bottom cleric in Figure 10 wears a short version of this cloak style, together with short trousers. In Figure 8 the cleric on the right has pulled his striped cloak across the front of his body. His friend on the left wears a striped cloak with a square neckline. The garment probably doesn't open but covers his upper body similar to a poncho. The two upper clerics in Figure 10, who are both barefoot, both wear long tunics and cloaks, one striped and one plain. The right-hand man's cloak has bottom corners at the front, whereas the cloak worn by the cleric on the left has been cut with a curved hemline. For another example of fabric being cut on a curve, see the Orkney Hood.

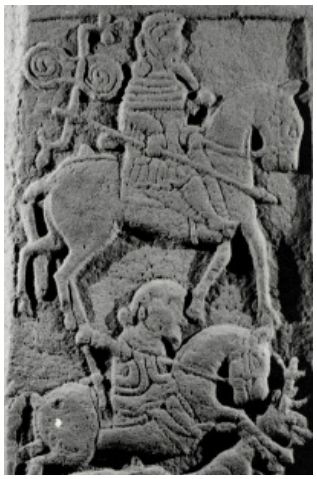
Figure 9

Figure 10

Figure 11

Figure 12

Figure 13



There are a few other articles of clothing that should also be mentioned. As well as the short trousers shown in Figure 10, Figure 11 shows some short trousers in closer detail. They reach to just above the knee and are reasonably close fitting. The horseman in Figure 12 and the lower hunter in Figure 13 are both wearing short jackets that reach approximately to the waist. Close fitting caps are worn by a horseman in Figure 14 and by a woman in combination with her cloak in Figure 15. The clerics in Figure 16 seem to be wearing an extra layer between their tunics and cloaks, all of the garments heavily striped. The centre person also has a circular pouch hanging from his belt at the front of his body.

The cleric in Figure 17 has a tunic with elaborate hem decoration, and his striped cloak is fastened by two clasps linked by a cord or band of some kind. The upper cleric in Figure 18 has a herringbone-patterned cloak. The two clerics standing below him also have heavily decorated cloaks, the hoods of which have been pushed back to sit behind the head.

Figure 15

Figure 14

Figure 17

Figure 16

Figure 18

In general, the Picts seem to have been extremely fond of striped clothing. The majority of their clothing is also shown with prominent decoration at the hem, as well as occasional fringing. This is often the case even if the garment is otherwise relatively plain.

The rich array of clothing displayed on the Pictish stones demonstrates that the Picts are not deserving of the stereotype of nakedness and woad, but instead should be known for their intriguing variety of fashion.

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Figure 1. Hilton of Cadboll: Ancient Scotland. Accessed 27/3/10. http://www.ancient-scotland.co.uk/picframe.php?a=1618

Figure 2. Fowlis Wester 2: The Megalithic Portal. Accessed 27/3/10. http://www.megalithic.co.uk/modules.php?op=modload&name=a312&file=index&do=showpic&pid=21439

Figure 3. Rhynie: Scottish History Online. Accessed 27/3/10. http://www.scotshistoryonlin..co.uk/rhynie/Rhynieman.jpg

Figure 4. Mail**:** Henderson, p. 125.

Figure 5. Brough of Birsay: Henderson, p.65.

Figure 6. Eassie: www.brand-dd.com. Accessed 27/3/10. http://www.brand-dd.com/stones/symbol/eassie.html

Figure 7. Papil: Shetland Museum. Accessed 27/3/10. http://www.shetlandmuseum.org.uk/galleries/earlyPeople/images/earlyPeople_01.jpg

Figure 8. Tarbat: Henderson p. 142.

Figure 9. Drosten Stone: BBC Tayside and Central Scotland. Accessed 27/3/10. http://www.bbc.co.uk/taysideandcentralscotland/content/images/2009/04/16/drosten_detail2_470x353.jpg

Figure 10. St Vigean's 11: RCAHMS. Accessed 5/11/07. http://www.rcahms.gov.uk/scotland_screenres_800/1027598.jpg

Figure 11. Kirriemuir 2: Henderson, p. 126.

Figure 12. Meigle 5: Henderson, p. 73.

Figure 13. Kirriemuir 2: Henderson, p. 181.

Figure 14. Fowlis Wester 2: The Megalithic Portal. Accessed 27/3/10. http://www.megalithic.co.uk/modules.php?op=modload&name=a312&file=index&do=showpic&pid=21441

Figure 15. Abernethy: Henderson, p. 146.

Figure 16. Invergowrie: Henderson, p. 57.

Figure 17. Meigle 29: Wikipedia Commons. Accessed 27/3/10. http://upload.wikimedia.org/wikipedia/commons/2/2e/Meigle_29.jpg

Figure 18. Fowlis Wester 2: Henderson, p. 154.

Allegrezza d'Amore

A cascarda from Caroso's Il Ballarino.

\- *Joanna of the Beechwoods*

At the beginning, a man and two women stand in a triangle, facing the centre.

The Bar count starts at the first complete bar of the music, and uses the 6/8 version of the music, not the 3/4 so each bar has 6 beats, not 3.

Figure One

In the **first playing of the A part of the music**, all do:

BARS

1 – 2 Riverenza

3 – 4 2 Seguiti spezzati LR flankingly backwards.[1]

In the **second playing of the A part of the music,** all do:

1 – 2 Passi presti LR and a Cadenza, each travelling to their own left.

3 – 4 2 Passi presti RL and a Cadenza, each travelling to their own right.

In the B part of the music, which is played only once per repeat of the music as a whole.

1. The Man **only** does a Trabuchetto L turning 90° left to face the centre of the triangle.
2. The Woman on the Man's right (Woman 1) does the same.
3. The other Woman (Woman 2) does the same.

[1] Step diagonally to the left and backwards, then diagonally to the right and backwards.

Then all do:

4 – 5 2 Passi presti LR and a Cadenza L, moving toward the centre.

6 – 7 2 Trabuchetti gravi LR.

8 – 9 2 Seguiti spezzati LR flankingly backwards.

10 -12 2 Passi presti LR and a Cadenza L, moving toward the centre.

Figure Two

In the **first playing of the A part of the music**, all do:

1 2 Fioretti fiancheggiati[2] LR (keep these very small).

2 2 Passi presti LR (keep these very small too).

3-4 Then using 2 Seguiti spezzati LR, the Man passes between the Women while the Women change places, passing right shoulders, with all then turning to face the centre.

Note: This means that with the first step the Man goes directly forwards while the Women go diagonally forward so as to be ready to pass one another more easily on the second step and make some forward progress without running into the Man. The second step must incorporate a turn to face the centre as well as some travel.

In the **second playing of the A part of the music**:

1 – 4 Repeat the above returning to original places.

In the **B part of the music:**

1 The Man **only** does a Riverenza minima.

[2] Flankingly – in this case moving a little to the side.

2 Woman 1 does the same.

3 Woman 2 does the same.

Then all do:

4 – 6 6 Seguiti battuti LRLRLR turning to the left on the spot.

7 – 9 6 Seguiti battuti LRLRLR turning to the right on the spot so as to end facing the centre.

