

**LACE** (ME. *las*, Fr. *lacs*, OF. *laz*, It. *laccio*, Sp. *lazo*, Portug. *laco*, Eng. *lasso*, Lat. *laqueus*, all meaning 'noose'; equivalent to *lace* as used in this article, are Fr. *dentelle*, *guipure*, *point*, Ger. *Spitzen*, *Kanten*, Dutch *Kant*, Sp. *encaje*, It. *trina*, *merletto*, *punto*, *pizzo*, ML. *opus reticulatum et denticulatum*; interesting to compare with the Fr. *lacs* are its diminutive *lacet*, cord, and *lakis*, network). Decorative openwork of threads, usually linen or cotton, but sometimes of silk or aloe fibres. The word developed this sense in the sixteenth century, before which it was restricted to shoe, corset waist, and sleeve laces, and to the gold and other fancy braids used in trimming hats and clothes.

## HAND LACE

Probably the earliest use of the word was in an ancient rule for English nuns dating from 1210, which, modernized in form and abbreviated, reads: "Make no purses or lace (laz), but shape and sew and mend church clothes and poor men's clothes." A clear idea of the *braid* meaning of the word in the fifteenth century can be had from the directions given in an Harleian manuscript dating from 1471, for making "lace Bascon, lace indented, lace bordered, lace covert, a brode lace, a round lace, a thynne lace, an open lace, lace for hattys," etc. The illuminated initial letter shows a woman busy making such lace. As is explained in the text, threads in combinations of two, four, five, up to 10 and 15, are twisted and plaited together. No pillow, bobbins, or pins are used. Instead the fingers serve as pegs, upon each of which is placed a ball of thread. The fingers are lettered, the first finger being called A, the second B, and so on. A "thynne" lace can be made with only three threads, requiring the use of only three fingers, A, B, and C, on one hand. By occasionally dropping some of the threads, braid with openwork or with indented edge is produced. For very broad laces the fingers of assistants must also be used. The most ancient specimens of lace in existence are knotted hair nets and breast nets from the tombs of Thebes and other parts of Egypt—some dating from as far back as 2500 B.C., and some not only made with loose tassels and meshes in ornamental groups, but also adorned with heads and tiny porcelain figures strung among the meshes. Also from the tombs of Egypt come the Coptic (Roman-Egyptian) laces dating from the third to the seventh century A.D. Some of these are bobbin laces; others are embroidered warp laces. Mrs. Pollen (see *Bibliography*, below) in her illustrated folio volume illustrates examples of both. The bobbin lace illustrated by her resembles torchon, was unearthed in 1903, and is now in the Cluny Museum. The bobbins were found with it. It was probably made, not on a lace pillow, but on a wooden frame, with pegs to hold the threads apart. An interesting example of Coptic lace net for the hair is the coif in the Poldi-Pezzoli Museum, Milan, illustrated by Ricci, also included in this work.

The oldest large pieces of lace in existence are on two albs, the first of which, still preserved in Assisi, is said to have been woven and ornamented by St. Clare and her nuns and to have been worn by St. Francis of Assisi (1181-1226). The lace is a fundamental part of the linen robe, being drawn work, a polygon made up of squares containing gammadions (swastikas) and other derivatives of the cross. Mrs. Pollen regards the design and technique as showing traces of Coptic origin. The other alb is said to have been worn in 1298 by Pope Boniface VIII and is preserved in the treasury of the Sistine Chapel in the Vatican. The linen of which it is made is crisp and wiry, though much worn, resembling, not Italian linen, but that of Egypt, the *linum usitatissimum*, called in early Christian times *byssus of Alexandria*. The linen of this alb is slightly finer than that of the Assisi alb and is heavily adorned with lace of an Oriental character. The rosettes symmetrically grouped in squares are needlework in *punto a rammendo*, and the curious *punto treccia* (tress work) is introduced as well

