



BURNT OUT LACE MADE IN IMITATION OF POINT PLAT DE VENISE BY THE SWISS  
HAND-EMBROIDERY MACHINE IN 1904 FOR THE ST. GALL RIFLE CLUB.

# IMITATIONS OF HAND-MADE LACE BY MACHINERY

by

GEORGE MIDDLETON

## PART II

NOTE: Just before this article went to press word was received of Mr. Middleton's sudden death. For many years Mr. Middleton was a special expert for the United States Tariff Commission. During this time he built up his remarkable collection of modern machine laces; his interest, however, included historic laces, of which he also collected specimens.

Mr. Middleton's loss is keenly felt by the Needle and Bobbin Club, which is very much indebted to him, not only for his helpful interest in the Club but also for his research in the preparation of *La Révolte des Passemens* and for his illuminating articles for the *Bulletin* on modern machine-made lace.

**I**N THE belief that additional material concerning machine imitations of hand-made lace might be of interest to those who read the previous article on this subject,\* further information about the machines with non-technical descriptions of them and additional illustrations of their products are now presented. Although most of the illustrations of the products of the machines are imitations of hand-made lace, a few are not. The information and illustrations may be arranged under two main headings—machinery and lace.

*Machinery.*—Since the products of knitting machines are so rare, and since the type of machine used for making the examples shown (Plates 7, 8) is so difficult to determine, no attempt is made to give a description or illustration of a knitting machine. An introduction to lace machinery, however, is offered by Plate 1 which shows the evolution of the bobbinet and Levers machines.

The bobbinet machine [Plate 2(a)] may be called the *Genesis* of lace machines since four other machines were developed from Heathcoat's

\* THE BULLETIN OF THE NEEDLE AND BOBBIN CLUB, Vol. 22, No. 2, 1938.

original patent: the bobbinet-Jacquard, Levers and go-through, Nottingham lace curtain, and Farigoule machines.

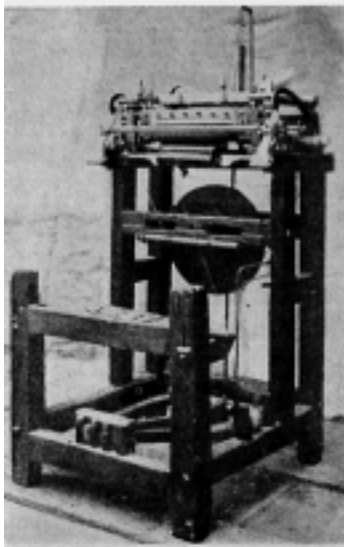
Machines other than the bobbinet are entirely dependent upon the beauty of the lace pattern for the sales appeal of their products. Patterned laces were made possible by a Jacquard construction, so that a portrait of Joseph Marie Jacquard, who did more than any other man to make possible decorative textiles, might well be included in any history of machine laces.

The Bobbinet-Jacquard or Pusher machine was the first lace machine upon which figured patterns were produced. Although not operated outside of France, it deserves its place among the illustrations [Plate 2(b)].

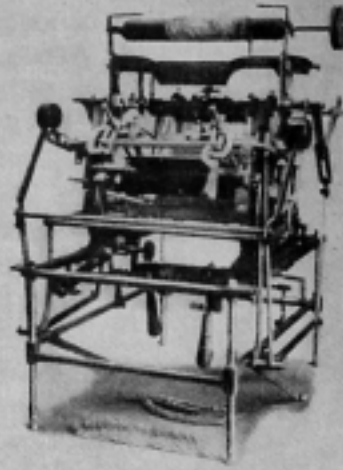
The Levers lace machine is very important commercially [Plate 3(a)]. The Jacquard, moreover, is of such a totally different construction from that applied to other textile machinery that illustrations are included of the Levers lace machine Jacquard which were obtained from a French factory [Plates 3(b), 4]. Without attempting to thread the labyrinth of words which a technical description of the complicated operation of this machine would involve, a few details of the machine may be given which are of interest.

*The Levers lace machine.*—A Levers lace machine consists of two parts, the portion where the lace is made and the Jacquard which governs the pattern; these two parts together form the lace machine in its entirety. Lace is a delicate fabric, but a lace machine weighs as much as 33,000 pounds, is 9 to 10 feet in height, occupies a floor space of about 50 feet by 10 feet, and when fully equipped contains enough yarn, if tied end to end, to stretch from New York to San Francisco and back again, and even in some cases half way around the world.

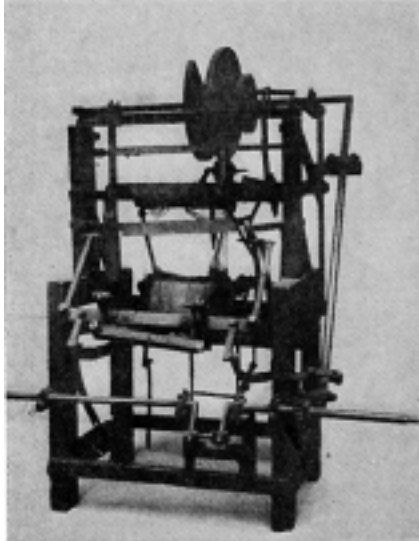
The body of the machine, where the lace is made, is from 170 to 270 inches in width. The working parts of the inside of the machine consist of combs, points, bobbins, carriages, steel bars, and brackets. The fineness of detail of the lace is governed by the fineness of the inside parts of the machine, and machines are called 10-point, 12-point, etc., depending on whether they have 20 or 24 carriages, etc., to an inch. Assuming the width of the machine to be 224 inches, which is the most usual width in the domestic Levers lace industry, and the gage to be 10 point, the inside of the machine would contain the following extraordinary number of items: 224 comb leads of 40 combs each, 224 point leads of 40 points



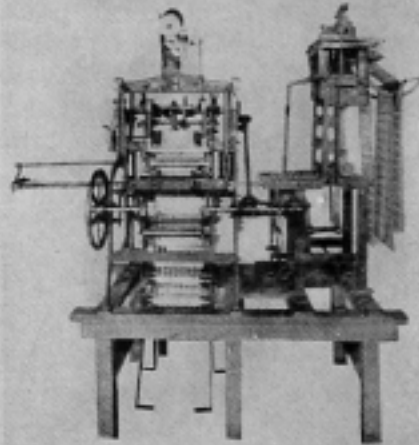
STOCKING HAND FRAME.  
Invented 1789



HEATHCOAT'S SECOND BOBBIN NET  
MACHINE.  
Invented 1809.