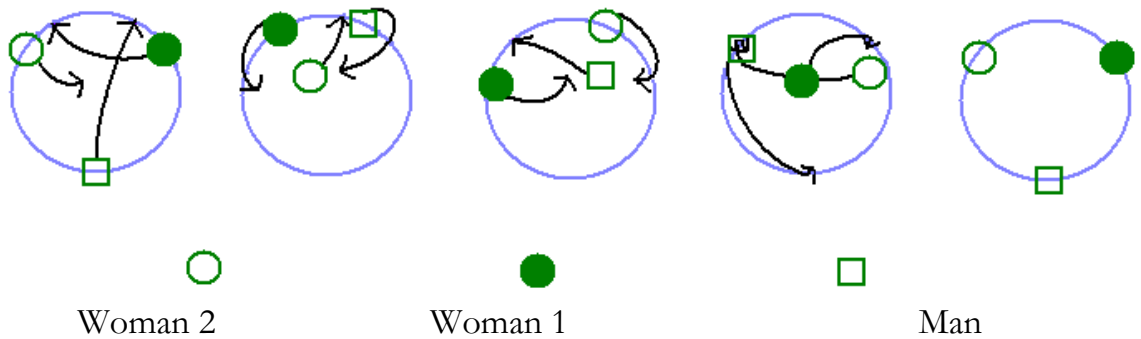
10 – 11 2 Passi presti LR and a Cadenza L, moving toward the centre

Figure Three

In the **TWO playings of the A part of the music**, all do a hey in 8 Seguiti spezzati.

This starts with the Man going between the two women, taking right hands with Woman 1 and heading toward her end of the line while she travels toward Woman 2. **At the same time Woman 2 begins moving** forward and a little toward the right ready to take Woman 1's left hand. The hey then continues as normal, with **no extra loop at the end of the line, just a quick turn in readiness to present the same hand that you have just used to the next person you meet.**

If the group find themselves getting back to place with a step left over – not all of them do – they can do an extra turn in their own place. They can't put one in on every "end" as the Man has two "ends" to do Women one so he will tend to get back to his place late.



The light blue circle has been included in the diagram to make it easier to see how the dancers are moving relative to their original positions.

In the **B part of the music:**

1 The Man **only** does 2 Passi in Gagliarda[3] LR and a Cadenza R.

2 Woman 1 does the same.

3 Woman 2 does the same.

Then all do:

4 – 7 2 Scambiate[4] LR (See Appendix A).

8 – 9 2 Puntate L forward, R back.

10 – 11 1 Seguito spezzato L turning around to the left on the spot, ending with a Cadenza R.

Figure Four

In the **first playing of the A part of the music**, all turn to their own left and do:

1 2 Fioretti à piede pari[5] LR.

2 2 Trabuchetti LR.

3 – 4 2 Passi presti LR and a Cadenza L, turning back the way you came in the Cadenza.

In the **second playing of the A part of the music** go back that way with the same steps, starting with the right foot, and turn to face the centre with the Cadenza.[6]

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[3] We have no description of Passi in Gagliarda, but *Il Ballarino* does have Passi larghi fermati (wide stopped) in Gagliarda and Passetti (little passi) in Gagliarda. Both are steps backwards and due to the speed involved here these Passi in Gagliarda are probably like the Pasetti, each one being a step backwards on the balls of the feet with the legs straight.

[4] See description on the following page.

[5] Fioretto à piedi pari Caroso describes a Fioretto à piedi pari per fianco in Il Ballarino, but in *Nobilta di Dame* he calls this same step both these names. It starts with the legs straight, the feet two inches apart and the toes level. Raise the left foot while moving it sideways a hand's-breadth, then put it back in the place where it started, striking the floor with the ball of the foot as you transfer your weight on to it and lifting the right foot to the side to do the next Fioretto as you do.

[6] Caroso does not specify a turn, but the dancers must face one another to do the next part.

In the B part of the music:

1	The Man **only** turns to face the centre and stamps his left foot twice
2	Woman 1 does the same.
3	Woman 2 does the same.
4 – 5	The Man and Woman 1 swap places, passing right shoulders, with 2 Passi Presti Scorsi and a Cadenza.
6 – 7	Woman 1 and Woman 2 do the same.
8 – 9	Woman 2 and Man do the same.
10 – 11	Woman 2 and Woman 1 do the same. (See Fig 4 Note over page)

AFTER THE MUSIC: Finish the dance with a Riverenza.

Fig 4 Note Caroso specifies the first two swaps in the final section, then says that you return to the triangular formation in which you started. There are a number of ways to do that, but all of them require someone to make only two moves, the second retracing their steps. I have given this part to the Man as he has more to do in the hey of Figure 3 and because the I think the symmetry of both Women doing the same thing is appropriate.

Appendix A:

The Cambio or Scambiata (The Change or Exchange) **for Il Ballarino Dances**

To do a **left** Scambiata in **two 6/8 bars** as it is in this dance**:**

1st ½ Bar 1: Move the left foot forward and a little to the left so that its heel is level with the right toe and a little to the left of it.
2nd ½ Bar 1: Cross your right foot behind your left so its toe is near the outside of the heel of your left foot
1st ½ Bar 2 Lift your left foot about 3 inches forward and 3 inches up, then put it down next to your right with your weight equally on both feet.

2nd ½ Bar 2 Do a little bounce on both feet (a Balzetto à piedi pari[7]) to the left.

This step is described in both *Il Ballarino* (1581) and *Nobilta di Dame* (1600), although it is not used in any of the dances in the latter book, including *Nobilta's* version of Allegrezza d'Amore.

Caroso's description in *Nobilta* starts with the same movement of the left foot but then differs in that the right foot moves in from behind the left heel "in the manner of a Sottopiede". Then it says to then raise the left foot 3 inches up and forward, returning it behind and together with the right, bend and spread the knees somewhat, ending gracefully with the feet together, rather than ending gracefully with a Balzetto a Piedi Pari.

This has led some to classify the step as a Sottopiede with the feet brought together at the end, but the 3 descriptions of Sottopiede by both Caroso and Negri start as follows:

Il Ballarino - First do a Trabuchetto (a type of Jump to the side that starts with feet together)
Nobilta - First do a passo or a Trabuchetto to the left side
Negri's *Le Gratie d'Amore* - Being with the left foot raised forward.

None of these have an initial movement the same direction and only the passo in *Nobilta* has a similar style of movement. None of them involve crossing one foot behind the other before raising your other foot. None of them require you to put your feet together after that and none involve either a Balzetto à piedi pari or any knee bend at the end. The Cambio or Scambiata is obviously a step in its own right.

It is also possible to do this step in one 6/8 bar as follows. This is not such an easy step and the movements must be kept as small as described to accomplish them in the time available.

[7] Caroso describes this as a separate step in both of his books – a little bounce off, and a landing on, both feet, moving a little to the left or the right. He says to do one of these at the end of the Cambio or Scambiata in Il Ballarino

Beat 1: Move the left foot forward and a little to the left so that its heel is level with the right toe and a little to the left of it.

Beat 2: Cross your right foot behind your left so its toe is near the outside of the heel of your left foot

Beat 3: Lift your left foot about 3 inches forward and about 3 inches up.

Beat 4: Put it down next to your right with your weight equally on both feet.

