CONTENTS

DESIGN AND TECHNOLOGY TEXTILES

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CLOTHING - A BASIC HUMAN NEED

1

Clothing is a basic human need. One reason people first wore clothing was for protection. They made garments to protect them from animal bites, scratches, and burns. Clothes also kept people warm and dry.

People wear protective clothing for some types of work and play:

- the mechanic's overalls,
- the chemist's rubber gloves,
- the rugby player's shoulder pads.

Climate affects the amount and types of clothing that people wear:

- The inhabitants of hot, humid countries may wear as little clothing as possible. The flow of air to their skins helps dispose of body heat.
- Many Arabs live in a climate that is hot but dry. They wear clothing that covers them from head to toe. Their loose white wool robes reflect the sun's rays and shield them from the hot winds. Such garments also provide insulation at night.
- Eskimos wear two layers of clothing, usually sealskin or caribou furs. The inner layer consists of undergarments and socks. The hairy side of Eskimo undergarments is worn against the skin. Eskimo outer garments, trousers, a hooded parka, mittens, and boots, are worn with the hairy side out.

People who live in temperate climates vary their clothing with the seasons. The clothes they wear in summer are usually loosely woven and light in weight. In winter they may wear extra layers of clothing to hold in the warmth of their bodies. They may also wear a coat of closely woven cloth, leather, or fur to insulate them against the cold.

Questions...

1. Select two countries with differing climates and write about how the types of clothing worn differs according to the temperature and time of year.

2. Make a list of jobs in which protective clothing is required. List the types of protective clothing used.

3. How important is clothing for protection? Which items of clothing are there in your home which are designed to be protective?

CLOTHING - APPEARANCE

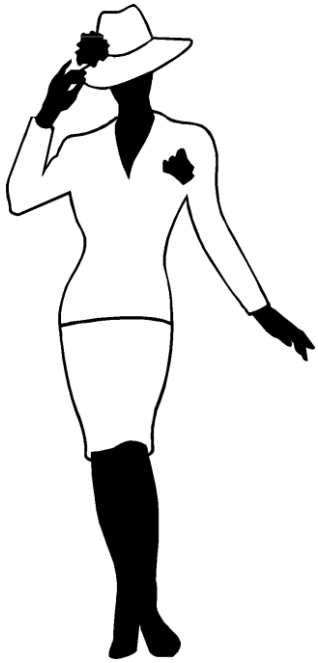
2

One of the most important reasons clothing is worn is appearance. People choose clothes that they like and that they think other people will like. They try to select clothes in styles and colours that are flattering to them.

Clothing that people in one country find attractive may look strange to people in other countries. In Greece and Scotland men traditionally have worn skirt type clothing, (kilts in Scotland). In some countries, however, a man wearing a skirt would be the object of stares and laughter.

Even within a single country, ideas of what styles of clothing are attractive may change from year to year. Clothing styles that are temporarily popular are called fashions. In areas where clothing fashions are important, people rarely keep clothes until they are worn out. Ordinarily, they discard them when they are out of style.

Another important reason for wearing clothes is to cover the parts of the body that people think should not be seen. Views about how much of a person's body should be seen differ in various parts of the world. In the UK a person appearing in public without clothing might be arrested. But a Botocudo woman living in the Amazon region of South America is considered properly dressed if she wears nothing but wooden cylinders in her earlobes and lower lip. Within a given area, ideas of modesty in clothing have changed in the course of time. Clothing styles now accepted in such countries as the UK once would have been considered improper.



Questions...

1. How do clothes matter in fashion?
2. What are fashions and how do they come about?
3. Why is appearance important?
4. Select two countries with differing cultures and compare how clothing is used for appearance and style.

NATURAL FIBRES

3

Natural fibres are any hairlike raw material directly obtainable from an animal, vegetable, or mineral source and convertible into nonwoven fabrics such as felt or paper or, after spinning into yarns and woven cloth. Although nature abounds in fibrous materials, especially types such as cotton, wood, grains, and straw, only a small number can be used for textile products or other industrial purposes. Apart from economic considerations, the usefulness of a fibre for commercial purposes is determined by such properties as;

- length,
- strength,
- pliability,
- elasticity,
- abrasion resistance,
- absorbency.