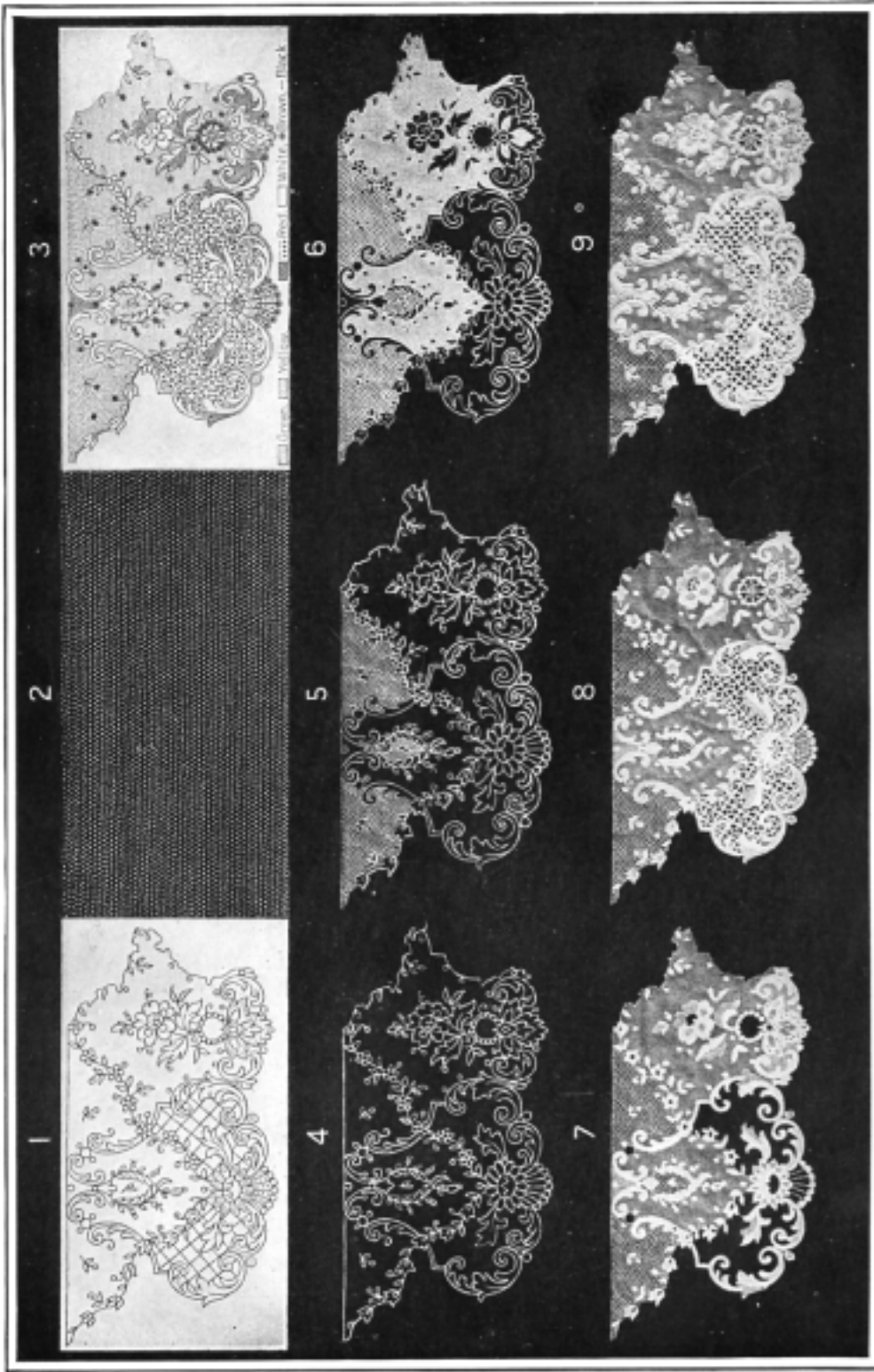
as the *punto a stuora* (matting stitch). But in this as well as other very early lace the *punto a festone* (buttonhole stitch) does not appear, although afterward it came to be almost the only stitch used in needle lace, until the advent of the *réseau* (looped mesh). In the alb of Pope Boniface the lace was inserted in squares, the surrounding linen cloth being developed into rows of drawn work. The flounce and insertions of bobbin lace were added at a later date.

Painted evidence of the ecclesiastical use of lace at the beginning of the fourteenth century is afforded by the fresco of Giotto (1276-1337) in St. John Lateran, where one of the two priests supporting Boniface VIII wears an alb with lace on the sleeve; by Giotto's "St. John the Baptist" in the Louvre, with lace on the bed linen and the long towel; by Giotto's fresco in the basilica of Assisi, where the shirt of the Christ Child is adorned with reticella lace.