Beats 5 and 6: Do a little bounce on both feet (a Balzetto à piedi pari)

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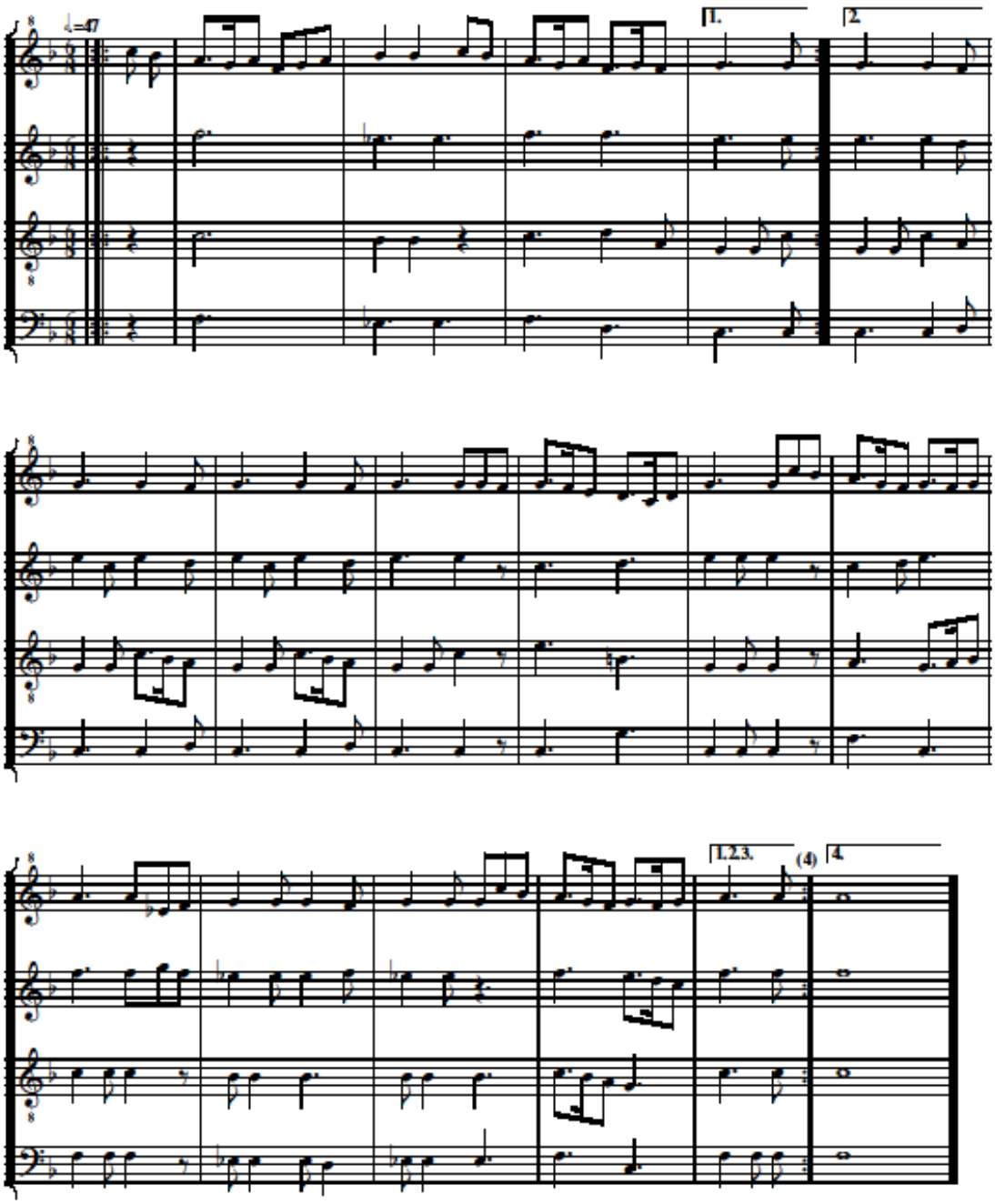
Hunt, Katrina *Allegrezza d'Amore* 1999 (arrangement of music from Caroso) Supplied privately and available free for SCA use at http://joannaandmurray.homemail.com.au/Music.html
See below for music

Negri, Cesare *Le Gratie d'Amore / Nuove Inventioni Di Balli* 1602/1604
Facsimile and transcription can be found at: http://www.pbm.com/~lindahl/negri/

Allegrezza d'Amore

Fabritio Caroso arr Katrina Hunt



The World: Just how big is it?

- Ælfred se leof

Introduction

The shape of the world is one of my favourite examples of how 'common sense' can be hopelessly misleading.

My, and probably your, common sense tells us that the word is flat. It looks flat to a person standing on its surface and we usually navigate as if the world is a flat sheet. (If you don't believe me, please send me a message detailing the spherical geometry that you used when calculating your walk or drive to work.)

Of course, we learn in school that the world is actually spherical and that it only appears flat because its magnitude makes its curvature too shallow to be apparent to minuscule beings like us. But how would you demonstrate this to someone who insisted that it was 'common sense' that the world was flat?

These days, given enough money, you could take your doubter on a trip around the world by ship, aeroplane or spaceship. Despite popular modern images of a mediaeval world populated entirely by pre-Colombus flat-earthers, however, many ancient and mediaeval thinkers found ways to estimate the size and shape of the Earth without access even to ocean-going ships, let alone aeroplanes or spacecraft.

Aristotle

Aristotle (384 - 322 BC), one of the most influential thinkers in the history of Western thought, addresses the size, shape and motion of the Earth in *On the Heavens*. In Part 13, he describes and refutes the views of various other philosophers who say that the Earth is flat, cylindrical or infinitely big. In Part 14, he describes and justifies his own opinion that the Earth is a very large sphere, albeit small compared to the size of the universe.

He first argues that, since the substance of the Earth is observed to fall towards the centre of the universe (that is, Earth, in Aristotle's cosmology), the Earth's mass be must equally distributed about its centre. Mass distributed in any other way would over-balance and fall closer to the centre.

More practically, he observes that heavenly bodies appear to move in a circle about the Earth: if the Earth were flat, the sun, moon and stars would instead move in a straight line across the sky. Furthermore, the horizon moves as one travels north or south, so that it is possible to see stars in Egypt and Cyprus that are not visible from further north (where they are below the southern horizon). From a flat earth, any star above the plane of the Earth's surface would be visible everywhere.

Finally, he says that "those mathematicians who try to calculate the size of the earth's circumference arrive at the figure 400,000 stadia". He does not say who these mathematicians were, however, or how they arrived at the figure of 400,000 stadia. Modern histories of the circumference of the Earth say that Archimedes (c.287 - c.212 BC) later proposed 300,000 stadia, but none of them are any clearer as to where this figure comes from.

Eratosthenes

Eratosthenes (c.276 - c.194 BC), the chief librarian of Alexandria, made what is probably the most famous attempt to establish the size of the Earth in antiquity. I was first introduced Eratosthenes' method as an exercise in high school geometry, but you can also read about it in histories of science like Robert Crease's *The Prism and the Pendulum* (2003). Eratosthenes' own *On the Measurement of the Earth* is lost but we know of his work through a description given by Cleomedes in *Caelestia*.

Eratosthenes reasoned that, if he could work out both the distance along the surface of the Earth between two points and the portion (angle) of the Earth's circumference that you needed to traverse in order to travel between the two, he could calculate the circumference of the Earth by multiplying the distance between the two points by the number of times that the angle between them fitted into a full circle (that is, 360 degrees).

Of course Eratosthenes wasn't able to place a giant protractor at the centre of the Earth to measure the angle between two points on the Earth's surface. Instead, he used the change in the angle of the sun's rays when seen at two different latitudes together with some elementary geometry to estimate the angle that he actually needed to measure.

