

## HATS AND CAPS

THE manufacture of caps and hats is classed among the woollen industries, though the processes of manufacture are entirely different from those followed in the ordinary woollen mill. Fur is now the principal material used. The hat you wear was probably once a rabbit running wild in Australia, for the soft coat of the rabbit is a favorite with "felt" hat makers. Millions of rabbit skins are sent from Australia every year to satisfy the American demand for "soft hats." France, Russia, Germany, and England also supply American hat manufacturers with the fur of the rabbit and the hare. Thousands of men are employed making soft hats in Danbury, Connecticut, the greatest fur hat centre in the country. Vast quantities of headwear of this class are made also in Yonkers, New York; in Newark, New Jersey, and in a hundred other places.

The manufacture of wool hats is properly a part of the felt manufacturing branch of the woollen goods industry, as the hats are made by a process of felting, a very simple but ingenious process. As it comes from the card in a continuous loop, the wool is wound upon a double cone, which is so rotated as to wind it in a zigzag manner. When a sufficient quantity has been thus wound, the double cone is divided in the centre, and two "hat bodies" are the result. Each "body" is then subject to individual treatment, the various processes of felting, dyeing, stiffening, blocking, finishing and trimming being subdivided among many hands. This industry is decidedly on the decline, the amount of capital and number of wage-earners having fallen off fifty per cent in ten years, as the result of the use of fur instead of felt as the principal material.

Cloth is also used in this industry for outing hats and caps. The American straw hat is worn the world over. The first person who had the temerity to wear a straw hat in the lobby of the Opera House, in Paris, was an American artist. Following his example, all Europe has learned the comfort of straw headwear in summer, and it has largely displaced the silk hat, even with evening dress.

## HOW A FELT HAT IS MADE

The manufacture of felt hats—and reference is made now to those of which fur is the material—used to be done slowly and laboriously by hand. The process is now almost entirely accomplished by machinery and with the utmost rapidity. The process is one of the most interesting to be found in any branch of industrial work. The felt is made at the same time with the hat itself, the two processes being practically simultaneous. The first machine employed is called a “devil.”

Various kinds and qualities of fur required to produce the sort of hat wanted are put into this machine, which pulls the fur apart and thoroughly mixes up the fibres. The mass is then carried to a blowing machine, which agitates it continually by light currents of air. All foreign matter is eliminated by this ceaseless winnowing, and falls through a set of sieves, which also serve to separate the more valuable pieces of fur for further treatment. This part of the process is continued until the fur is perfectly free from extraneous matter, and it is taken from the blowing machine in so fine and soft a lap that it will hardly bear a touch of the fingers. Next comes the process of hat-building, which is done on a special machine known as a “former.” The fine lap of fur is parcelled out in boxes, each representing one hat. Of course, the weight and quality of the hat govern the amount of fur in each parcel, the range being from two to six ounces a hat. The “former” is a revolving cone made of brass or copper, and is pierced with a number of small holes through which an exhausting fan blows air. Small jets of water are continually thrown upon the mass to give it consistency. The fur is fed to the revolving cylinder through a tube, and the current of air draws it into the “former” and spreads it evenly over the surface. This operation takes place in a tight box, where the embryo hat is soon formed into a cone and removed by hand. After this it is rolled and pressed, first by hand, afterward by machinery, in order to “felt” it and to reduce it to due proportions. The hat is then stiffened and made more durable, by being seized and treated with an application of shellac dissolved in alcohol. The “derby” requires a stronger solution than the soft hat.

The next step is to shape the felt cone into a hat. This is done by pressing in a mold which forms both crown and brim at one process. The hat is then dyed and given its final color. After this comes blocking, which gives the finishing touches in regard to shape. All inequalities are removed by sand-papering or pouncing, which is done while the hat is turned rapidly on a revolving block. The slight nap thus raised is ironed down, so that the fur all lies in one direction. Then are added the “sweat” band, the lining, ribbon, and binding. Another blocking completes the process. The inventions of three men, Thomas Blanchard, H. A. Wells, and John T. Waring, are the basis of the modern manufacture of fur hats.

## HOW A SILK HAT IS MADE

The beaver hat of old has given way to the silk hat of to-day, which is principally interesting as being one of the most popular styles of headgear ever devised. Few branches of manufacture require greater degree of skill than the production of silk hats, although, in description, the process is a simple one, and necessarily performed by hand. The "barrel" of the hat is composed of cambric, which is steeped in a strong solution of shellac, and then dried upon a stretching rack, at a temperature between 130° and 140°. A piece of sufficient size for a hat is modelled into shape on a specially prepared block; the ends being pasted together, and the top, or "lid," being secured in place by pasted cambric strips. The rim is set on after the upper part of the hat is completed. For this purpose a hole is cut in a square of cambric, of the exact size of the outside circumference of the hat, so as to permit of sliding it over the cylinder into place, where it is securely pasted, in the same manner as the lid. This square rim is then cut into the required oval shape by a machine or by hand—the greatest care and skill being required to prevent all error—after which the hat is ready for silking.

The cloth used for covering the hat is an expensive quality of silk plush, exclusively manufactured in France, the nap of which consists of long and fine fibres of silk. It is cut so that the silk threads shall overlap, when the cover is in place, and the attachment to the hat is made with strong glue composition. With careful cutting in the first place, and skilful joining of the ends around the hat, all traces of the seam may be hidden by a careful ironing. The covering on the top and rim is placed with the same care, and the under part of the rim is finished with silk cloth. The brim is now curled, first by heating, then by working into shape by hand—this is another process requiring great skill and experience—and the hat is completed, except for binding the braid around the edges of the rim; setting on the band, and inserting the lining.