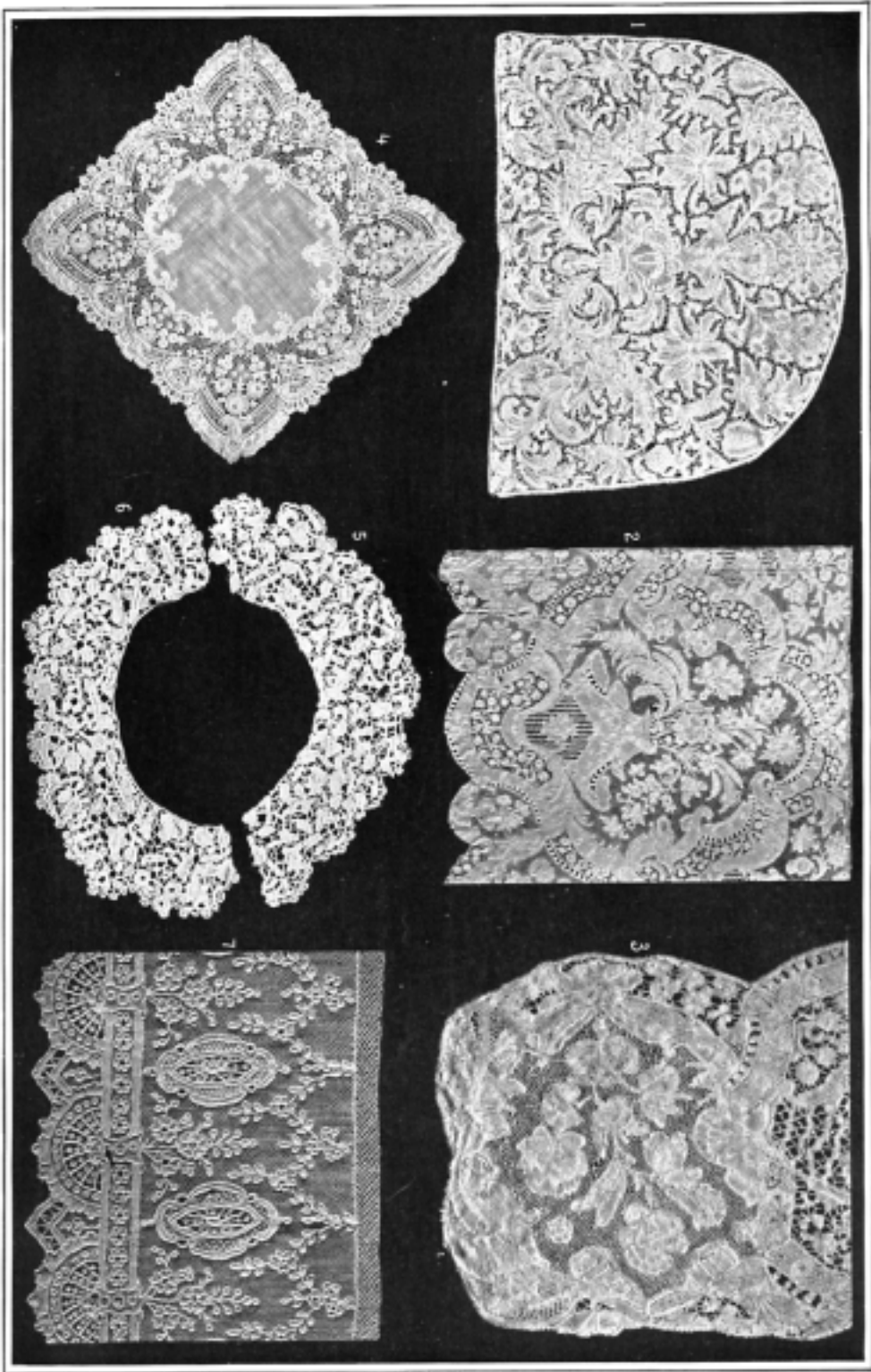
However, even if the Assisi and the Pope Boniface albs are as ancient as claimed, it is certain that the amount of lace worn either by ecclesiastics or laity previous to the sixteenth century was comparatively small, and that the development of needle lace and bobbin lace, made without using warp or web or net, did not take place until then. Only then does lace begin to appear frequently in paintings and in illustrations of manuscripts and books. From the middle of the sixteenth century well into the eighteenth is the age of lace as an article of personal adornment for both gentlemen and ladies. But of course the amount of lace worn now, though less conspicuously, since the invention, and enormous development in recent years, of inexpensive power-machine laces, is thousands of times greater than ever before, while the use of all-lace curtains that became practicable only with the development of machine net has within the past 25 years become common in the United States, Great Britain, and France, and not uncommon in Germany and Italy.