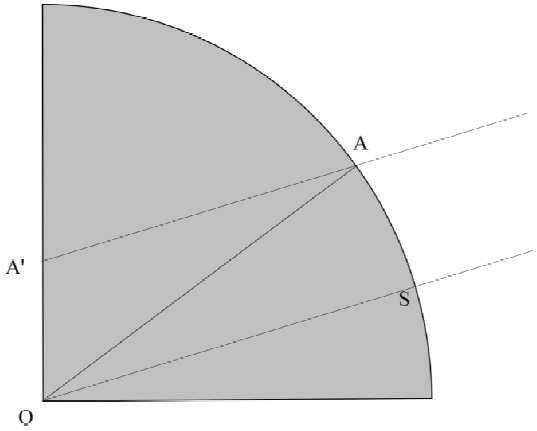


Figure 1. Erastosthenes' method for calculating the circumference of the Earth.

Figure 1 shows the idea. Eratosthenes noted that the sun shone directly overhead at noon on the solstice in the city of Syene (*S*), now Aswan in southern Egypt. At the same time of year in Alexandria (*A*), which was nearly (but not quite) directly to north, the sun cast shadows at an angle equivalent to one-fiftieth of a full circle (that is, 7.2 degrees).

Assuming the distance between the Earth and the sun to be very much greater than the distance between Alexandria and Syene, the sun's rays at Alexandria (line *AA'* in the diagram) are very nearly parallel to the rays at Syene, which point directly at the centre of the Earth (*O*). One of Euclid's theorems concerning parallel lines then tells us that the angle *AOS* between Alexandria and Syene is equal to the angle of the sun's rays observed at Alexandria at solstice.

Eratosthenes estimated the distance between Alexandria and Syene to be 5,000 stadia. Since the foregoing observations indicate that this distance represents about one-fiftieth of the circumference of the Earth, the full circumference is about 250,000 stadia. Unfortunately we do not know exactly how long Eratosthenes' "stadium" was, since the length of a stadium differed from city to city. Depending on which stadium he used, 250,000 stadia comes to between 39,250 and 52,250 kilometres.

Cleomedes doesn't relate how Eratosthenes came by the "5000 stadia" from Alexandria to Syene and modern writers give differing accounts: Crease says he obtained it from the "royal surveyors"; Al-Khalili (2010) suggests that he commissioned someone to walk from Alexandria to Syene, counting the number of steps taken; and Rubin (2011) asserts that he obtained it from an estimate of the average speed of a camel caravan travelling between the two cities. Other writers (including Al-Khalili) suggest that he may have even obtained the figure from a previous calculation of the circumference of the Earth, making the new calculation circular.

The House of Wisdom

Al-Khalili (2010) relates that Abu Ja'far Abdullah al-Ma'mun (786-833), the Abbasid caliph of Baghdad from 813 until his death, established *Bayt al-Hikma* (The House of Wisdom) in Baghdad in order to "collect all the world's books under one roof." Along with numerous other adventures in astronomy, mathematics and geography, al-Ma'mun is said to have set his astronomers the task of re-creating Eratosthenes' experiment under more controlled conditions.

Al-Ma'mun's astronomers used the plains of Sinjar, about 100 kilometres west of Mosul (now in Iraq). One group of astronomers walked due north, counting their steps as they went and marking the distance with arrows, until they had travelled one degree of latitude as determined by the positions of the stars. Another group walked south and measured similarly. The astronomers double-checked the measurements on their return journey and by taking the average of all of the measurements; they arrived at a distance of 56.6 Arabic miles (about 109 kilometres) for one degree of the Earth's surface. This gives an estimate of 39,224 kilometres for the circumference of the Earth.

Al-Biruni

Abu Rayhan Muhammad ibn Ahmad al-Biruni's *Kitab Tahdid al-Amakin* (The Determination of the Co-ordinates of Cities) reports that one of al-Ma'mun's leading astronomers, Sanad ibn Ali al-Yahudi, later proposed another method for determining the size of the Earth. Sanad observed that it should, in principle, be possible to determine the radius of the Earth by climbing to the top of a mountain from which the sea is visible. The climber can measure the angle between a plumb line and the line to the horizon as seen from the mountain, and combine this with knowledge of the height of the mountain and some trigonometry to compute the radius of the Earth.

Sanad doesn't seem to have actually carried out the experiment that he proposed, and it isn't immediately obvious how one might measure the height of the mountain. Al-Biruni himself, however, proposed and carried out a more complex scheme that first determined the height of a mountain, and from this he was able to work out the radius of the Earth.

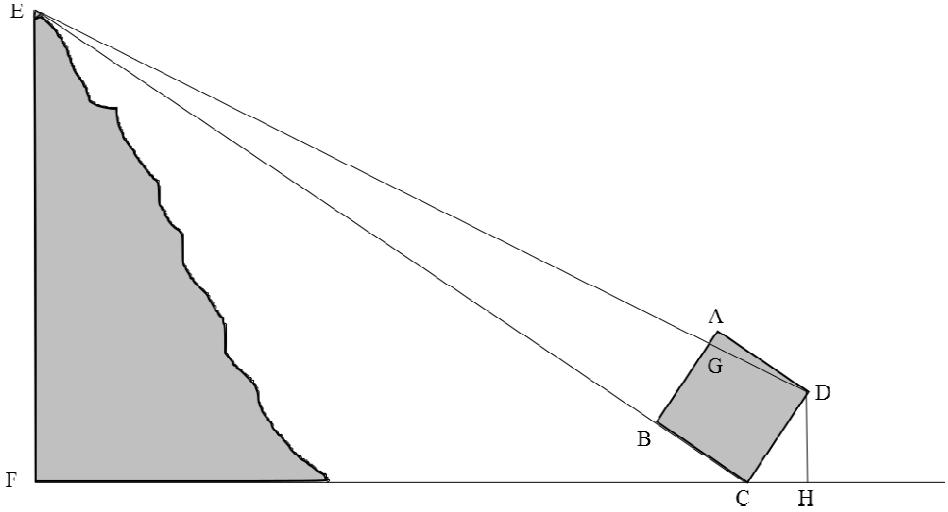


Figure 2. Al-Biruni's method for calculating the height of a mountain, adapted from Al-Khalili's book.

Figure 2 illustrates al-Biruni's method for determining the height of a mountain using a square board, called *ABCD* in the diagram. Al-Biruni's board was one

cubit one each side, but any square will do. (The one shown in Figure 2 is much larger than any practical square, of course.)

Holding the board vertically, place one corner (*C*) of the board on the ground at sea level, and rotate the board until the bottom edge (*BC*) aligns with the top of the mountain to be measured. Attach a straight edge to point *D* on the board, and rotate it until this edge is also aligned with the top of the mountain. This edge will intersect the side *AB* of the square at some point, called *G* in the diagram.

Using a little geometry from Euclid, we can see that the triangles *DAG* and *ECD* are *similar*, that is, have the same three internal angles and are therefore magnifications of one another. Since we can measure *DAG* directly, we can work out the distance between *C* and the top of the mountain (*E*) by multiplying the side of the square (*AD*) by the ratio *CD*:*AG*.

Having worked out the length *CE* this way, drop a plumb line from the corner *D* to the ground (point *H*). Assuming that the curvature of the Earth between the board and the mountain is negligible, we can see that the triangles *DHC* and *CFE* are also similar. Using our knowledge of the length *CE* and triangle *DHC*, we can work out the height of the mountain (*EF*) by multiplying the length *CH* by the ratio *CE*:*CD*.