Most textile fibres are slender, flexible, relatively strong strands that are elastic in that they stretch when put under tension and then partially or completely return to their original length when the tension is removed.

Natural fibres can be classified according to their origin;

- the vegetable, or cellulose-based class includes such important fibres as cotton, flax, and jute,
- the animal, or protein-base, fibres include wool, mohair, and silk,
- an important fibre in the mineral class is asbestos.

Questions...

1. What is a natural fibre?
2. What are the main features of natural fibres?
3. What are the disadvantages of natural fibres?

COTTON

4

Cotton is a seed-hair fibre of a variety of plants native to most subtropical countries. It is a shrubby plant, growing up to 6 metres high in the tropics, but typically ranges from 1 to 2 metres in height when it is under cultivation. It produces creamy-white flowers, which soon turn deep pink and fall off, leaving the small green seedpods, known as cotton bolls, which contain the seeds. Seed hairs, or fibres, growing from the outer skin of the seeds, become tightly packed within the boll, which bursts open upon maturity, revealing soft masses of the fibres.

Cotton fibres may be classified roughly into three large groups, based on average length of the fibres making up a sample or bale of cotton and appearance;

- the first group includes the fine, lustrous fibres,
- the second group contains the standard medium-staple cotton,
- the third group includes the short-staple, coarse cottons used to make carpets and blankets, coarse and inexpensive fabrics, and blends with other fibres.

Cotton is shipped in bales to a textile mill for yarn manufacturing. A common processing method is ring spinning. The cotton bale is opened and its fibres are raked to remove foreign matter (e.g., soil and seeds). A picking machine then wraps the fibres into a lap. A carding machine brushes the loose fibres into rows that are joined as a soft sheet, or web, and forms them into loose untwisted rope known as card sliver. For higher quality yarn, card sliver is put through a combing machine, which straightens the staple to a finer degree and removes unwanted short lengths. In the drawing stage, a series of variable-speed rollers reduce the sliver to firm uniform strands of usable size. Finally, the roving is transferred to a spinning frame, where it is drawn further, twisted on a ring spinner, and wound on a bobbin as yarn.

Questions...

1. How is cotton grown?
2. What are the main advantages of using cotton in clothing manufacture?
3. Make a list of the types of clothing that cotton is used for.
4. What other products are made of cotton other than clothing?

Australia, Russia, New Zealand, and Kazakhstan lead in fine-wool production, and India leads in the production of the coarser wools known as carpet wools. Leading consumers include the United Kingdom, the United States, and Japan.

Single wool fibres can resist breakage when subjected to weights of 0.5 to 1 ounce (15 to 30 grams) and when stretched as much as 25 to 30 percent of their length. Unlike vegetable fibres, wool has a lower breaking strength when wet. The resilient fibre can return to its original length after limited stretching or compression, imparting to fabrics and garments the ability to retain shape, drape well, and resist wrinkling. Because crimp encourages fibres to cling together, even loosely twisted yarns are strong, and both crimp and resilience allow manufacture of open- structured yarns and fabrics that trap and retain heat-insulating air. The low density of wool allows manufacture of lightweight fabrics.

Wool fibre has good affinity for dyestuffs. Highly absorbent, retaining as much as 16 to 18 percent of its weight in moisture, wool becomes warmer to the wearer as it absorbs moisture from the air, adjusting its moisture content and, consequently, its weight, in response to atmospheric conditions. Because moisture absorption and release are gradual, wool is slow to feel damp and does not chill the wearer by too-rapid drying.

Wool that has been stretched during yarn or fabric manufacture may undergo relaxation shrinkage in washing, with fibres resuming their normal shape. Felting shrinkage occurs when wet fibres, become matted into packed masses. Wool has good resistance to dry-cleaning solvents, but strong alkalies and high temperatures are harmful. Washing requires the use of mild agents at temperatures below 20 C (68 F), with minimum mechanical action. The performance of wool has been improved by development of finishes imparting insect and mildew resistance, shrinkage control, improved fire resistance, and water repellency.

Questions...

1. How is wool produced and where is it mainly produced?
2. What are the main advantages of using wool in clothing manufacture?
3. Make a list of the types of clothing that wool is used for.
4. What other products are made of wool other than clothing?