EARLY LEVERS-LACE MACHINE.  
1825-1881.



EARLY LEVERS LACE MACHINE WITH  
MANCHESTER JACQUARD.

PLATE I.  
EVOLUTION OF BOBBINET AND LEVERS LACE MACHINES.

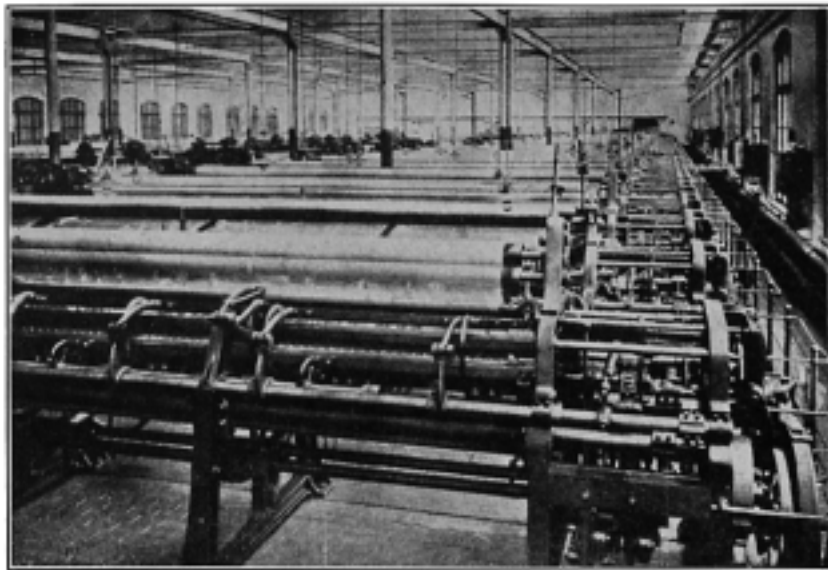


PLATE 2.  
(a) BOBBINET MACHINES.

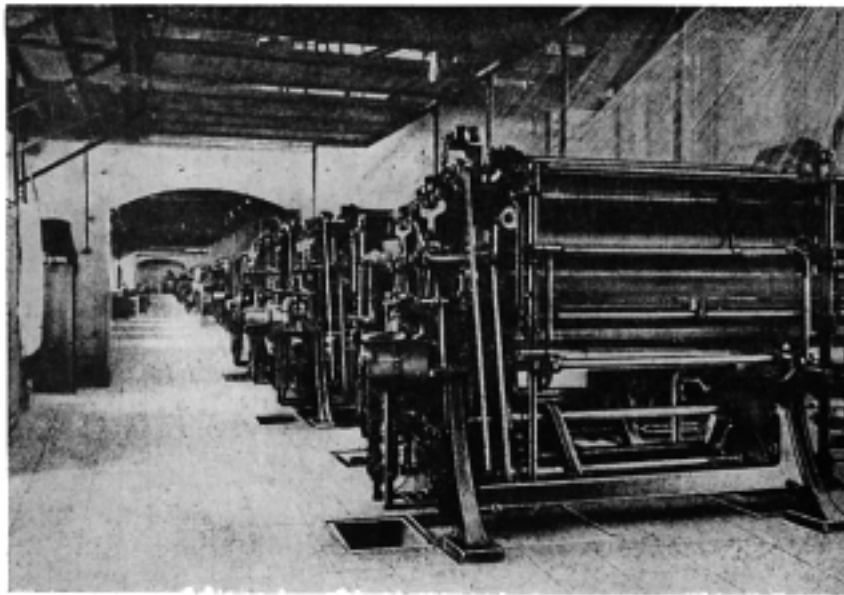


PLATE 2.  
(b) BOBBINET-JACQUARD MACHINES.

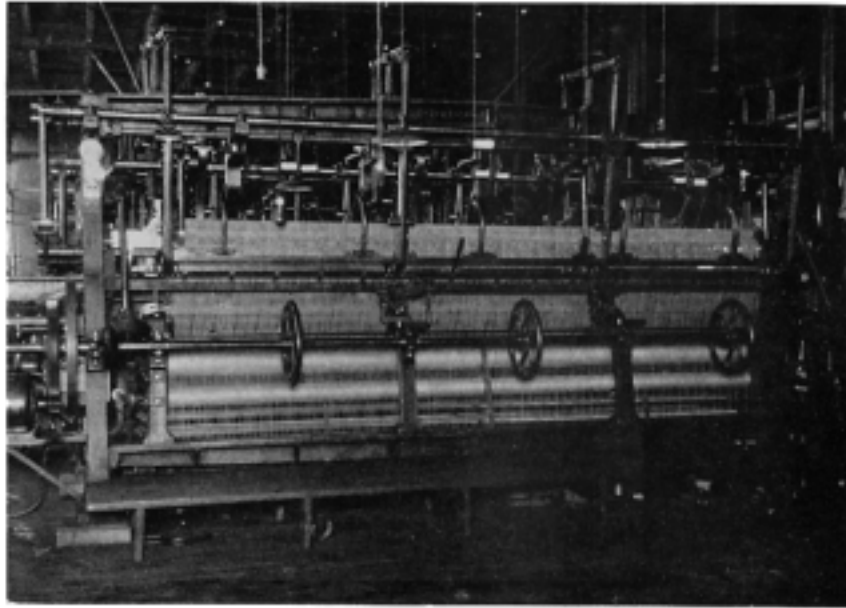


PLATE 3.  
(a) LEVERS GO-THROUGH LACE MACHINE.

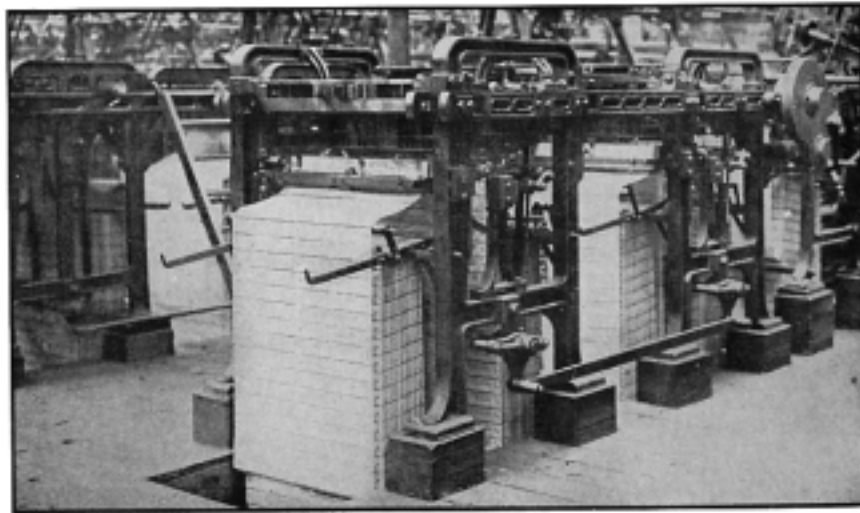


PLATE 3.  
(b) LEVERS LACE MACHINE JACQUARD.