The primitive origin of lace is from nets and embroidered warps or knotted fringes. Lace nets are finer and more decorative than fish nets or hunting nets and are used to adorn the body or drape the home. Embroidered warp laces are those made, like the ancient Coptic and Peruvian and some of the early Italian ones, by omitting the weft from a section or sections of a cloth on the loom or weaving frame, and then with needle or bobbin working a lace pattern on the warps thus left exposed. Another way of getting exposed warps to use as a foundation was to pull out some of the wefts. This is *drawn work*. Still another way of getting lace into the body of a fabric was to cut out sections of the fabric, edging the small openings with embroidery and filling in the large ones with needle lace. This is *cutwork*. As a basis for lacework figured by darning or filling in with the needle, square-mesh knotted net was also used. This is *filet italien*, called *lakis* or *filet brodé* by the French and *modano* by the Italians. Another basis for similar lacework was *buratto*, or bolting cloth, coarse and open like a sieve. Lace fringes were made by knotting warps left unwoven at the ends of a cloth. This is *macramé* lace. All of these laces date from before the Renaissance. Other laces are made by *knitting*, *crocheting*, and *tatting*. (See KNITTING.) Crocheting is looping done with a crochet hook, and *tatting*

LACE



SUCCESSIVE STEPS IN THE MAKING OF POINT D'ALENÇON LACE  
From the Metropolitan Museum of Art, New York  
(See Explanation and Description in Text)



LACES FROM THE METROPOLITAN MUSEUM OF ART, NEW YORK

- 1. English Antique
- 2. Italian
- 3. English Antique
- 4. English Modern
- 5. Irish Modern
- 6. Brussels Antique
- 7. Brussels Modern

is knotted lace made with a tatting shuttle. But the laces par excellence, and those that most appeal to the imagination as derived from the delicate and wonderfully beautiful laces of the spider and caterpillar, are made with needle or bobbin and without any cloth or net or warp ground to start with. These are the laces the development of which in the sixteenth century brought fame and fortune to lace makers and established the art as one of the great decorative arts.

Here it is well to remark that the attempt to make point lace a synonym of needle lace or of needle-point lace is a gross error. Point means bobbin lace (sometimes called pillow lace from the pillow on which much of it is made) just as much as it means needle lace. In other words, point is a general word for lace in English as well as in French and Italian (*punto*). General terms that cover all laces, machine as well as hand, are *sewed laces* and *woven laces*—the former including all laces made with the needle and the latter all laces made in any other way. Laces made on embroidery machines class, of course, with sewed laces; those made on the Leavers machine or the lace-curtain machine or the dentellière with woven laces.

*Needle lace* of the *punto in aria* type is worked on loose threads that have no coherency until the needlework binds them together. This needlework is executed with a single thread. First the pattern is drawn, usually on parchment. A piece of heavy linen is sewed to the parchment to hold it straight. The threads in groups of two, three, four, or more are laid along the main lines of the pattern and basted down through parchment and linen.

The entire pattern is then executed, in five stitches, the buttonhole stitch being much used except for the net ground. The accompanying plate shows how Alençon lace is made, the different classes of work being assigned to different workers successively, each an expert in her particular part. Fig. 1 shows the design, which is drawn on white paper. It is then pricked with a needle on a piece of green parchment on which the grounding is indicated (Fig. 2). A colored design in which the portions to be worked out by the different workers are indicated is next employed and is shown in Fig. 3. The first worker traces out the design on the parchment (*la trace*) as shown in Fig. 4. The next supplies the coarser groundwork (*bride*), indicated on the color scheme by yellow and shown in Fig. 5. Next the finer grounding (*réseau*), which corresponds in the color plan to the green, is worked in, and then the design itself is worked in solid buttonhole stitch (*rempli*). This is indicated by the white on the color plan. Next the fine stars of the openwork (*modes*) are added, corresponding to the red on the diagram, and the final process consists in working a heavy outline around the design, as is indicated by the black. Fig. 9 shows the finished lace after it has gone through these successive stages.