SILK

6

Production of silk involves;

- the care of the domesticated silkworm from the egg stage through to the completion of the cocoon,
- the production of mulberry trees that provide leaves upon which the worms feed.

The silkworm builds its cocoon by producing and surrounding itself with a long, continuous fibre, or filament. Liquid secretions from two large glands within the insect emerge from the spinneret, a single exit tube in the head, hardening upon exposure to air and forming twin filaments composed of fibroin, a protein material. A second pair of glands secretes sericin, a gummy substance cementing the two filaments together. Silk is a continuous filament within each cocoon, having a usable length of about 600 to 900 metres (2,000 to 3,000 feet).

Silk containing sericin is called raw silk. Spun silk is made from short lengths obtained from damaged cocoons or broken off during processing, twisted together to make yarn. The thickness of silk filament yarn is expressed in terms of denier, the number of grams of weight per 9,000 metres (9,846 yards) of length. Silk is sometimes treated with a finishing substance to increase weight, add density, and improve draping quality.

Silk has good strength, resisting breakage when subjected to weights of about 4 g (0.5 ounce) per denier. Wetting reduces strength by about 15-25 percent. A silk filament can be stretched about 20 percent beyond its original length before breaking but does not immediately resume its original length when stretched more than about 2 percent. Silk, lower in density than such fibres as cotton, wool, and rayon, is moisture absorbent, retaining as much as a third of its weight in moisture without feeling damp, and has excellent dyeing properties. It is more heat resistant than wool, decomposing at about 170 C (340 F). Silk loses strength over a long period of time without appropriate storage conditions and tends to decompose with extensive exposure to sunlight but is rarely attacked by mildew. It is not harmed by mild alkaline solutions and common dry-cleaning solvents. The rustling sound associated with crisp silk fabrics is not a natural property of the fibre but is developed by processing treatments, and it does not indicate quality, as is sometimes believed.

Questions...

1. How is silk produced?
2. What are the main advantages of using silk in clothing manufacture?
3. Why is silk so expensive?
4. Make a list of the type of clothing made from silk.

SYNTHETIC FIBRES

7

Synthetic fibres are now used in nearly every type of clothing. They are in many ways superior to natural fibres A synthetic sweater dries faster than a wool sweater and is less likely to shrink. Some synthetic fabrics and finishes need little or no ironing.

The clothing industry has made increasing use of plastics. Some upper shoe material used in the manufacture of footwear is made from plastic substitutes for leather. Plastics are also used as textile coatings, from which garments like raincoats are made.

Cellulosic fibres are derived through chemical processing of short cotton fibres, or linters, and from wood pulp; they include rayon, acetate, and triacetate. Other materials modified to produce fibres include protein, glass, metals, and rubber. Synthetic fibres, produced from chemicals combined into large molecules called polymers, include such types as acrylic, modacrylic, nylon, olefin, polyester, saran, spandex, and vinyon. Individual manufacturers apply trademarked names to their own form of such fibres, such as Antron, Cumuloft, Qiana, Orlon, Dacron, and Lycra.

Synthetic fibres are usually produced by converting the fibre-forming substance to a fluid state, either by melting or by using a solvent, to form a spinning liquid. In the spinning, or extruding, operation, the liquid is fed through holes in a spinneret, a device performing much the same function as the spinneret of the silkworm. In the formation of synthetic fibres, the term spinning applies to the process of forcing the liquid through the spinneret holes; the same word is applied to the production of yarn by twisting together either natural or synthetic fibres or combinations of both.

The emerging liquid is hardened, forming a fibre having great length, called a filament, which is subjected to a stretching, or drawing operation, increasing the alignment of its molecules. Variations and special properties can be introduced during the manufacturing process. Long filaments may be used to make yarn or may be cut into short, uniform lengths forming staple and then twisted together to form yarn.

As the variety of new synthetic fibres increased, as various fibres were blended together, and as special finishes were applied, fabric care presented new problems to the consumer; a trend developed employing permanent labels specifying garment care.

Questions...

1. What does 'synthetic' mean?
2. Why have synthetic fibres been increasingly produced rather than the increased use of natural fibres?
3. What advantages do synthetic fibres have over natural fibres?
4. Make a list of synthetic fibres.