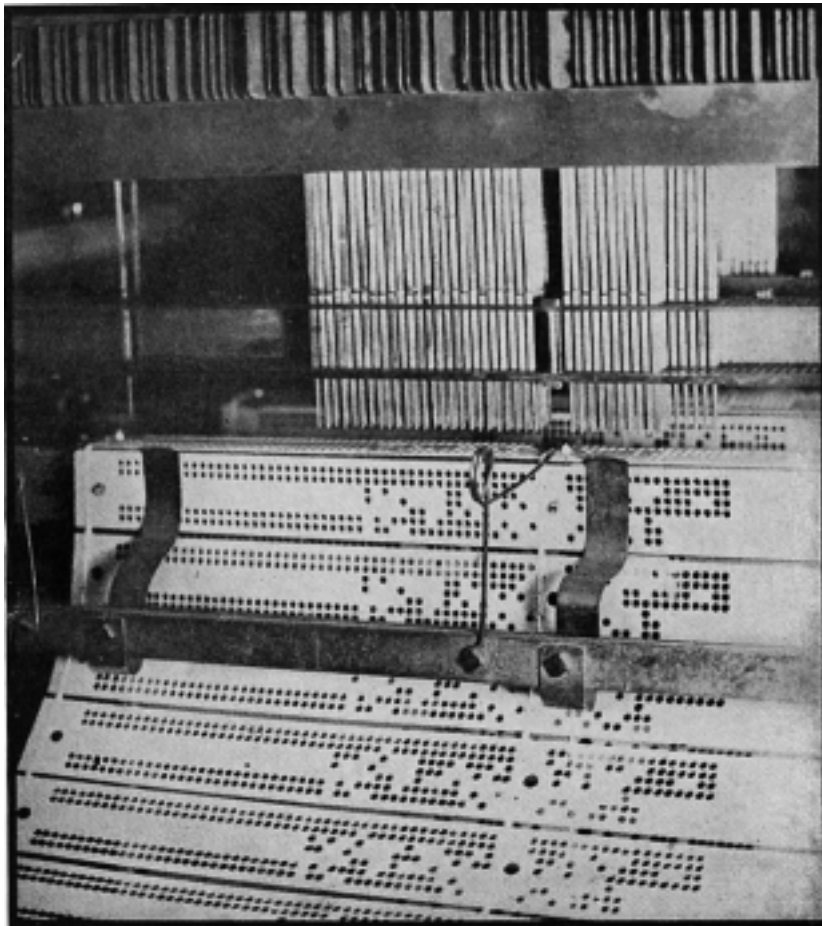


PLATE 4.  
DETAIL OF THE THREAD CONTROLLING APPARATUS OF THE LEVERS LACE MACHINE.

or more each, 4,480 bobbins and 4,480 carriages, and 150 to 200 steel bars, long ribbon-like pieces of steel, the thickness of a piece of paper, one-eighth to one-twelfth of a millimeter in thickness.

Such a machine, if making simultaneously 37 breadths of double warp bobbin fining lace, 6 inches in width, would have 4,440 threads of right twist and the same number of reverse twist yarn. These 8,880 threads might be, when the warp beams are full, 3,000 yards each in length, and thus the apparent fairy tale of stretching half way round the world if tied end to end is easily proved by ordinary arithmetic. In addition, 4,440 brass bobbin threads of perhaps 120 yards each would be required, thus adding another 300 miles.

The number of Swiss hand-embroidery machines in operation is now comparatively small, and the use of the schiffli embroidery machine for the purpose of producing burnt-out lace has so far superseded the Swiss machine that no illustration of the latter machine is shown.

The schiffli embroidery machine [Plate 5(a)], which is mainly operated at Plauen, Germany, and St. Gall, Switzerland, though there is quite a substantial industry in the United States, is really a multiple needle sewing machine, with its needle in front of the material, and its shuttle at the back, which interlocks every stitch of the needle. These machines are now made 15 yards in width and three rows of needles simultaneously embroider three pieces of fabric of the same length.

The Barmen lace machine [Plate 5(b)] is an improved braiding machine, called in France, the country of origin, the *torchon* machine, and in Germany, the country of largest development, the single thread braider. It is circular in form and produces one breadth, approximately 6 inches in width, or a number of narrower breadths, aliquot parts of the full width simultaneously.

The list of machines of which illustrations are given is as follows:

- Evolution of bobbinet and Levers lace machines
- Bobbinet machines
- Bobbinet-Jacquard or Pusher machines.
- Levers lace machine
- Levers lace machine Jacquard
- Detail of the thread controlling apparatus of the Levers lace machine
- Schiffli embroidery machine
- Barmen lace machine



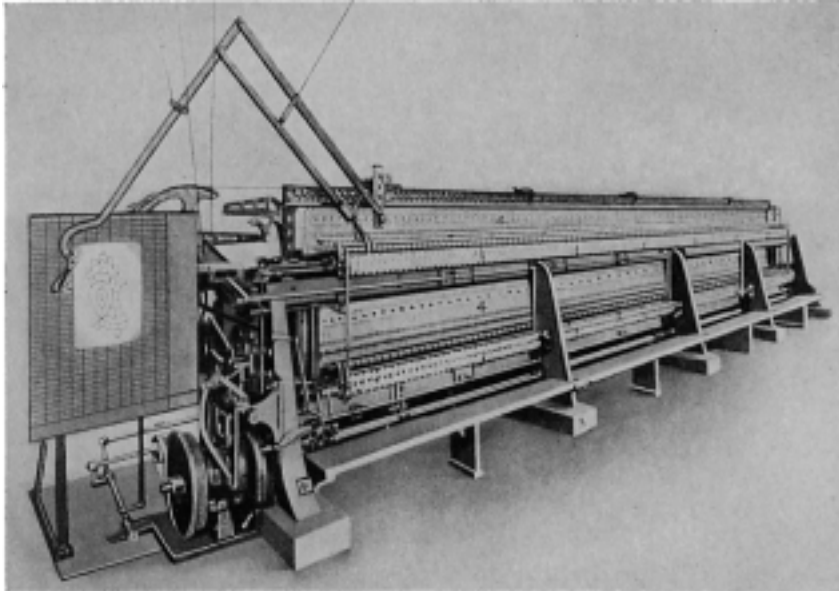


PLATE 5.

