

# **Sugar Swans**

## **16<sup>th</sup> Century England**

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# 1 Introduction- Sugar Subtleties

During the medieval era, the English court feasted with four courses. Between each course, a subtlety was presented to the guests. These subtleties, also called sotelties, were sculptural centerpieces made using sugar, marzipan, wax, or some other more orthodox material.<sup>1</sup> Subtleties were not always edible, as they might be composed of wax or plaster. Subtleties were elaborate sugar sculptures. They may have been constructed by molded or poured sugar, formed sugar around a base using sugar paste or carved from blocks of sugar.<sup>2</sup> The theme for these subtleties offered entertainment and conversation between the four courses.

Menestrellorum Multitudo: Minstrels At A Royal Feast By Constance Bullock-Davies was used to construct our Yule feast. This book outlines the detailed lists of materials ordered and stocked for the Feast of Swans (a feast held in honor of a royal knighting ceremony in England, May 1306). Subtlety swans are mentioned at good length in the book, though there is speculation as to whether they are made from sugar or actual cooked swans. For this feast, sugar swans were produced as swans are hard birds to acquire, even for culinary purposes.

## 2 Sugar paste

The earliest printed recipe for gum-paste appeared in a book of secrets compiled by Girolamo Ruscelli, first published in Venice in 1552. The modern recipe for gum paste has changed very little from the period recipe. Gum or sugar paste is a combination of powdered sugar (not modern powered sugar with corn starch, but sugar that had been powdered) and plant gums. Gum tragacanth was the most common plant gum used in production of sugar paste, followed closely by gum arabic. Raw tragacanth is a ribbon-like exudate that forms on bark wounds. When steeped in water, gum tragacanth or gum dragon, (as it was once known in England), forms a sticky mucilage which allows any powdered material to be converted into a pliable, plasticine-like paste.<sup>3</sup>

Construction methods have also changed very little. Sugar-paste is an extremely fine material which can be modeled in the way of clay, though it is a difficult medium to work with. It dries out quickly on the surface, but remains internally soft. This can cause surface cracking if the work is moved. Its extreme elasticity also encourages slumping in large freestanding structures. Larger structures require the support of wires or armatures.<sup>4</sup> Once dried, the sugar can be painted. Red pigments were made from cochineal or carmine, green from spinach, beet or buckthorn, yellow from saffron, blue from Prussian blue and black from burnt ivory. Colors could also be mixed by grinding pigments with gum arabic and a little sugar to make the sugar paint shiny.

### 2.1 Period recipe- sugar paste

To make a paste of Suger, whereof a man may make al manner of fruits, and other fine thinges with their forme, as Plates, Dishes, Cuppes, and such like thinges, wherewith you may furnish a Table: Take Gumme and dragant as much as you wil, and steep it in Rosewater till it be mollified, and for foure ounces of suger take of it the bignes of a beane, the juyce of Lemons, a walnut shel ful, and a little of the white of an eg. But you must first take the gumme, and beat it so much with a pestell in a brasen mortar, till it be come like water, then put to it the juyce with the white of an egge, incorporating al these wel together, this don take four ounces of fine white suger well beaten to powder, and cast it into ye mortar by a little and little until they be turned into ye form of paste, then

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<sup>1</sup> Natural History Museum of Sugar, [Sugar Sculptures: The Early Years](http://www.sugarmuseum.org/ottoman.html) <<http://www.sugarmuseum.org/ottoman.html>>

<sup>2</sup> Mason, Laura [Food Culture in Great Britain](#), 2004

<sup>3</sup> Coutts, Day, The Henry Moore Foundation < [http://www.henry-moore-fdn.co.uk/docs/sugar\\_sculpture\\_0.pdf](http://www.henry-moore-fdn.co.uk/docs/sugar_sculpture_0.pdf)>

<sup>4</sup> Coutts, Day, The Henry Moore Foundation < [http://www.henry-moore-fdn.co.uk/docs/sugar\\_sculpture\\_0.pdf](http://www.henry-moore-fdn.co.uk/docs/sugar_sculpture_0.pdf)>

take it out of the said mortar, and bray it upon the powder of suger, as it were meale or flower, untill it be like soft paste, to the end you may turn it, and fashion it which way you wil. When you have brought your paste to this fourme spread it abroad upon great or smal leaves as you shall thinke it good, and so shal you form or make what things you wil, as is aforesaid, with such fine knackes as may serve a Table taking heede there stand no hotte thing nigh it.<sup>5</sup>

## 2.2 Modern recipe

1 tbl tragacanth gum  
1 tbl glucose  
3 tbl warm water  
1 tbl lemon juice  
1 pound powdered sugar

