

## MAKING OF PINS AND NEEDLES.

**T**HERE is no record of the period when pins and needles were first employed in their primitive forms. The earliest needles were not pierced at the end opposite the point; but the prehistoric needle was rather an awl, which served to make holes in furs or skins that were worn ages before textile fabrics were invented. The long underground roots of plants or bindweed, and leathern thongs, were passed by hand through the holes thus made; and it was only in more recent times that the idea was conceived of attaching the thong to the primitive needle for forcing it to follow the path thus made, whence arose the first idea of the needle proper. In remains of the stone age splinters of stone, pierced with a hole at the end opposite the point, are met with; and it is evident that these tools, sometimes a little curved, served as needles in those remote periods.

Flat needles with a split in the end opposite the point are found among the remains of the bronze age, the two branches being slightly separated, then brought together again, and crossed at the ends, whereby a kind of eye was formed, while the two parts were sometimes united by a rivet. It is not known when the eye was first formed by piercing the end, which must have been a difficult operation on a cylindrical rod of iron or steel, so that, subsequently, the place was flattened where the eye occurs; but no correct idea can be formed as to the shape of these needles, because they could not withstand atmospheric influences, while, on the contrary, specimens of the early pin, for which bronze or the precious metals were often employed, have been very well preserved. The true type of a sewing needle was, so early as the Greek and Roman times, pointed at one end, and it was only when the sewing machine was invented that needles were made with the eye near the point.

Even if the period when the first true needle made its appearance be unknown as also its exact form, there can be no doubt that this essentially domestic implement had attained a very high degree of perfection in ancient times. So ancient a poem as Homer's "Odyssey" gives a detailed account of the mantle woven and embroidered by Penelope for Ulysses on his departure for the Trojan expedition. It was not, however, women only who used the needle, because needlework ranked among the fine arts, and it is probable that the embroiderers of the period made their own needles, just as, so late as a century or two ago, painters made their brushes and prepared their own colors.

It was only about 1785 that the first mechanical process producing the double steel rod, for making two needles joined together, was introduced. At first, needles, before they were completely finished, underwent a great many manual and mechanical operations, passing several times between the factory and the workman's dwelling; and it was only about 1870 that the needle was made for the most part by mechanical methods, while during the last 15 years only has it been entirely finished in this manner.

After Sheffield, Aachen, or Aix-la Chapelle, has been celebrated for the needle industry during the last two centuries, and it is in this city that were established the first mechanical appliances connected with it. Before the invention and perfection of the pointing machine, a skilful workman could point 25,000 needles in a day of 10 hours; but a machine now performs this operation with greater precision on 300,000 needles in the same time and with one workman.

The needle manufacture is now concentrated in England, the

United States and Germany—namely, at Aix-la Chapelle, which is by far the most important seat, and also at Iserlohn, Altona, Schwabach, Chemnitz and Ichttershausen. While no needles are made in France, that country produced a large quantity of pins—it is stated 10,000,000,000—while consuming more than 10,000,000 daily, so that French imports of this domestic article are considerable.

There are at least 250 varieties of the needle for sewing alone, to say nothing of those for embroidery, packing, cartridge-making, bookbinding, sail-making, knitting, larding (cooking), and many other purposes more or less connected with the original object.

The pin, called *steck-nadel* in German, has even more varieties than the needle, while being still more largely and generally used. The pin must also have been employed before the needle for connecting the skins which served as garments before the idea of sewing them together was conceived. Examples of artistically wrought pins are found among Egyptian as well as Greek remains; but it was especially the Romans who made very elaborate fibule, which have developed into the modern brooch. Simple pins, with mere head, shank and point, were, however, largely used in antiquity; and the estimation in which they were held is proved by many proverbs and popular sayings connected with the pin in many languages.

Different kinds of wire are required for making the pin and the needle; for while that of the latter must be stiff and yet yielding, to a certain extent, as well as polished to the highest degree, that of the pin must also possess a certain amount of stiffness, while it must also permit of bending without being broken, though a too highly polished pin becomes easily detached. Scarcely 100 years ago the steel pin was rarely used; but this variety has now been so much improved that the steel pin may be said to have now come into general use. The lengths of steel wire are prepared in the same manner as those for the needle, so as to constitute two pins, separated into equal parts before the operation of heading; and one end must be softened before receiving the head. For this delicate operation alone an automatic machine has been devised, that brings each head in turn within the influence of small gas flames, and which can soften 150,000 shanks in a day, five or six machines being tended by one person. Very small brass or iron pins are headed by simple "upsetting" or crushing down the end, as in riveting; but for those of larger size, the heads must be prepared previously, in a particular and very ingenious manner, from a piece of wire twisted spirally, two and a-half turns being required to make the head, of which 500,000 may be produced daily by one worker. Whereas before 1835 each pin was headed separately by hand, between 5,000 and 6,000 pins may now be headed mechanically in 10 hours.

Enamel-headed pins constitute a branch of industry special to Aix-la-Chapelle, where was first conceived the idea of adapting the "enamel" or glass head to the steel shank. A manufacturer of that city, seeking means for utilizing the needles spoilt in manufacture, conceived the idea, after visiting some Venice glass-bead factories, of fixing the bead on the end of one of the "waster" needles, so as to form a pin; but it was only after long and tedious trials that he succeeded in attaching the enamel strongly enough to the shank, and also in finding a composition of glass sufficiently tough to stand the usage to which a pin may be subjected.

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