(a) SCHIFFLI EMBROIDERY MACHINE.

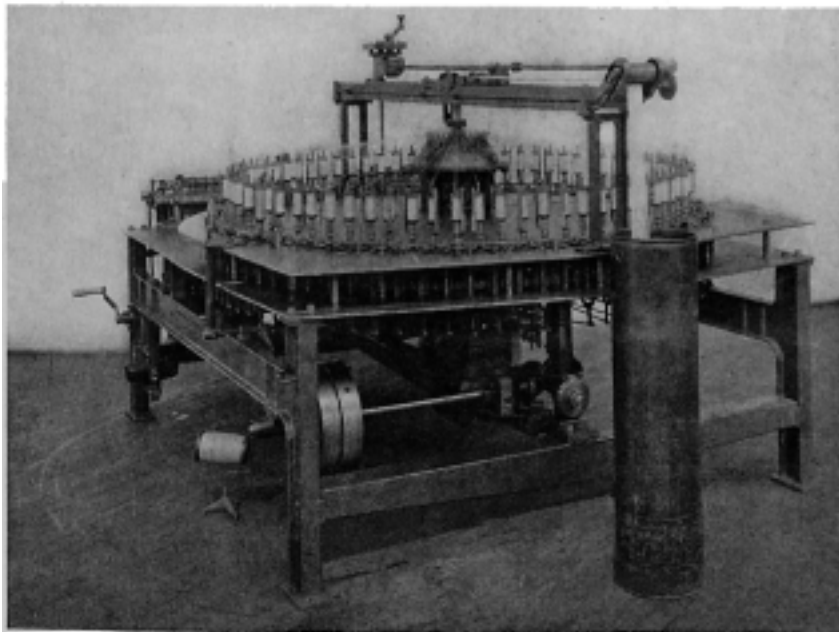


PLATE 5.

(b) BARMEN LACE MACHINE.

Bobbinet, bobbinet-Jacquard, Levers, and schiffli embroidery machines are not built in the United States, and where such machines are used in the domestic lace and embroidery industries they are of necessity imported. England is the principal source of bobbinet and Levers lace machines; bobbinet-Jacquard machines are only operated in France. Schiffli embroidery machines are made in Switzerland and Germany, and those in use in the United States have been imported from those countries. Barmen lace machines are sometimes imported from Germany, but when more machines are required they are generally built by the firms operating them in this country. The value of Levers lace and of bobbinet machines has varied considerably when pre-war and post-war prices are in question, and while the post-war price is considerably higher, in terms of foreign currency, the increase is partly offset by its depreciation in value. It is doubtful, however, if a new Levers or go-through lace machine could be imported on which the landed value would be less than \$10,000 before the machine could be operated. The landed value includes the duty payable upon importation into this country (30 per cent on the foreign invoice value), ocean and domestic freight (necessarily very large on machinery of such weight), insurance, consular fees, and costs of erection.

The Barmen lace machine is comparatively small, but the others are of such weight that the buildings housing them are specially built. Numerous other pieces of accessory machinery are necessary for the preparatory processes connected with the yarns of which the lace is made. The preliminary work of designing and drafting is difficult and requires years of training for proficiency to be obtained. Levers lace machines cannot be economically operated in fewer number than 8 or 10, and as the price of individual machines is high the purchase and maintenance of a small plant requires considerable capital.

Without irreverence toward those clever and patient people to whom the world owes the art of making real lace, it may be said that the stock bequeathed by them has been so carefully improved by machinery that the accumulated interest now exceeds the principal.

*Laces.*—The first two laces made in the eighteenth century on knitting machines serve as an introduction to additional specimens of machine imitations of hand-made lace (Plate 6). Other examples of the products of knitting machines are illustrated by the nineteenth century shawl (Plate 7) and the interesting specimen of Chantilly lace (Plate 8).

The excellent portrait of George Washington, for which no excuses

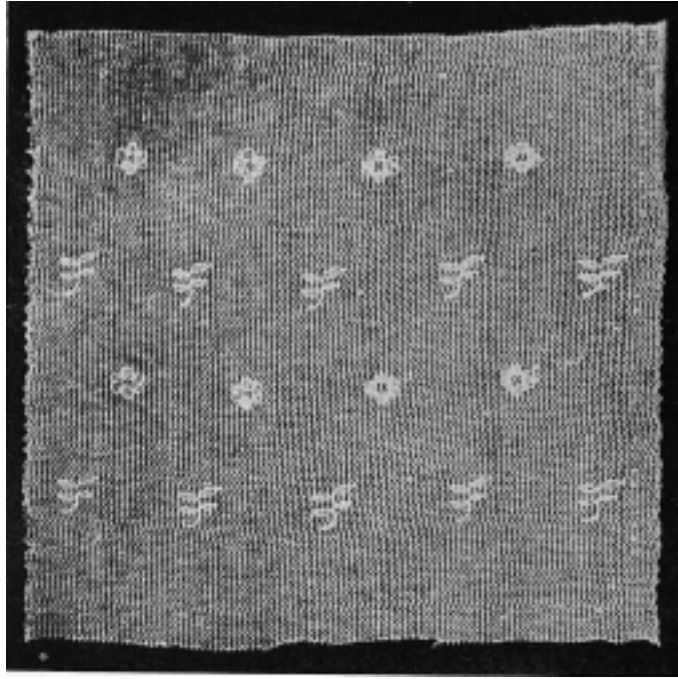


PLATE 6.

(a) EARLIEST EXAMPLE OF MACHINE-MADE LACE PRODUCED BY  
ROBERT FROST OF NOTTINGHAM, 1769.