*Bobbin lace* is made from a large number of threads attached by pins to an oval cushion or pillow, each thread being wound on a small bobbin. The design, as in needle lace, is drawn on stiff paper or parchment, which is carefully stretched over the pillow and pricked out along the main lines. Then small pins are inserted at close intervals, around which the threads turn to form the various meshes and other openings.

The thread on the bobbins is lightly wound and tied at the top in a loop that slips easily when the bobbin is needed. The plaiting or weaving is exceedingly intricate, but the bobbins are passed over and under each other with remarkable rapidity and accuracy. The laces are usually made, not in large pieces that would require a huge cushion and a bewildering number of pins and bobbins, but in separate motifs that are joined together afterward.

The early pattern books indicate not only that early needle-lace designs are based on embroidery designs, but also that they are Venetian. They first appear definitely in *Il Burato*, published about 1527, and continued their career in the pages of Tagherite and Zoppino, until in Mathio Pagan's book, published in 1543, we find *punto tagliato* (cutwork), which is nothing more or less than *reticella* lace. The novelty of this lace depends upon the *tagliato*. The linen not only has threads drawn, but it is also cut. The process is splendidly illustrated by a piece of *reticella* lace in the Palermo Museum that has lain unfinished since the sixteenth century (Plate 102 of vol. i of Ricci; see *Bibliography*). The main lines that border the cut squares are in threads left undrawn and covered with mating stitch, and the squares themselves are filled in with needle lace, at first consisting of triangles in buttonhole stitch, attached by the three corners to the linen or to crossbars, and with brides to lighten the general effect. Later, openwork squares, wheels, and picots were introduced, and before long flowers, foliage, animals, and personages. *Reticella* lace has often been called by the various names of Gothic, Greek, Venetian, Spanish.

*Punto in aria* (point in air) is made with the needle out of thread only, without warp or net or web to start with. It comes in logical and historical sequence after *reticella* lace, from which it is derived. It is needle lace par excellence.

Italian bobbin lace is the younger sister of Italian needle lace; and while all the Italian needle laces, except Sicilian drawn work, are of Venetian origin, there are pillow laces from Genoa, Milan, and the Abruzzi as well as from Venice. In character they are decidedly more popular and more provincial and have less individuality than the aristocratic needle laces. But while bobbin laces lack the accuracy of design, the interesting relief, and the delicate perfection of needle laces, they are both softer and stronger. That the making of bobbin laces was well established in Venice before the middle of the sixteenth century is clear from the preface to Froschower's book of designs for bobbin lace, published in Zurich in 1560. He says: "Among the divers arts invented and practiced for the good of humanity, ought justly to be mentioned the Art of Bobbin-lace, which arose in our country about 25 years ago and quickly became common amongst us. It was imported into Germany from Italy for the first time by Venetian merchants in 1536." This would seem to settle definitely the claim of Barbara Uttmann to be regarded as the inventor of bobbin lace, despite the fact that in 1834 a monument was erected to her in Annaberg, in the Harz Mountains, Germany, bearing the inscription "inventor in 1567 of bobbin lace, which made her the benefactress of the neighborhood."

One reason for the rapid development of bob-

bin lace, i.e., its cheapness, is brought out by Froshower, who says: "When, years ago, cut-work and relief work were much in vogue, there is no telling how much time was taken in making a collar or bib or anything of the sort, joined to heavy expense to the person by whom it was ordered. On the contrary now, a bobbin lace may be acquired for little money and applied in little time, so that the cost is much less. Formerly, too, collars and other articles were adorned with cords of gold and colored silk, occasioning vast expense for soap and cleaning; now the work is done much more expeditiously because all these things are made of linen that is not injured by lye."