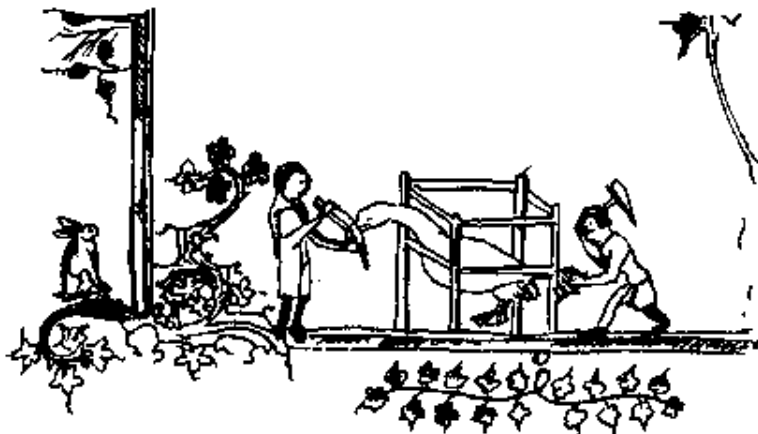
1. Mix warm water and Glucose until Glucose is absorbed.
2. Add the gum and lemon juice and, after these ingredients are thoroughly mixed, add small amounts of powdered sugar until you can work the mixture with your hands.
3. Continue adding small amounts of powdered sugar while kneading the mixture on a table top. As soon as the mixture is pliable and can be shaped without sticking to your fingers, you've added enough sugar (a pound or more)

## 3 Royal Swans

All swans in England belong to the crown. Swans were given Royal status in the 12th century, and if a privately owned swan escaped, it became the property of the crown. In 1482 document entitled "the Laws, Orders and Customs for Swans" stated all swans owned by those who pay less than 5 marks a year Freehold were forfeit to the King. Only those persons who had royal patens/marks could own swans. These marks were granted by special compensation by the King's Swan Master and entered into a registration book.

### 3.1 Markings

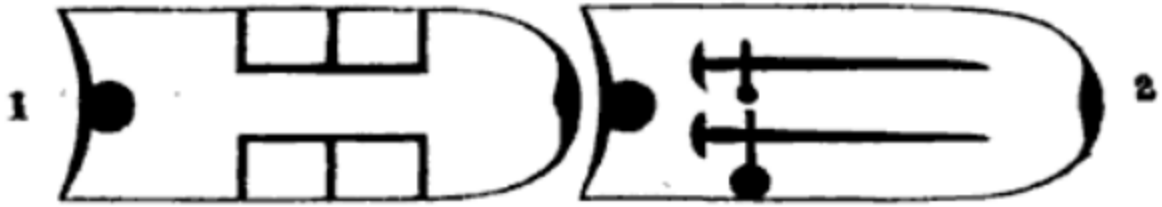
All swans in England are marked in a process called swan upping. The purpose is to mark all new cygnets with the same mark as their parents. Groups of swans are driven onto the river bank, where the cygnets are counted and marked by making nicks with a sharp knife. Prior to the early 20<sup>th</sup> century, these markings were made in the bill or foot of the swan.<sup>6</sup>



<sup>5</sup> Dawson, Thomas Good Hus-wiues Iewell, part I 1597

<sup>6</sup> Janin, Hunt Medieval Justice: Cases and Laws in France, England, And Germany : 500-1500 2004

Foot Marking a Swan (Reproduced from Bodleian MS, 204, f214, v. circa 1340)



Royal swan marks of Henry VII.<sup>7</sup>

### 3.2 Heraldic swans



Heraldic badge of Henry V white swan with gold crown and chains.<sup>8</sup>

## 4 Project notes

This project was constructed with 95% edible materials. The 5% of materials that are not edible are integral to the structural integrity of the sugar piece. NOTE: While a majority of the piece is sugar, edible varnish and non-toxic pastry paints, this piece is not for human consumption. The royal icing contains raw egg and the sugar is rock hard.

### 4.1 Materials

#### 4.1.1 Base materials

- 2 large boxes of rice crisp cereal
- 2 bags of marshmallows
- 2 stick of butter

To create a sugar form, rice crisp cereal was used. The rice/marshmallow combination creates a sticky moldable form that dries rock hard. As this is not a sugar piece that will be eaten, I used modern materials, they will: 1, not be seen; 2, will withstand a lengthy preparation time (4+ weeks); and 3 are the materials I had available to use.

#### 4.1.2 Sugars

- 10 lbs of fondant
- 1.5 lb of gum paste

<sup>7</sup> Yarrell, William A History of British Birds, Volume 3 1856

<sup>8</sup> Hook, Walker and Wise Medieval Heraldry 1980

- 2 lbs of royal icing

Both gum paste and fondant are similar in chemical composition. The difference lies in proportions and slight chemical variations. But basically, they use gum tragacanth and gum arabic to hold sugars together.

Gum paste is not very forgiving. It has a short set time which means you have a short window of working with it before its shape is set. It is super sticky so you must work with shortening on your hand and work surfaces to keep the sugar from setting. This makes tools slippery, and clean up is a pain. The upside, the sugar dries rock hard and is useful for structural pieces, like the beak, tail and head cap.