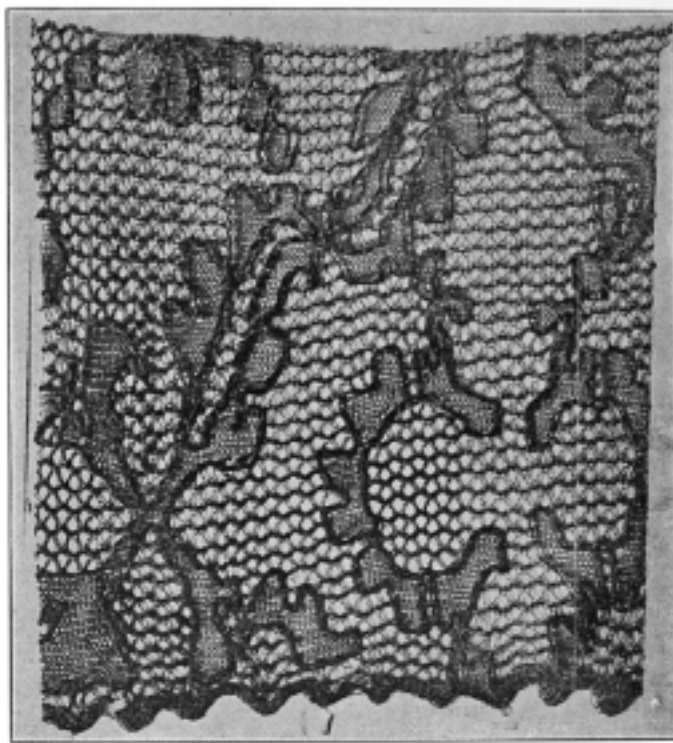


PLATE 6.

(b) DETAIL OF THE PATTERN OF THE SECOND EARLIEST LACE MADE ON THE MACHINE INVENTED BY ROBERT FROST IN 1771.

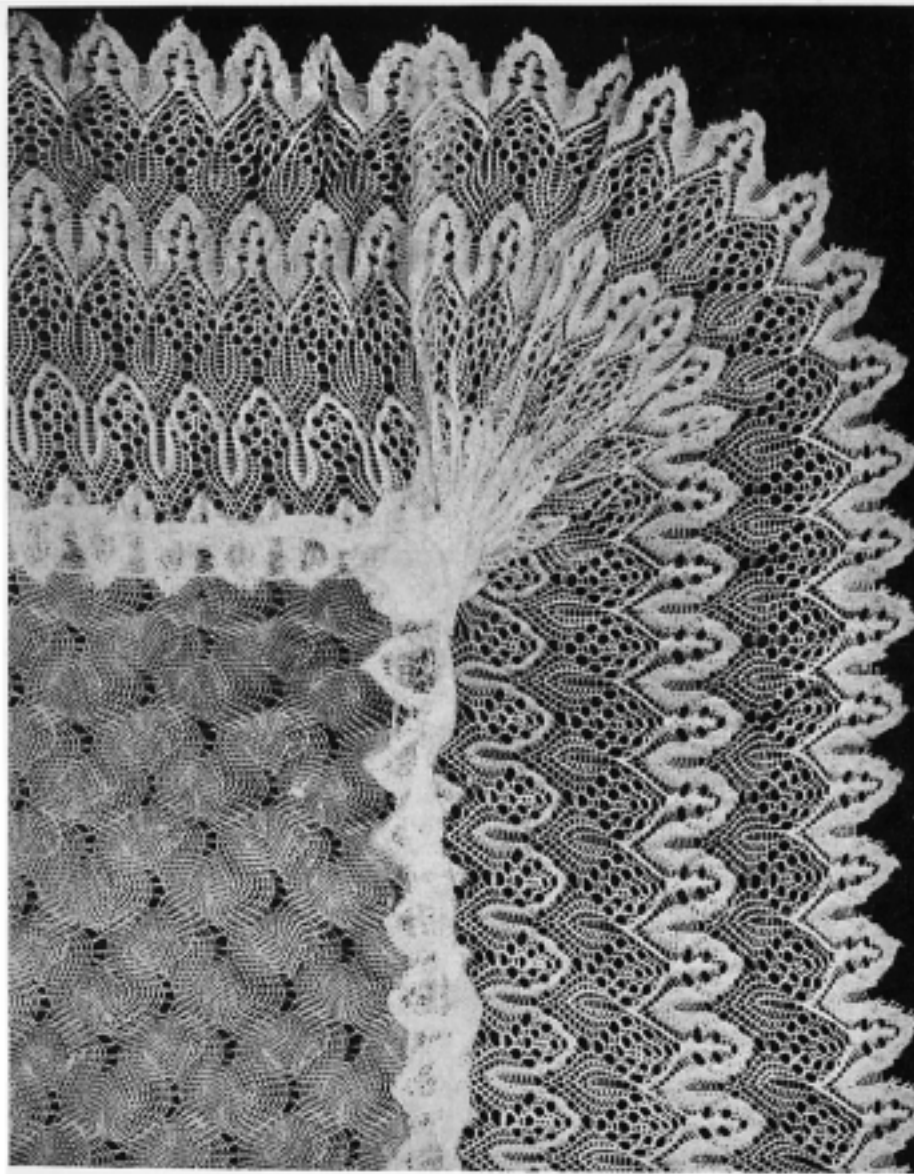


PLATE 7.  
CORNER OF A KNITTED LACE SHAWL, ABOUT 1830.



PLATE 8.  
KNITTED IMITATION OF CHANTILLY LACE.

need be made (Plate 9), is the product of the bobbinet-Jacquard or Pusher machine. The same machine produced the handsome lace with the *rococco* pattern in the style of Louis XV (Plate 10). The outlining threads in this piece were added subsequently to the manufacture of the ground.

The imitation of Point Milan (Plate 11) and the French specimen of silk lace (Plate 12), made when the translation and production of Rostand's "Chantecler" held the theatrical world in its grip, are fine examples of Levers lace. The Levers machine is also responsible for the interesting lace made for the Paris Exposition of 1900, with railroad engines, telegraph poles and electric lights introduced in the design (Plate 14).

An outstanding piece is the fine imitation of *Point Plat de Venise* made on the Swiss hand-embroidery machine (Frontispiece). This extraordinary specimen was made in 1904 for the competition of the St. Gall Rifle Club. The central figures show William Tell, carrying the cross-bow, and his son. The four surrounding shields illustrate the following: Left-hand top corner, emblem of Switzerland; right-hand top corner, emblem of the Canton of St. Gall; left-hand bottom corner, emblem of the town of St. Gall; right-hand bottom corner, emblem of the St. Gall Rifle Club.

Examples of the products of the schiffli and Barmen machines are also included in the illustrations. Two pieces of schiffli lace, one on a silk background prior to burning out, and the other on a cotton background prior to burning out are shown in Plate 15. A series of narrow hand-made laces are contrasted with Barmen lace reproductions in Plate 16. These are not arranged in any definite order and the result is a challenge to say "which is which."