A primitive lace that deserves especial notice because of its revival in recent years in both hand and machine forms is *filet italien*. (See above.) Anciently it was called *lakis* in English as well as French, one of the "laureate" Skelton's verses (1460-1529) reading:

"The sampler to sew on, the *lakis* to embroid."

In a painting (1488) by Lorenzo Costa, at San Giacomo in Bologna, the square openings of the robes of the three personages are filled in with *lakis*. The most influential and famous designer for both *lakis* and *reticella* was Vinciolo, the first edition of whose work was published in Paris in 1587 under the title *Les singuliers et nouveaux pourtraicts et ouvrages de lingeries*. There are a number of ancient specimens of lace extant after Vinciolo's designs, notably a bedspread in the Victoria and Albert Museum, composed of squares picturing the months of the year, male and female heads, figures and groups. In early Italian *lakis* (*modano*) the designs are classic renaissance with figures and foliage of the type called grotesque after the underground caverns from which the ancient Roman frescoes and mural ornament were excavated. In German *lakis* eagles and heraldic emblems, oak leaves, acorns, thistles, and hunting scenes predominate.

Towards the end of the sixteenth century Flemish paintings and drawings begin to show the use of Flemish bobbin lace, and during the seventeenth century an immense quantity of it was produced in Flanders. The industry here was much helped by the superior quality of Flemish linen, "fynner than any other part of Europe yealdeth." The designs were apt to be crowded, and composed of bold scrolling tapes, called *guipure de Flandres* when the motifs were joined with *brides à picots*, and *point d'Angleterre* when the ground consisted of fine net. Hardly any needle lace was made in Flanders before 1720, when Brussels began to produce an imitation of Alençon lace, but less firm and precise and with looser toil than the French work. Some of the thread used is so fine that it has to be spun underground in damp air to keep it from breaking. Much of the Brussels eighteenth-century work is extremely naturalistic, and at the court of Louis XV it was popular, being sometimes preferred to Alençon. The designs were uniformly French in character, with the Chinese influence strong, as in French decorative art of the first half of the eighteenth century. Other Flemish cities famous for lace are Bruges, Mechlin (Malines), Valenciennes, Lille, and Arras, the last three of which became French by conquest and treaty in the seventeenth century.

In the reign of Louis XIV Paris became the

centre of style. Art industries of every kind were established and encouraged by Colbert, among them tapestries at the Gobelins and needle lace at Alençon. A company was formed Aug. 15, 1665, with the exclusive privilege for 10 years of making *points de France* (French lace). On Nov. 17, 1667, was published a special prohibition against selling or wearing "passements, lace, and other works in thread of Venice, Genoa, and other foreign countries." The French were so determined to promote and protect the home industry that in 1670, wrote an Englishman then traveling in France, "there was publicly burnt by the hangman a hundred thousand crowns worth of point de Venice, Flanders lace, and other foreign commodities that are forbid." By 1673 Colbert, in acknowledging the receipt from the French Ambassador to Venice of a point collar in high relief, was able to write that "those made in France are quite as fine."

The lace industry of Honiton, England, is supposed to have been founded by Flemish refugees escaping from the persecutions (1568-77) of the Duke of Alva, and names undoubtedly of Flemish origin occur at Honiton, Colyton, and Ottery St. Mary. That bobbin lace was made here in the reign of James I is shown by the inscription on the gravestone of "James Hodge, *Bonelace siller*," and by Westcote's mention of it in 1620. A petition submitted to the House of Commons in 1698 asserts that "the English are now arrived to make as good lace in fineness and all other respects as any that is wrought in Flanders." However, the petition adds: "The Flemish send it to Holland, Germany, Sweden, Denmark, France, Spain, Portugal, etc., whereas we made it chiefly to serve our own country and plantations." The chief centres of production of modern handmade laces are France and Belgium, England and Ireland, and Italy. The industry was inaugurated in Ireland about 1870 and revived in Italy at Burano (a suburb of Venice) about a few years later.