NYLON

8

In the 1930s American chemists discovered a group of polymers that formed fibres that were unusually strong, durable, and lustrous. These were first called **superpolyamides** but later given the simpler name nylons. The first nylon fibres were offered for sale in 1938. They were bristles in toothbrushes. By 1940 nylon stockings were available all over the United States. To emphasize that this new substance was not based on any natural fibre, nylon was advertised as being made from the three raw materials:

- coal,
- air,
- water.

Of course many chemical manufacturing steps were needed to convert these resources into finished nylon.

By the 1980s more than half the nylon produced was used in home furnishings such as carpets and upholstery material. Large amounts are also used in making clothes and industrial equipment.

fibres closely related to nylons are the aramids, which became available in the 1960s. They are the toughest, strongest, and most heat-resistant of all the fibres of their class. Radial car tyres reinforced with aramid cords are similar to those reinforced with steel. Nylons and aramids are polyamides; each amide group is formed by the reaction of an amino group of one molecule with a carboxyl group of another.

Questions...

1. How is nylon made?
2. Make a list of non clothing products made out of nylon.
3. What qualities does nylon have?

POLYESTER

9

For the three decades following their introduction, the nylon fibres were produced in greater amounts than any other man-made fibre except those based on cellulose. In 1972, however, polyesters moved into first place. The most important of these was developed in the UK and its commercial production began in about 1950. In the United States, fibres made from this polyester are called Dacron and Kodel. The largest amounts of polyesters are used in making clothing. Smaller amounts are used for carpeting, upholstery fabrics, ropes, and drive belts for machinery. The properties resemble those of nylon.

Companies that developed synthetic fibres gave them trade names such as Orlon, Dacron, Kodel, and Arnel. These names are still used, but since 1960 textile manufacturers have been required to identify the fibres in their products with the appropriate generic name.

About half of the classes of synthetic textile fibres are produced by one general type of chemical reaction, which is called addition polymerization. These classes are acrylic, modacrylic, nytril, olefin, saran, vinal, and vinyon. Most synthetic rubber also is made by this process, but some is made by a different addition polymerization of molecules that contain two double bonds. The simplest molecule that undergoes addition polymerization is ethylene, a hydrocarbon belonging to the olefin family. Ethylene forms the polymer polyethylene, which is made into both fibres and plastics.

Questions...

1. What is polyester?
2. Make a list of clothing products which commonly include polyester.
3. Compare polyester with cotton. List the qualities and compare the uses of both.

PVC AND ACRYLIC

10

In the molecule of the compound vinyl chloride, one of the hydrogen atoms of ethylene has been replaced by an atom of chlorine. Vinyl chloride can be made into a polymer in the same way as can ethylene. fibres made from this polymer, called polyvinyl chloride, or **PVC** were the first to be produced by this method. PVC can be made in a soft form for raincoats and shower curtains, or used for other, harder products.

Vinylidene chloride is a molecule formed by replacing two of the hydrogen atoms of ethylene by chlorine atoms. Polymers in which this molecule makes up more than 85 percent of the combining units are called saran. Most saran, either fibre or film, is made from mixtures of vinylidene chloride with other monomers, usually vinyl chloride and acrylonitrile.

With acrylic and modacrylic fibres one hydrogen atom of ethylene is replaced by a cyano group, which contains two atoms (one carbon and one nitrogen) acting as one. The class of **acrylic** fibres is made from polymers of acrylonitrile. The first of these, with the trade name Orlon, was introduced in the United States in the 1940s. Of all man-made fibres, the acrylics resemble wool most closely. They are used alone or blended with wool for sweaters, socks, blankets, and carpets.

Modacrylics are a group also based on acrylonitrile, but their molecules contain large proportions of other combining units, mostly vinyl chloride and vinylidene chloride. Fake fur is an unusual product made from modacrylic fibres

Questions...

1. What is 'PVC'?
2. List the qualities and uses of PVC in textiles.
3. What is acrylic?
4. Compare wool and acrylic and list their similar uses.

YARN

11

Yarns are made from both natural and synthetic fibre, in filament or staple form.

- Filament is fibre of great length, including the natural fibre silk and the synthetic fibres.
- Most fibres that occur in nature are of fairly short length, or **staple**, and synthetic fibres may be cut into short, uniform lengths to form staple.