The following is a list of the illustrations with the names of the producing machines:

*Knitting machines:*

- Earliest knitted laces
- Corner of lace shawl made in 1830
- Knitted imitation of Chantilly lace

*Bobbinet-Jacquard or Pusher machine:*

- Portrait of George Washington
- Rococco pattern, imitating the style of Louis XV

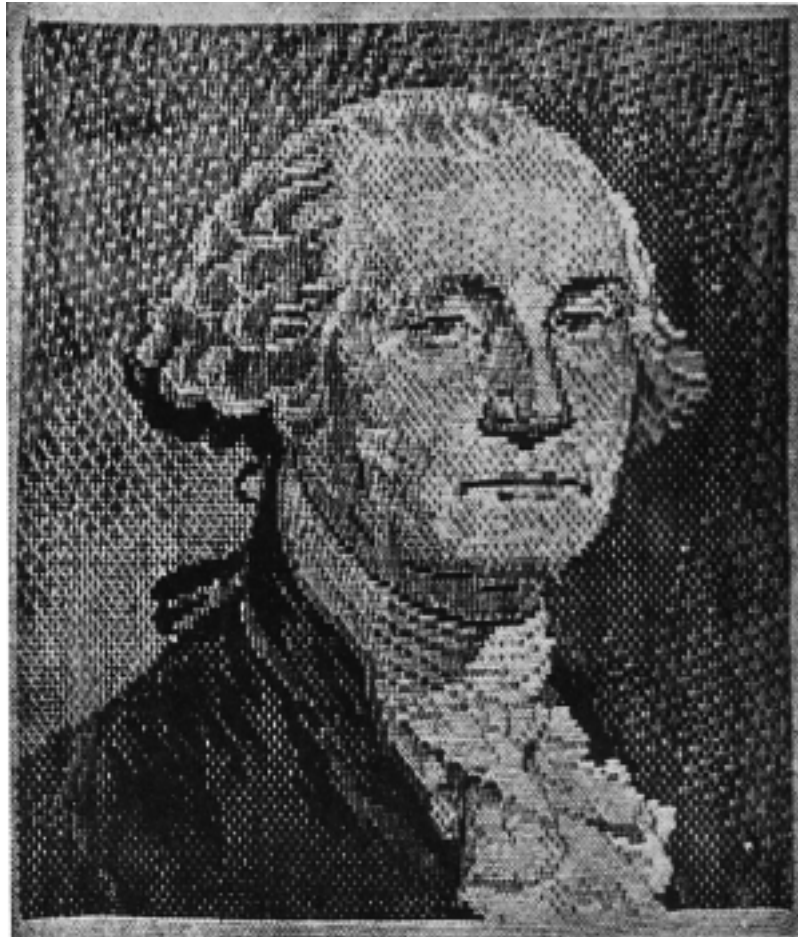


PLATE 9.  
PORTRAIT OF GEORGE WASHINGTON, PRODUCT OF THE BOBBINET-JACQUARD  
OR PUSHER MACHINE.



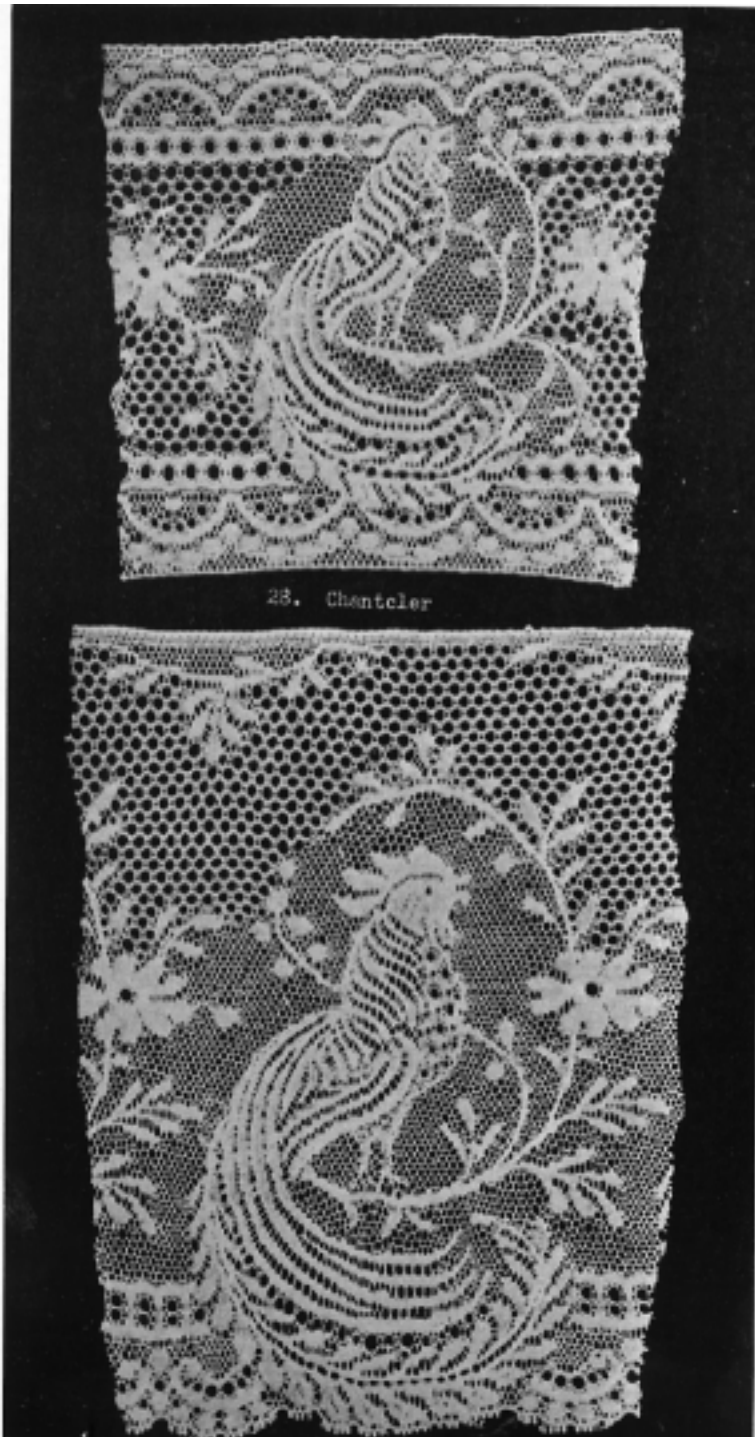


PLATE 10.  
ROCOCCO PATTERN IN THE STYLE OF LOUIS XV, PRODUCT OF THE BOBBINET-JACQUARD  
OR PUSHER MACHINE.