#### MACHINE LACE

The *first lace machine* was based on Lee's stocking machine (see KNITTING), as modified by Strutt and Frost to produce in 1764 a web with interstices, otherwise net. By 1769 Frost was able to make figured net and by 1777 net with square meshes that were fast. The *second lace machine* is the warp frame, so called because it employed a set of warp threads for each of which there was an individual needle looping its thread first to the right and then to the left and back again. By 1795 this machine was producing plain net and soon afterward figured lace in an almost endless variety of meshes and patterns. The *third lace machine*, brought to perfection by constant improvement during the past century, is the so-called Leavers machine, developed by John Heathcoat (1809) and John Leavers (1813). The application to the Leavers machine of the Jacquard attachment vastly increased the range and intricacy of patterns possible, and the operation by water and later by steam power vastly increased the speed and the quantity produced. In the Leavers machine warp threads and bobbin threads are used, sometimes more than 9000, making 60 pieces of lace at once, each piece requiring 100 warp and 48 bobbin threads. The warp threads are stretched perpendicularly, just far enough apart to admit

the passage between, edgewise, of a 25-cent piece. The bobbins are very thin and flat, so that they pass without difficulty. Ingenious mechanism varies the tension of warp and bobbin threads as desirable. As the bobbins swing like pendulums through the warp threads, they are made to vacillate and twist around the warps, the twistings being compressed by combs. If the bobbin threads are made tight and the warp threads loose, the warps will twist on the bobbin threads, and vice versa.

The kinds of embroidery machines used in making machine laces are: (1) the *bouaaz machine*, a sewing machine that leaves a trail of V's on net or cloth, thus producing Swiss laces and lace curtains; (2) the *hand-embroidery machine*, that multiplies automatically the work of the operator who executes the master pattern; (3) the *schiffle* or *power embroidery machine*, that works with shuttle as well as needle and has an output many times larger than that of the hand machine. The *schiffle* machine, though of delicate and complicated construction, easily getting out of order, is indispensable for the cheap production of low and medium grades of embroidery and lace. On these two embroidery machines are made the world's imitation guipure laces, such as *point de venise*, *rose point*, *point de genes*, etc. The centre of the branch of the lace industry is Plauen in Germany. Nottingham in England and Calais in France are the centres of the production of woven laces, the French nets being particularly fine. In the production of lace curtains woven in one piece (the so-called Nottinghams), the United States is coming rapidly to the front, as well as in other branches of the machine-lace industry. The production of machine laces and lace curtains in the United States increased from \$3,585,138 in 1899 to \$7,203,422 in 1904 and to \$8,922,082 in 1909, not including about one-ninth as much more made by manufacturers primarily engaged in making carpets and rugs.

**Bibliography.** Mrs. Bury Palliser, *History of Lace*, often cited as the ultimate authority, the third edition of which was published in 1875, should be consulted cautiously, as it contains a mass of confused information and misinformation, even in the fourth edition, revised, with the addition of many important illustrations, by Jourdain and Dryden (London, 1902). A scholarly work, elaborately illustrated with laces, most of which are in the Imperial Austrian Art Industrial Museum, is Dr. Moritz Dreger, *Entwicklungs-geschichte der Spitze* (Vienna, 1901). Mrs. J. H. Pollen, *Seven Centuries of Lace* (London, 1908), is a folio volume with invaluable illustrations of precious laces that are well described. The standard work on Italian laces is Elisa Ricci, *Antiche trine italiane*, in two huge folio volumes superbly illustrated, with authoritative text (Bergamo, 1908, 1911). The American edition, entitled *Old Italian Lace* (Philadelphia, 1913), is useless as far as the text is concerned because badly translated. A small but valuable book on French laces is Ernest Lefévre, *Les points de France*, translated by M. T. Johnson (New York, 1912) and well illustrated. An exhaustive work on Alençon laces is by G. Despierres, *Histoire du point alençon* (Paris, 1886). The history of English machine laces is told by William Felkin in his *Hosiery and Lace* (London, 1876). On lace curtains G. L. Hunter has an important chapter in his *Home Furnishing* (New York, 1913). A convenient handbook

is F. Nevill Jackson's *Hand-Made Lace* (London, 1900). Another and better one is M. Jourdain's *Old Lace* (ib., 1909). Books showing how to make lace are: L. A. Tebbs, *Bobbin Lace* (London, 1907); Mincoff and Marriage, *Pillow Lace* (ib., 1907); Carita, *Lacis* (ib., 1909). Convenient and well illustrated is the little *Lace Dictionary* by C. R. Clifford (New York, 1913).