Fondant is slightly more forgiving in that it feels like marshmallow and has a longer molding time. This makes it easy to create moldable parts like feathers. The down side, it takes longer to set.

#### 4.1.3 Construction materials

- wooden dowels 1/4" diameter
- 2 yards of duck tape
- 2 tubes of epoxy

These are the non-edible parts of the sugar piece. The dowels are used for structural support and to give the cereal something to grab onto. The duck tape and epoxy were used for emergency repairs to the head. This shall be explained further in the construction techniques.

## 4.2 Construction techniques

### 4.2.1 Create the base

The base was created using rice cereal and marshmallow. The head and body were made in several layers to get the distinctive swan shape. The head and body were allowed to cure for 3 days, and then joined together with wooden dowels. Once formed, the whole cereal form was allowed to cure undisturbed for a week, before adding the first fondant coat.



### 4.2.2 Wrap in sugar fondant

Fondant was added to the swan, to create a hard outer shell. This protects the form, and give additional support to the rice cereal. At this time the swan weight 5 lbs. The neck line was also shortened due to it being out of proportion with the body size. A wooden dowel has been added to support the head and neck during the drying process. Tail, head cap, beak and beak bridge have been made out of gum paste and allowed to dry. These pieces were then attached with royal icing into position.



#### 4.2.3 Smooth coat of sugar

A layer of royal icing was applied to the fondant to remove the lumps and smooth out the surface of the swan. With this layer came extra weight, which caused the swan to decapitate under the weight of the sugar.



This would be the first of 3 such incidents. Each time the royal icing has been applied (you can see the royal icing in this photo) and allowed to harden. This was roughed up and sanded. A 4 inch wooden dowel was inserted into the head. Epoxy and royal icing was used to cement the 2 pieces together, and gum past is used to fill any gaps. This was allowed to cure. Each time the head/neck broke in a different location.



#### **4.2.4 The duct tape solution**

The weight of the sugar was causing catastrophic failures in this piece. Starting over was not an option, as 4 weeks of preparation had already gone into the project, and Bhakail Yule was the deadline for completion.

1.5 yards of duck tape to the whole neck to offer stability. This was then covered in sugar and fondant feathers. The cause of decapitation is probably substandard rice crispies, generic marshmallows, and the sheer weight of the sugar. The rest of the bird is rock solid and not going anywhere.



Period methods of repair would have been wax and/or plaster. However, this may have caused other issues as these materials are applied wet. Water/wetness would have continued to degrade the sugar on the bird.

#### 4.2.5 Shaping

Various methods of carving/sanding were applied to the royal icing to achieve smoothness and shape. This also roughed up the surface slightly giving the fondant feathers a place to grip when applied.

#### 4.2.6 Feathers

Feathers were cut out using a form. Small feathers on the majority of the bird, larger feathers for the wings.



#### 4.2.7 Details

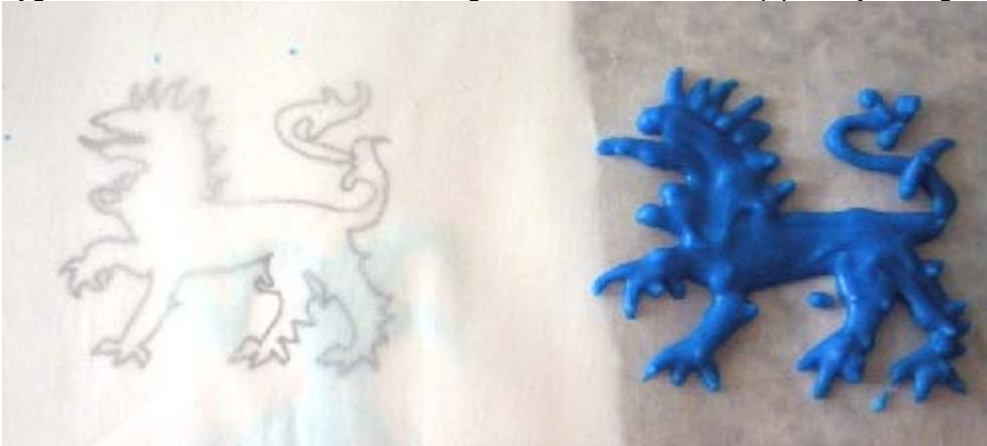
##### 4.2.7.1 Beak markings

The beak has been marked in the style of Henry VII



##### 4.2.7.2 Heraldic crown

Crown and chain indicate that the swan is a royal swan. This crown has the East Kingdom Blue Tygers as heraldic indicators. Crown is gold dusted fondant and piped royal icing blue tygers.





#### Preservation

The piece was sprayed with several coats of varnish, which provides protection to the sugar from moisture. Moisture is the number one cause of sugar disintegration. The varnish is a pastry varnish, which means it can be eaten, but does not taste very good.