PLATE II.

IMITATION OF POINT MILAN INSERTION MADE ON THE LEVERS MACHINE.



28. Chantcler

PLATE 12.  
"CHANTECLER" MADE ON THE LEVERS MACHINE.

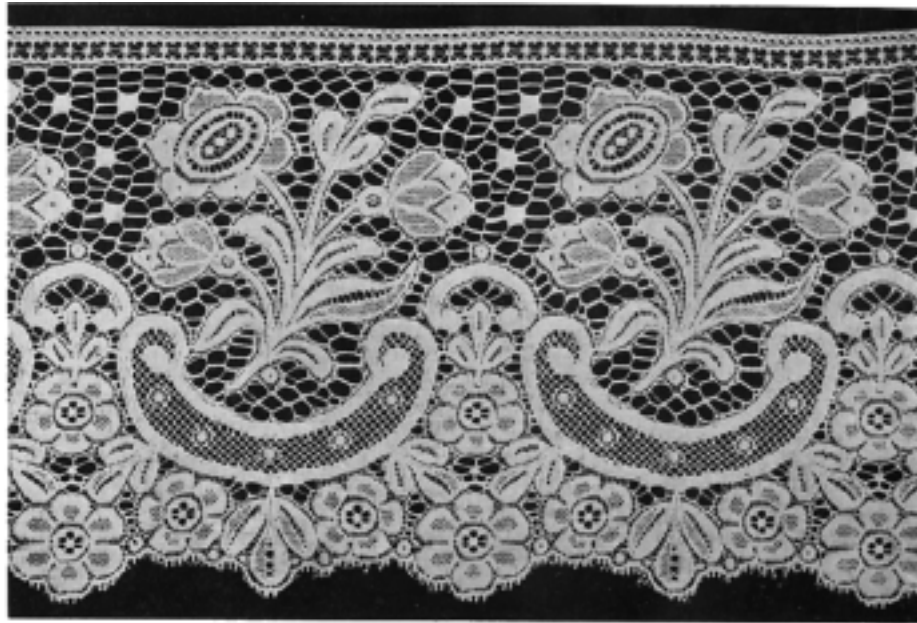


PLATE 13.

(a) IMITATION DUCHESSÉ LACE MADE ON THE LEVERS MACHINE.



PLATE 13.

(b) THE SAME AS FIRST TAKEN, UNFINISHED, FROM THE MACHINE.

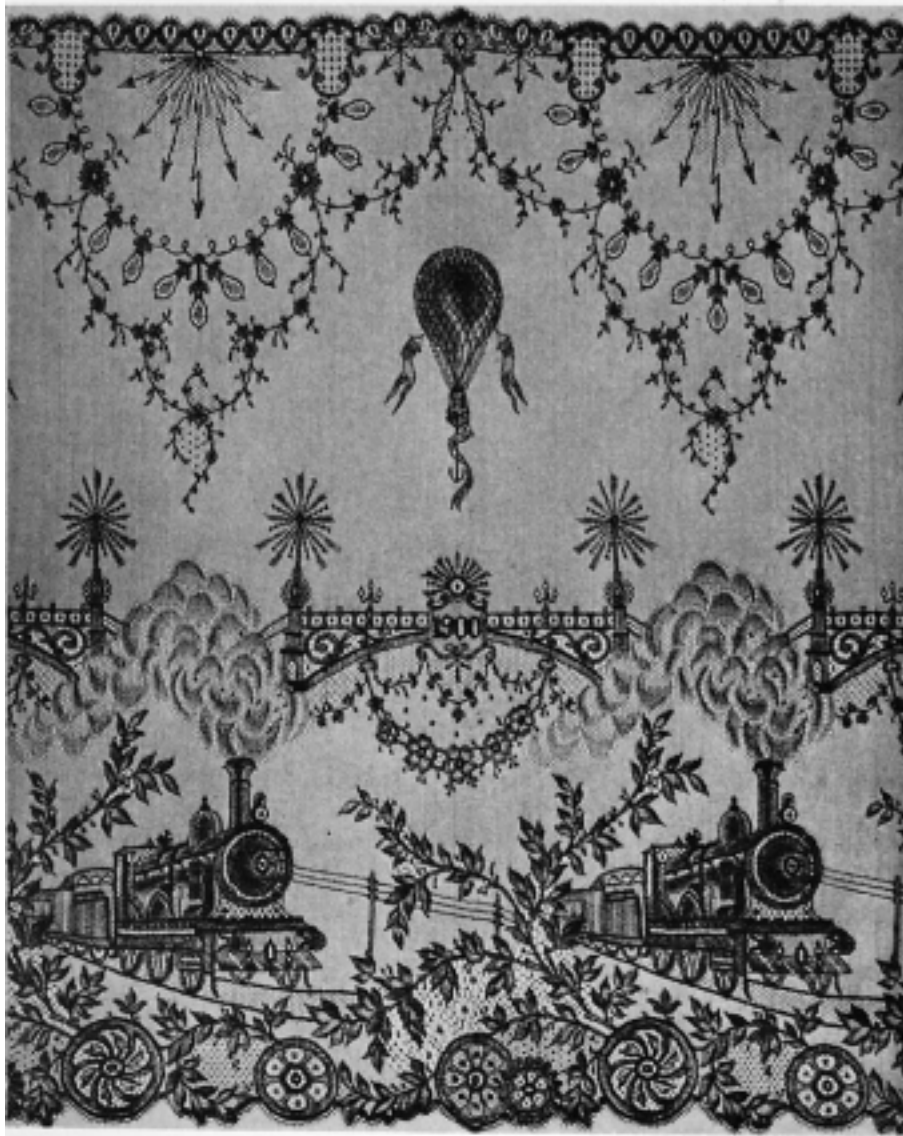


PLATE 14.  
LACE DESIGN PRODUCED ESPECIALLY FOR EXHIBIT AT PARIS INTERNATIONAL  
EXPOSITION, 1900. MADE BY THE LEVERS MACHINE.



PLATE 15.

(a) STRIP OF SCHIFFLI LACE WITH SILK BACKGROUND PRIOR TO BURNING OUT.