Armed with the height of the mountain, we can finally implement Sanad's idea, illustrated in Figure 3. At the top of the mountain (*A*), measure the angle *OAT* between a plumb line (*OA*) and the horizon (*T*).

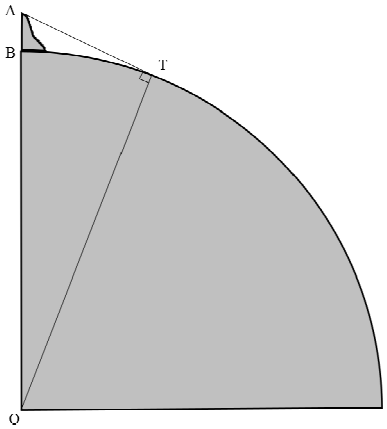


Figure 3. Sanad's method for calculating the radius of the Earth, as used by al-Biruni.

Since the angles of a triangle must add up to 180 degrees, and the angle (*ATO*) between a radial line and a tangent is 90 degrees, we see that *OAT* + *TOA* + 90 = 180. We have just measured *OAT*, so we can use this simple equation to compute the angle *TOA*, made at the centre of the Earth by the radial lines to the mountain and the horizon.

If we know our trigonometry (as al-Biruni did), we will further see that the cosine of the angle *TOA* is the ratio *OT*:*OA*. Assuming that the Earth is perfectly spherical, the distance *OA* is equal to *OT* + *BA*, that is, the radius of the Earth plus the height of the mountain. So, our trigonometry tells us that $cos(TOA) = \frac{OT}{OT+BA}$. Since we know the angle *TOA* and the height of the mountain *BA*, we can solve the equation for the sole unknown distance *OT*, the radius of the Earth.

Aside from its complexity, the chief difficulty with this method is in measuring the distance *AG* when determining the height of the mountain. Since any practical square *ABCD* is very small compared to any mountain worthy of the name, the lines *CE* and *DE* will be very nearly parallel, and the distance *AG* will be very small. If you are standing one kilometre from the top of the mountain with a 1m x 1m board, for example, the distance *AG* will be only one millimetre. A hundred-metre difference in the height of the mountain will translate to a difference of less than a tenth of a millimetre in the position of *G*.

Al-Biruni, nonetheless, computed a value of 12,803,337 cubits for the radius of the Earth. Unfortunately we aren't certain exactly how long his cubit was, but his value comes to between 6,162 and 6,386 kilometres for the lengths of a cubit suggested by Wikipedia's definition of an Arab mile.

My Own Attempt

I live in the Shire of Adora, which lies on the Australian coast between the Illawarra Escarpment and the Tasman Sea. A modern-day al-Biruni, then, should be able to estimate the size of the Earth by measuring the height above sea level

of a point at the top of the escarpment, and then measuring the angle of the horizon when seen from the same point.

I wasn't able to achieve the precision required to determine the height of a mountain using al-Biruni's method. After a few attempts produced absurd results for the height a few nearby mountains, I concluded that I'd need to obtain a measurement produced by a professional surveyor with better equipment than I was able to make.

I tried measuring the angle to the horizon from three different points on the Illawarra Escarpment, slightly refining my equipment and technique each time. I took the last, and hopefully most refined, measurement from the summit of Mt Keira, which overlooks the centre of Wollongong. According to signage erected by the New South Wales National Parks and Wildlife Service, the summit rises 464 metres above sea level. A taller mountain would be better, but none of the mountains convenient to me are much higher than Mt Keira.

Using a plumb line and a 270mm set square from my technical drawing class, I aligned the top edge of the square with the horizon and dropped the plumb line from the top corner nearest me, as shown in

Figure 4. This forms a right-angled triangle with the plumb line as its hypotenuse, the left-hand edge of the square as one side, and the bottom edge of the square as the other side. The length of the last edge is what I need to measure in order to calculate the size of the Earth.

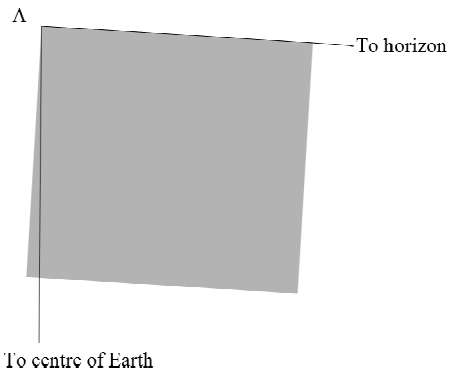


Figure 4. My apparatus for measuring the angle of the horizon.

I repeated this procedure several times, using different points on the horizon each time, resulting in measurements between 4.5mm and 6mm. This variation suggests that my procedure is not very reliable, probably because my hand-eye co-ordination wasn't very precise in aligning the top edge with the horizon. For the sake of illustrating the calculation, however, let's say my average measurement was 5.5mm.

Since the leftwards edge of the square in

Figure 4 is parallel to the line *OT* in Figure 3, and the plumb line is aligned with *OA*, the angle made by the plumb line and the left-hand edge of the square is the same as the angle *TOA* made by the plumb line and the horizon at the centre of the Earth. I can therefore derive cos(*TOA*) from my triangle using Pythagoras' theorem and the definition of cosine by

$$cos(TOA) = \frac{0.270}{\sqrt{0.270^2 + 0.0055^2}}$$

(Note that I've converted the millimetres into metres.)
We can now use Sanad's equation and the height of Mount Keira to estimate of the radius of the Earth *OT*:

$$\frac{OT}{OT + 464} = \frac{0.270}{\sqrt{0.270^2 + 0.0055^2}}$$
$$\sqrt{0.270^2 + 0.0055^2}\,OT = 0.270(OT + 464)$$
$$\left(\sqrt{0.270^2 + 0.0055^2} - 0.270\right) OT = 0.270 \times 464$$
$$OT = \frac{0.270 \times 464}{\sqrt{0.270^2 + 0.0055^2} - 0.270}$$
$$OT \approx 2236635.3 metres$$

According to this calculation, the radius of the Earth is just 2237 kilometres!

Other Modern Measurements

NASA's *Earth Fact Sheet* (Williams, 2010) puts the radius of Earth at 6356.8 kilometres at the poles and 6378.1 kilometres at the equator. This equates to a circumference of 39,940 kilometres around the poles and 40,075 kilometres around the equator.

In fact, the metre was originally chosen to represent one ten-millionth of the distance between the Equator and the poles, or "the ten millionth part of one quarter of the terrestrial meridian", as French Metrology (*n.d.*) puts it. If the Earth were a perfect sphere, and post-Revolutionary French metrologists perfect observers, the full circumference of the Earth would be 40,000,000 metres.

Conclusion

Standing at the top of Mount Keira with my 270mm set square, I ought to have measured a displacement of about 3.25mm. This is large enough to be measurable, but I presumably failed to align my square with the horizon with sufficient accuracy. Better equipment, a steadier hand and a taller mountain would all help in getting a more accurate measurement. Indeed, al-Biruni's figure for the Earth's radius is within a few hundred kilometres of NASA's value.

References - Books

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Robert P. Crease, *The Prism and the Pendulum: the Ten Most Beautiful Experiments in Science*. (Random House: New York, 2003)

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Julian Rubin (2011). *Eratosthenes: the measurement of the Earth's circumference*.
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viewed 30 September 2012.