Spinning is the process of drawing out and imparting twist to a mass of fibres. Filament yarns generally require less twist than staple. A fairly high degree of twist produces strong yarn; low twist produces softer, more lustrous yarn; and tight twist produces crepe yarns. Two or more single strands of yarn may be twisted together, forming ply yarn.

Novelty yarns, used to produce special effects, include bouclé, characterized by projecting loops; nub yarn, with enlarged places, or nubs, produced by twisting one end of a yarn around another many times at one point; and chenille, a soft, lofty yarn with pile protruding on all sides. Textured yarns are synthetic filament yarns that are made bulky or stretchy by heating or other techniques.

In yarns used for weaving, the warp, or lengthwise, yarns are usually made stronger, more tightly twisted, smoother, and more even than the filling, or crosswise, yarns. Knitting yarns have less twist than weaving yarns. Yarns used for machine knitting may be single or ply types; ply yarns are generally used for hand knitting. Thread, used for sewing, is a tightly twisted ply yarn having a circular cross section.

Questions...

1. What is yarn?
2. How is yarn produced from the following raw materials:
   - wool,
   - cotton,
   - nylon?

SPINNING AND CARDING

12

In textiles this is a process of drawing out fibres from a mass and twisting them together to form a continuous thread or yarn. In synthetic fibre production the name is applied to the extrusion of a solution to form a fibre, a process similar to the method by which silkworms and similar insect larvae produce filament to make their cocoons from a viscous fluid that they secrete.

There are two main types of spinning machines today:

- the mule is used for cotton and wool yarns,
- the spinning frame is used for cotton, wool, and worsted yarns.

Another preparatory process is carding, by which a thin sheet of fibres is condensed to form a thick, continuous, untwisted strand called sliver. The spinning process draws out and twists fibres or slivers into a continuous yarn or thread. This product is then classified by any of several methods. One method is based on the number of strands and describes a yarn as:

- one-ply,
- plied,
- cord.

One-ply yarns can be single strands composed of fibres twisted together; filaments with or without twist; narrow strips of material; or single, thick, man-made filaments (monofilaments). Plied yarns are composed of two or more yarns twisted into a single strand, and cord is formed by twisting plied yarns together. Among other systems of classification are those based on the use for which a yarn is intended or on the relationship of its length to its weight.

Questions...

1. Write in your own words what spinning involves.
2. What is carding?
3. How do spinning and carding affect the production of different types and qualities of yarn?

WEAVING

13

In weaving, lengthwise yarns are called **warp**; crosswise yarns are called **weft**, or filling. Most woven fabrics are made with their outer edges finished in a manner that avoids raveling; these are called selvages. They run lengthwise, parallel to the warp yarns. The three basic weaves are:

- plain,
- twill,
- satin.

In the plain weave each filling yarn passes over and under the warp yarns, with the order reversed in alternating rows. Fabrics made in the plain weave include percale, muslin, and taffeta. Ribbed effects in such fabrics are produced by employing heavier yarns for either the warp or the filling. In the basket weave one or more filling yarns are passed alternately over and under two or more warp yarns, as seen in monk's cloth.

Twill weaves are made by interlacing the yarns in a manner producing diagonal ribs, ridges, or wales across the fabric. Wales may run from the upper right to the lower left of the fabric, or the reverse. The herringbone weave has wales running both ways. Twill fabrics include denim, gabardine, and flannel.

Satin weaves have a sheen produced by exposing more warps than fillings on the right side of the fabric. The exposed warps are called **floats**. In the sateen weave the process is reversed, and the exposed fillings form the floats. The amount of twist in the yarns and the length of the floats produce variations. Fabrics made in these weaves include slipper satin, satin crepe, and various sateen types.

Questions...

1. Trace the history of weaving.
2. Write in your own words what happens in the weaving process.
3. Make a list of the types of weaving.

KNITTING

14

This is the production of fabric by employing a continuous yarn or set of yarns to form a series of interlocking loops. Knit fabrics can generally be stretched to a greater degree than woven types. The two basic types of knits are:

- the weft, or filling knits, including plain, rib, purl, pattern, and double knits,
- the warp knits, including tricot, raschel, and milanese.

In knitting, a wale is a column of loops running lengthwise, corresponding to the warp of woven fabric; a course is a crosswise row of loops, corresponding to the filling.