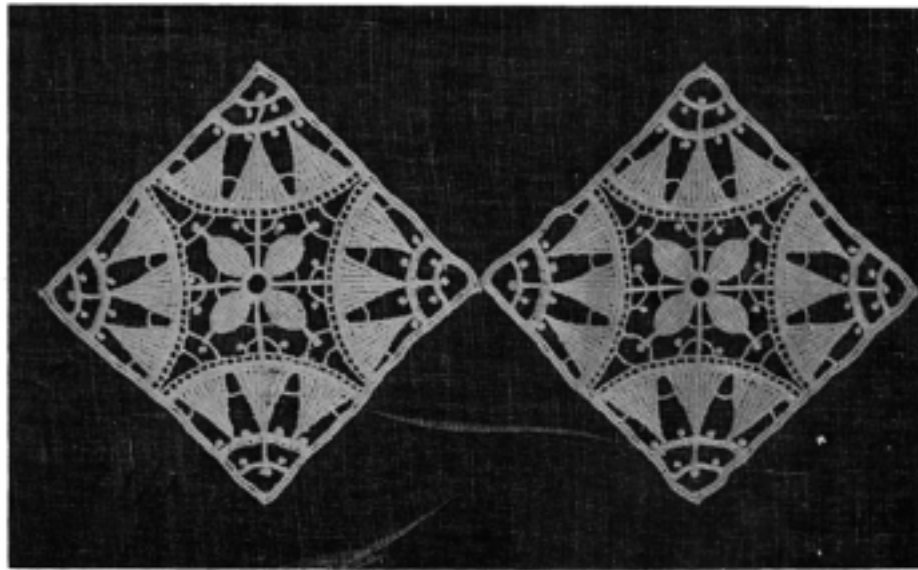


PLATE 15.

(b) IMITATION OF CYPRUS LACE MADE BY THE SCHIFFLI MACHINE WITH PREPARED COTTON BACKGROUND PRIOR TO BURNING OUT.

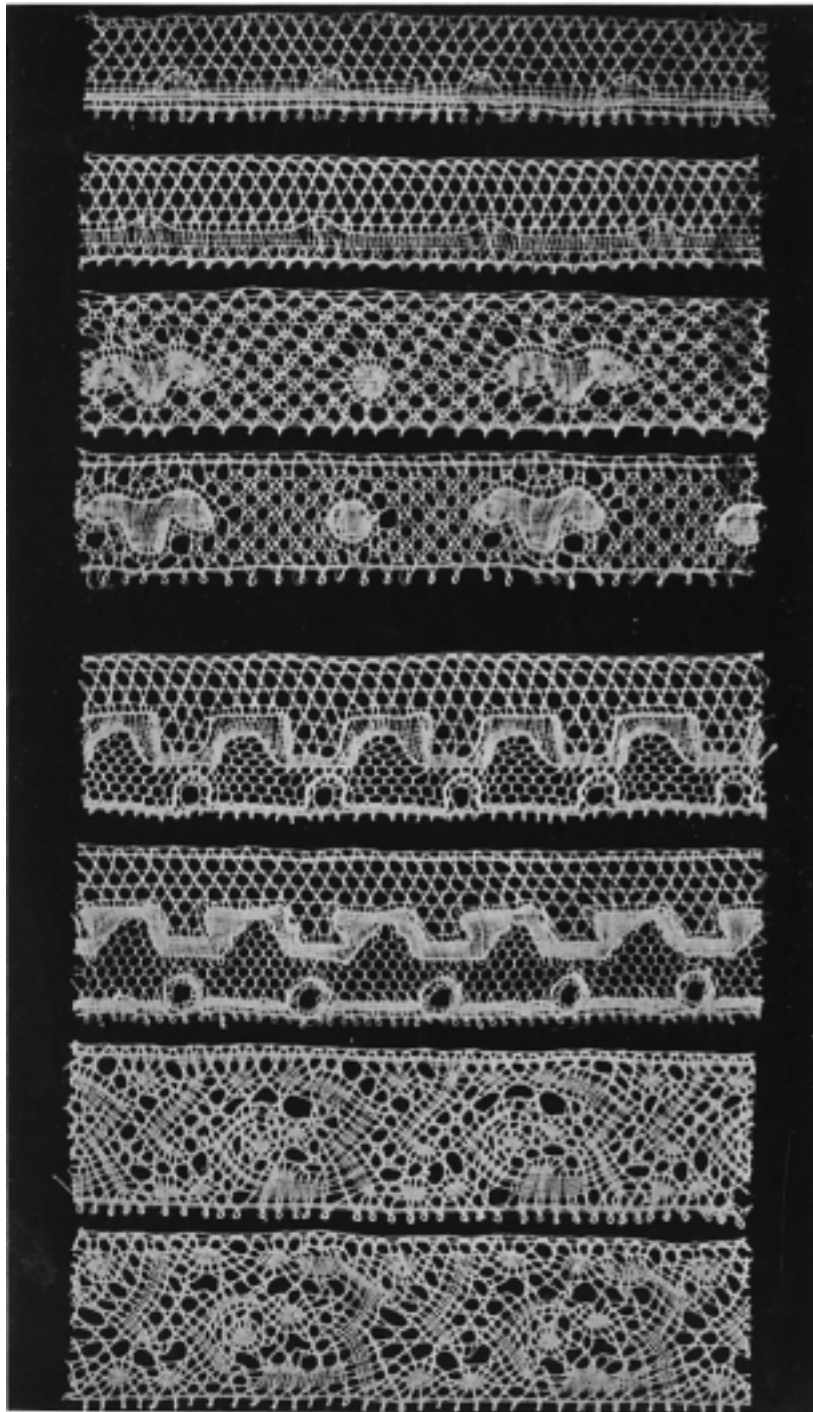


PLATE 16.

THE SAME PATTERNS MADE BY HAND AND MADE BY THE BARMEN LACE MACHINE.

*Levers lace machine:*

Imitation of Point milan insertion

Chantecler

{ Imitation Duchesse lace

{ The same as first taken, unfinished, from the machine

Lace made for the Paris Exposition, 1900

*Swiss hand-embroidery machine:*

St. Gall emblem

*Schiffli embroidery machine:*

Embroidered pattern on chemically prepared cloth prior to burning  
out

Embroidered pattern on silk prior to burning out

*Barmen lace machine:*

Specimens of hand-made lace with Barmen machine imitations

It is believed that these illustrations of laces made by six different types of machines, coupled with those shown in a previous article, will offer convincing evidence of the versatility of their products and will go far to prove that the end is not yet.