David R. Williams (2010). *Earth fact sheet*.
http://nssdc.gsfc.nasa.gov/planetary/factsheet/earthfact.html
viewed 30 September 2012.

Then a rumbling came from the bung!

- *Rurik Farserkr.*

Introduction to Extract Brewing:

The aim of this article is to guide you in producing a beer that is conjecturally period. It is not intended as a thorough guide to brewing or as an introduction to the subject. For this information please look at the references cited below. The intention is to provide a brewer with some experience and the opportunity to start brewing with malt extract and hops with minimal equipment outlays as most of what is needed can be found in a well equipped kitchen.

I have chosen the historical recipe from Richard Arnold as it is the earliest form of a beer recipe that is able be translated for the modern brewer, (Wheeler; 1993, 172) and as such it is a good place for the budding historical re-enactor brewer to start experimenting.

The documentary evidence:

"To make 60 barrels [164L] of single beer, use 10 [127kg] quarters of malt, 2 [25kg] quarters of wheat, and 2 quarters [25kg] of oats, with 40 pounds [1.8kg] of hops."

Richard Arnold, Customs of London, 1503.

Redaction:

I have worked out that if this beer was to be made in this scale it would have a starting gravity of between 1.045 and 1.050. The recipe is a simply a ratio of 5:1:1 being Barley Malt; Wheat; Oats and Hops. I have scaled it down to a 22.5L batch and have used modern malt extracts in replace of grain so as to make it more accessible to the beginning brewer.

Statistics:

Volume – 22.5L in the fermenter & 3L left in the kettle.
OG – 1.048
FG – 1.015
ABV) – 4.4%
BU – 25

Ingredients:

- Light Dry Malt Extract – 2kg
- Dry Wheat Malt Extract – 0.75kg
- Oat Extract - 0.4kg *(This product has disappeared from the market since the time of writing. If you can find it use it. If not then it can be substituted with 0.4kg of Light Dry Malt Extract)*
- Goldings Hops at an α 3.6% - 80g
- Muntons Gold brewing yeast, or some other real ale yeast.
- Water to 22.5L

Equipment:

This list is not exhaustive, it is simply what is needed in addition to the usual fermentation and packaging equipment:

- A 10L pot (the bigger the better)
- A large stirring spoon
- A measuring jug
- A spray bottle full of water
- Some scales and a thermometer

Method:

1) Take 1 kg of the light malt and mix it with cold water to a volume of 8 litres in the pot.
2) Bring this "sweet wort" to the boil. (Pay attention! As the "sweet wort" is about to start boiling it will foam and there is a chance of boil over, to prevent this you can turn down the heat and lightly spray water on the foam.)
3) Once the "sweet wort" is at the boil add the hops and turn the heat down to a simmer for 90 minutes.
4) At the end of the boil place the pot in the laundry sink and run cold water around it until it is cool (20 degrees Celsius). A supply of ice will speed up this process.
5) As the "hopped wort" is cooling, clean and sanitise the fermenting equipment.
6) Put 5 L of cold water in the fermenter and mix in the remaining malt extract. Add the cooled, bittered wort ("hopped wort") to the fermenter

carefully as not to get any of the hops or hot/cold break into the fermenter. A siphon can be helpful with this.
7) Pitch the yeast.
8) Let it ferment for five days.
9) On the fifth day take a hydrometer reading. Then take one 24 hours later, if the two reading are the same you can bottle, if the readings are different leave for a further 24 hours and repeat the process.
10) Bottle and let it age for at least six weeks. This beer will benefit with longer ageing, (6 months to a year).

Conclusion:

This brief primer on extract brewing will go a long way to enhancing the medieval brewing experience. One way to bring it closer to a historical beer would be to do a secondary fermentation on oak chips with a Brettanomyces culture. These should be available from any well stocked home brew shop.

Please do not hesitate to contact me via email or at an SCA event. I am always interested in trying other people's brewing and happy am to share my own.
Email: ben.paton@gmail.com

References:

Arnold, Richard, *Customs of London*, 1503 found at http://www.archive.org/stream/customsoflondono00arno/customsoflondono00arno_djvu.txt (Accessed on 30/09/2010)

Palmer, John, *How to Brew* (Brewers Publications: Colorado, 2006)

Wheeler, Graham, *Home Brewing: The CAMRA Guide (*CAMRA: St Albans, 1993)

Chemise bindings and Hulleninband (Book protection)

- *Isabell Winter*

Chemise bindings are a simple yet effective way of protecting your books dating to medieval times. They can be made quite simply or with elaborate embroidery and depending on how you make it you can customise for one book in particular or to be able to be adapted to a range of books. This is a very nice easy simple way to cover up mundane books at events, around the campsite or during Court. You may already have seen them in use by the Herald during Court.

Valencia? C.1460. Books of Hours. National Library of the Netherlands. Koninklijke-biliotheek

http://www.kb.nl/enweb-exhibitions/100-highlights-of-the-koninklijke-bibliotheek/from-1-to-100/14-chemise-binding

Harley 1498, Quadripartite Indenture (the 'Harley Indenture'), London, 1504 British Library.

http://britishlibrary.typepad.co.uk/digitisedmanuscripts/2011/09/quadripartite-indenture.html

There does not appear to be many extant examples remaining of chemise bindings. They were however used to protect a book and were often made of delicate material including very soft leather (suede) or fabric (often velvet). It is therefore understandable why there may not be many remaining. I have found images of seven extant examples and references to others. In comparison there are twenty four recorded extant girdle books which include several that were lost during the Second World War. These figures give you an idea of the very limited number of surviving extant examples.

THE ELLESMERE BIBLE 15th century **MS 692**
http://www.schoyencollection.com/bindings.html

Hulleninband is another term used to refer to chemise bindings, which translates as case binding, shell cover or cover sleeve. I think that Hulleninband is used more in reference to books that have a second leather cover attached (in comparison to chemise binding referring primarily to fabric coverings) and leaves a skirt around the fore-edges of the book to assist protection. This same sort of skirt can also been seen in some girdle books where the cover is left to extend past the end of the boards of the book rather than being wrapped around.

Hülleneinband – Sweden 1387.Photo: István Borbás/National Library of Sweden. The Town Law (Söderköping) of Magnus Eriksson.Sweden, 1387.

http://www.flickr.com/photos/25300312@N08/5061793149/in/photostream/

Some extant examples of Hulleninband have had the protective chemise cover wrapped around the boards and glued down to look like a normal leather covered bound book would look. I wonder how many other extant books may have had the same thing happen to them. As fashions change and the purpose of protection is no longer needed to the same level, it is easy to understand why this fate may befall this type of binding/book protection.

Chemise bindings or Hulleninband have extant examples from the second half of the 14th century through to very early 16th century. This is a similar time period to girdle books although chemise bindings do seem to start appearing nearly a century earlier than the girdle books. It would be a logical progression for people to extend the tail of a Hulleninband to make the cover into a girdle book specialised for traveling, so I do wonder if this is in fact what may have occurred.

There are also many images of chemise covers in use in paintings and even in some sculpture.

If the original idea for chemise covers was to cover small books you carried with you, for example in your belt pouch protecting the tooling on the leather cover, this would be sensible, particularly when you factor in the cost of books during medieval times. It is also important to remember literacy was limited during this period so carrying a book could also be seen as a mark of status. One thought is that chemise bindings were used more by ladies of nobility in comparison to girdle books which may have been used more by men or members of the church.