Most filling knits can be made by hand or machine, although commercial fabrics are generally machine-made. Basic stitches are the knit stitch, a loop passed through the front of the preceding loop, and the purl stitch, drawn through the back. The plain knits, also called flat knits, have a flat surface, with short, horizontal loops visible on the back. When produced by hand knitting, this structure is called stockinette. Pile-surfaced fabrics produced by variations of the plain knit include velour and fake furs. Rib knits have pronounced lengthwise ribs formed by wales alternating on both sides of the fabric. These knits are fairly heavy, have good elasticity, and are more durable than the plain knits. Purl knits have horizontal ridges running across on both the face and the back of the fabric, making them reversible. Pattern knits, such as those of fisherman knit sweaters, are produced by varying the manner in which the knit and purl stitches are used. Because the knit stitch tends to advance and the purl stitch to recede, a variety of patterns can be made by adding, dropping, alternating, or crossing stitches. Double knits are heavy and firm and rarely run. They are produced only by machine, with a variation of the rib stitch, the interlock stitch, employing two yarns and two sets of needles, with loops drawn through from both directions.

Warp knits, also produced only by machine, are usually run-resistant and are closer, flatter, and less elastic than filling knits. showing on the surface.

Questions...

1. Trace the history of knitting.
2. What is the difference between knitting at home and industrial knitting?
3. Write a short paragraph each on three different types of knitting styles.

CROCHET

15

Crocheting is a needlework technique in which yarn is worked with a hook by pulling loops through other loops from one continuous length of yarn. The word crochet comes from the French croc, meaning "hook." Only one hook is used, and one loop is worked at a time. Early examples of crocheting have been found around the world in Asia, Africa, Europe, and South America.

The appearance of crocheted articles can range from very fine lacelike fabric worked with thin thread and a needle-sized hook to thick and textured bulky yarns worked with a large hook about the size of a pencil. Fine crochet is used for lace edgings and baby clothes, while bulkier yarns are used in such clothing as sweaters, caps, and scarves. Warm afghans and shawls are also made with the larger crochet hook.

Crocheting designs can be worked either in flat pieces or in rings and squares. One of the most popular patterns is the granny square; odd scraps of leftover yarn and reused old yarn are used to make multicoloured medallions, which are then crocheted together. This colourful patchwork like technique is very popular now, and many fashionable garments and afghans have been designed with this technique.

The most delicate forms of crochet originated in Italy in the 16th century. Nuns made lace-trimmed vestments for churches, sometimes called nun's lace. This practice spread to the convents of Spain and Ireland, and these areas are still renowned for their fine crocheted laces.

In the 19th century crochet lace began to be used for garments and in households for curtains, tablecloths, and armrest coverings. Many new stitches were developed, and written patterns started to circulate. One of the most popular forms of the period was what is currently called filet crochet. This technique is easy to work and takes many forms. The basic concept is a lattice like mesh made of double and treble stitches. The mesh is filled at certain points in a denser manner to make motifs on the lattice background.

Macramé (from Turkish makrama, "napkin," or "towel") is coarse lace or fringe made by knotting cords or thick threads in a geometric pattern. Macramé was a speciality of Genoa, where, in the 19th century, towels decorated with knotted cord were popular. Its roots were in a 16th-century technique of knotting lace known as 'punto a groppo'. In the 1960s macramé became a popular craft and creative art technique in America and in Europe. It has been used to create lampshades, plant hangers, hammocks, window coverings, and wall hangings.

Questions...

1. What is the difference between crochet and macrame?
2. Trace the history of crochet.
3. What is the difference between knitting and crochet?

EMBROIDERY

One type of embroidery is carried out on canvas or an evenly woven fabric in which the strands of the weave can be counted. Canvas work was executed at least as early as the Middle Ages, when it was known as 'opus pulvinarium', or cushion work. As its name implies, cross-stitch is a double stitch diagonally crossing intersections of the horizontal and vertical threads of the fabric. Because it is based on regular squares, it imposes a certain discipline and squaring-off of forms; flowers and the like are thus schematized rather than naturalistic.

Embroidery is the art of decorating a fabric with stitches to add to its beauty or practicality. The fabric to be embellished can be any pliable material from fine leather to gauze. Linen and homespun cotton in varying thicknesses have always been the most available and are still preferred. Threads range from wool to fine silk, and the types of stitches used depend on the imagination of the needleworker.