Further Reading and References – Websites

http://sirencreations.com/page6.php – reproduction bookbinding, list of useful links
http://www.guildofbookworkers.org/resources/chemise.pdf - instructions on how to make a chemise binding

http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1404&context=tsaconf&sei-redir=1&referer=http%3A%2F%2Fwww.google.co.nz%2Furl%3Fsa%3Dt%26rct%3Dj%26q%3Dchemise%2520binding%26source%3Dweb%26cd%3D15%26sqi%3D2%26ved%3D0CHUQFjAO%26url%3Dhttp%253A%252F%252Fdigitalcommons.unl.edu%252Fcgi%252Fviewcontent.cgi%253Farticle%253D1404%2526context%253Dtsaconf%26ei%3DxJNuUO6YIMi3iQfo0IGYCg%26usg%3DAFQjCNGOw231n3Taj4UBoZk4XXBLlhIaZA%26sig2%3DBpZsbPUnZLLlQ117epjrpw#search=%22chemise%20binding%22 – Research paper – Textile and Embroidered bindings of medieval England and France. Robin E Muller.

http://books.google.co.nz/books?id=2Rr3ad0Xy7QC&pg=PA78&lpg=PA78&dq=chemise+binding&source=bl&ots=1vbc6SfNM5&sig=6Bv8ddJQNo_GMek2q8_ctA2uhOs&hl=en&sa=X&ei=V5tuUITiE46biQfLp4GYCg&ved=0CEsQ6AEwBjgK#v=onepage&q=chemise%20binding&f=false – google books mention of chemise bindings in book called French book of hours, Making an archive of prayer c. 1400 – 1600.

http://www.coblaith.net/BookDisguises/ChemiseBinding/default.html – Making a chemise binding. Coblaith Muimnech, Barony of Bryn Gwlad, in the Kingdom of Ansteorra

http://www.bl.uk/catalogues/illuminatedmanuscripts/GlossC.asp – British Library catalogue of illuminated manuscripts – definition of chemise binding.

http://translate.google.co.nz/translate?hl=en&sl=de&u=http://de.wikipedia.org/wiki/H%25C3%25BClleneinband&prev=/search%3Fq%3DH%25C3%25BClleneinband%26hl%3Den%26b

iw%3D1278%26bih%3D598%26prmd%3Dimvns&sa=X&ei=NLxvUPi1I8mZiQfisIDgBg&ved=0CDgQ7gEwAw – Helleneinband description translated on wikipedia

Further Reading and References - Books

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Rhein, Adolf. Falsche Begriffe in der Einbandgeschichte, *Gutenberg-Jahrbuch,* 35, 366-70

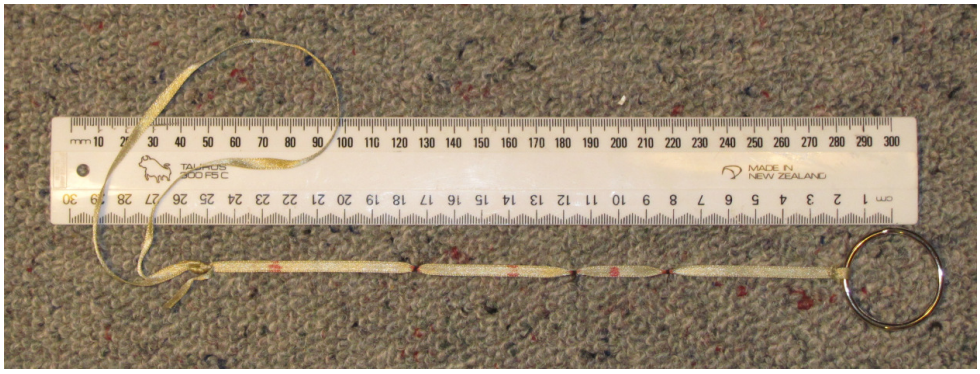
Schreiber, Heinrich. Buchtitel und Hallenbad - Funde und Betrachtungen, *Archiv fur Buchgewerbe und Gerbrauchsgrafik*, 76, 492-6. 1939

A Simple Metronome

- *Lowrens Wilyamson*

I was eventually provoked into writing this by the number of fellow musicians who, upon seeing this little device in action, exclaim "Cool!" or "What a good idea!" or variations of this.

"This little device" is a metronome which is compact, robust and can be used unobtrusively in a performance setting. It is trivially simple. A small weight is attached to a length of thread or fine ribbon. The thread or ribbon is marked at intervals using knots or stitches. By grasping the thread/ribbon at the appropriate mark and allowing the weight to swing freely, the appropriate tempo can be derived from the period of swing.



Simple metronome – my own work

Construction is obvious from the image. I have tried a more solid medallion as a weight but I think that the best results come from using a metal ring of 30-40mm diameter - the photo shows my current metronome using a rondel, which is rather apposite. My original unit used a medium weight linen thread, but the current version in the photo uses a 4mm ribbon. The ribbon looks smarter than the thread did, but the thread worked better. The ribbon is almost too heavy even when this thin. As well, the markings on the ribbon cannot be felt as easily as the knots in the original thread could be. The best of both worlds might be to ply some very light threads in (say) red, white and blue, and use that.

The magic is all in placing the knots, which can be done thus:

- take a length of the thread of choice (300-400mm) and tie it to the weight.
- working away from the weight, tie a nice bulky knot in the thread at the distances listed in the table below. Note that these distances apply between the centre of the weight and the knot.
- after all the knots are tied, form a loop of convenient size in the free end for general handling.

beats/ min	Period (s)	Length (mm)
60	1.00	248
70	0.86	182
80	0.75	140
90	0.67	110
100	0.60	89
110	0.55	74

I used a figure-of-eight knot in the linen thread (as below) which worked well. As an extra feature, for quick identification, you could include some different coloured threads in some knots.

Figure-of-eight knot - from Wikipedia Commons

The knot placements as given give the corresponding tempo for each full swing (to and fro). For faster tempi, count the half swings, e.g., the third knot from the weight gives 90 bpm (beats per minute) for full swings and 180 bpm for half swings (and 45 bpm for double swings, if necessary). With this construction, the actual period will be slightly shorter (faster) than the design figure, but with light thread/ribbon, the differences are not obvious. The lengths on my metronome in the photo differ from those in the table due to the effects of the ribbon's weight.

I find it convenient to select the tempo by lightly grasping the thread near the weight with one hand and pulling the weight with my other hand until the right mark is reached. With a knotted thread, this can be done by feel without actually looking at it, which can be handy for unobtrusively checking a tempo.

Similarly, to determine the tempo of a heard piece of music, start with the thread shorter (faster) than the tempo you are hearing, and progressively slide it longer until you have a match. With a little practice, this whole process can take no more than about 5 seconds.

Is it period? Possibly not. I am not aware of any examples of a period item being identified for this purpose. However, given the elementary nature of the device, it is possible that it would not be recognised for what it is.

It was about 1602 that Galileo determined that a freely swinging pendulum had a regular period, not very dependent on the amplitude of the swing[8]. The study that lead to this was said by his student Vincenzo Viviani to be initially sparked by his observation of a swinging chandelier in the Pisa cathedral in 1587, so there is some possible overlap. A physician friend Santorio Santorio used the principle to invent a "pulsilogium" for measuring patient's pulse rates[9], although Galileo did not publish the detailed relation between length and period until about 1607 as part of his study of falling objects.

So, it is not impossible that such a device could have been used in period, without any underlying theoretical basis, but just because it worked.

It is also moot to wonder as to just how necessary such a device is to a "real" musician, but I certainly find it handy, and perhaps you will too.

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[8] Letter from Galileo to Guidobaldo del Monte, 29 November 1602 (from Galileo's Opere, Volume X, E-text version of a 1965 edition in Italian to be found at http://www.liberliber.it/biblioteca/g/galilei/index.htm)

[9] From The Galileo Project by Rice University, Texas, at http://galileo.rice.edu/sci/santorio.html

Cockatrice FAQs

1. **Can I write an article for Cockatrice?**

Yes, you can! Cockatrice is all about sharing your research and your enthusiasm for your particular Art or Science. One of the best things about the SCA is the huge range of 'things' covered under the umbrella of Arts and Sciences, from brewing to smithing or philosophy; from music to embroidery or costuming; from cookery to philosophy or carpentry; from shoe-making to textile arts or book binding... Get the picture? The rationale for Cockatrice is to give the people of Lochac a place where they can share their research and passion for an Art or Science and to inspire their readers! This includes anyone interested in Arts and Sciences from Laurels to newcomer.

2. **But what do I write and how much**?

You can write an article on a particular area, like the ones in this edition. Articles can be from 500 words to 2000 in length.[10] I would suggest aiming for around 1000 words as it gives you enough room to express yourself but is still short enough to hold the attention of your reader. If you don't think you could manage writing a full article then there are a number of other ways to contribute including:

- ♣ Write a review of book you have found helpful or interesting. This could be an academic work of research or a popular history or even a work of fiction set in the SCA time period.
- ♣ Write a song or poem. This could be something that you have performed at an event or written for a contest or even for fun!
- ♣ Draw a picture – have you been experimenting with period artistic techniques then send it in!
- ♣ Redact a recipe – send in your versions of favourite period recipes.
- ♣ Instructions on how to make an item

3. **But I don't know *everything* about my particular area of interest!**

[10] All articles will be graciously accepted, long or short no matter, let us be the judge, it might be used in the future. The editor reserves the rights to alter articles layout (formatting), for ease of publication and / or edited for grammar, punctuation or sentence structure.

Firstly, thank goodness! How boring SCA life would be if we did know everything. There are many stages in our research journeys in the SCA and Cockatrice is a place where you can tell other people where you are at this point in time. It doesn't matter if you have been studying one particular area for the last fifteen years or it is something relatively new to you, the purpose of Cockatrice is to give you a platform to tell people about what you have found out so far and to provide them with inspiration in their own journeys in the SCA.

The other point about research in the SCA is that it is often impossible to know *everything* about a particular area, often due to a dearth of primary sources[11]. Other barriers can include difficulties with language and access to resources. One of the fun things about the SCA is the creative part of anachronism – in other words – how did you overcome these particular obstacles. Again Cockatrice is a place where you can tell others about how you have been creatively anachronistic. If you have made modern substitutes then tell us how and why you did so.

Another thing to remember is that part of research is putting our own particular interpretations on period Arts and Sciences. We come up with theories about how and why people in period did things certain ways usually based on our reading of primary source evidence. Cockatrice is a place for you to explain your ideas about an area of interest and describing how the evidence you have collected supports your theories. This may not mean you are definitively right as after your article has been published new information may come to light that may damage your argument or you may rethink what you have said. The important thing to remember is that your article in Cockatrice is a reflection of where you are at on at that stage of the journey and the exciting thing about the SCA is that we always learning new things!

4. How do I reference my article?

There is nothing worse than reading an article full of interesting ideas and thinking where did they get them only to find that there are no references! If you are

[11] In case you are not sure of the terminology – a primary source is created at the time e.g. a period manuscript, tapestry, dress, embroidery, sword etc. A secondary source is a piece of research based on these primary sources e.g. examining period embroidery examples to present an article on the different stitches used.

submitting an article to Cockatrice it is important that at the minimum you include a reference list of all the sources you have included.

For Referencing Websites:
Include the URL of the website and the date you accessed it. The date is important because due to website being often frequently updated this date tells us what version of the website was used.
This could look like:
French Metrology (*n.d.*).*The metre adventure*:
http://www.french-metrology.com/en/history/metre-adventure.asp,
viewed 30 September 2012.

For Referencing Books:
Book References should include the author, title, publisher, city and date of publications and look like:
Palmer, John, *How to Brew* (Brewers Publications: Colorado, 2006)

If you are including an article out of a book it should look like:
Geijer, Agnes, 'The Textile Finds from Birka' in N.B. Harte and H. Ponting (ed), *Cloth and Clothing in Medieval Europe*, (Heinemann: London 1983), pp. 80-99

If it is an article from a magazine:
Gribling, Barbara, 'The Black Prince: hero or villain', *BBC History Magazine*, January 2013, vol. 14, pp. 30-40

For Referencing Images:

All images used in articles must be referenced for copyright reasons. It also pays to check that the owner of the website is happy for you to use their images in your own work! You can either include the referencing with the images in your article or create an image list at the end. This should be referenced like any other book or website. Check out the one at the end of the Pictish clothing article as a good guide!

Looking forward to see your articles!

The Editor

Cockatrice Contributors

Lord Ælfred se leof is a dancer, brewer and occasional fighter based in the Shire of Adora.
Nicholas Sheppard is a software developer and lecturer in computer science. Email: nps@nps.id.au

Lady Drusticc inigena Eddarrnonn is a Pictish woman living in the upper Dee valley (Scotland) in the year 600. Mundanely she resides in the Barony of Ynys Fawr in the Kingdom of Lochac and is a fervent supporter of all early period things.

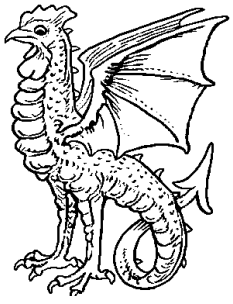
Lady Isabell Winter resides in the barony of Ildhafn, and has several interests within the SCA from equestrian, to cooking through to bookbinding. She is often found at events in 14th century style clothing but has been known to dabble in some 16th century styles. She has been researching bookbinding for over five years and, in the past few years, since a commission to make a girdle book. She has been researching this practical style. She is mother to a toddler and mundanely a part time administrator at a laboratory and in the limited remaining time she breeds Connemara ponies.
Email: kaosv2@yahoo.com Website: http://isabell.paradise.gen.nz/Bookbinding

Lady Joanna of the Beechwoods is a 12th Century Englishwoman whose main interests are dance and music, or music and dance. She has become somewhat obsessed with complicated Italian things, but teaches and researches dances from France and England as well. *Joanna Keenan* is a lot like her, but has been at it longer. She also welcomes questions at JoannaandMurray@homemail.com.au (note the double a) and will supply a CD of the music if you ask her nicely.

Lord Lowrens Wilyamson comes from the Scottish lowlands sometime in the 14th century. Details of his persona are vague and he seems to be in no hurry to remedy this. He occupies his time with singing,archery, woodwork, music, and other crafts. Email: lscampbell@xtra.co.nz

Rurik Farseker is a late 9th centurary to mid 10th centuary Swed living on the island of Visby. His current interests are brewing, sewing and improving his camp. Please visit http://blacksmithsarms.wordpress.com for more information on brewing. If you enjoyed this article or have any questions please look up the Lochac Brewers guild on Facebook. Email: ben.paton@gmail.com

Cockatrice Team



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