Since the early part of the 19th century, needleworkers have depended on manufactured embroidery patterns, needlework magazines, and books for information about techniques and stitches. The designs themselves usually reflect the sentiments and styles of the period in which they are stitched. Fashions in embroidery stitches and their placement on a garment vary as much as the garments themselves. At one time embroidered waistcoats and purses for men were as popular as embroidered collars and bodices for women. Household and bed linens and layettes for babies have long been embellished with embroidery.

The Bayeux Tapestry is one of the most famous works of embroidery in the world.

Questions...

1. Trace the history of embroidery in Europe.
2. What kinds of embroidery are there?
3. Make a list of products in your home which could be embroidered.

QUILTING

17

A quilt was originally a bed covering. The techniques used to make a quilt, as well as most of the designs, are the result of the attempts by people to make the best of things in a harsh environment. The warm bed quilts were born of necessity, since women in those early days had to use and reuse every inch of cloth that came into their hands. The desire to make something of beauty as well created a unique art form highly prized today by collectors.

Quilt patterns have been given names that describe the designs. The log cabin pattern, with long strips of fabric sewn into blocks, and the shell pattern similar to clam shells are just two examples from hundreds.

It is possible to tell approximately when and where a quilt was made by the types of patterns used. For example, quilts from the 1920s and 1930s contain distinctive floral fabrics.

Patchwork quilts are worked from one of two basic techniques. Patchwork is made by joining many small pieces, or patches, of fabric, either by hand or by machine, to form patterns. The choice and placement of fabrics and the accuracy of joining the fabrics is what makes the finished quilt beautiful as well as practical.

Patchwork quilts are usually made of all-cotton fabrics, but silk, velvet, and wool are also used. Patches were once cut from pieces left over from dressmaking or salvaged from partially worn clothing. Today fabrics are usually purchased specifically for a particular design or colour scheme.

Questions...

1. What is quilting?
2. Why did quilting become popular in the past and why is it not so popular today?
3. What is the difference between quilting and patchwork?

COLOURING AND PRINTING

18

The dyeing process can be done at any stage, from loose fibre to manufactured textile. Printing, on the other hand, completes fabrics before they are made into specific products. Printing is the decorating of fabrics by the application of pigments, dyes, or other materials to form a pattern.

The four chief methods of printing are:

- block,
- roller,
- screen,
- sublistatic.

Block printing is the oldest known form of printing. Wooden blocks are carved with a design standing out. colour is applied evenly to the block, and the pattern is stamped on the fabric. Today block printing has become too time-consuming and expensive for commercial use. Roller printing is used whenever long runs of fabric are to be printed with the same design. The roller machine consists of a large cylinder against which smaller engraved printing rollers press. The printed textile passes through a drying and steaming chamber to fix the colour

Screen printing may be performed either by hand operation or by automatic machine processes. Designs are applied through a screen made of silk or nylon gauge stretched over a wooden frame. The parts of the screen through which no colour is to pass are heavily painted or coated.

Sublistatic printing is a process used primarily for polyester fabrics. It prints a pattern on paper, and the paper is then applied to the fabric by passing the two through a hot calender. This transfers the pattern to the material.

Questions...

1. What is dyeing and colouring?
2. What part does dyeing and colouring play in fashion?
3. What is the difference between printing on paper and on cloth?

FABRIC CARE LABELS

This indicates the temperature that the clothing should be washed at. It refers to both machine and hand washing temperatures.

This means hand wash only.

This means do not machine or hand wash.

This indicates that the clothing can be dry cleaned. There may be other symbols present as well to indicate other details of cleaning.

Not suitable for dry cleaning.

This means that bleach can be used in cleaning.

Do not bleach.

This means that the clothing can be tumble dried.

Questions...

1. Why are care labels used so widely today?
2. Why are exact temperatures important in the washing of some clothing?
3. What happens if care labels are ignored?

FABRIC CARE LABELS

This means do not tumble dry.

This sign means that clothes should be drip dried.

Hang dry.

Dry flat.

Use a cool iron.

Warm iron.

Hot iron

Do not iron.

Questions...

1. Why were care labels not used so much in the past?
2. Is fabric care too difficult today, or is it the price we have to pay for variety and fashion?