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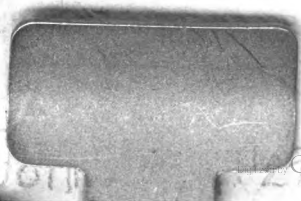
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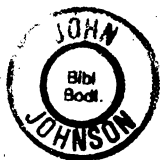
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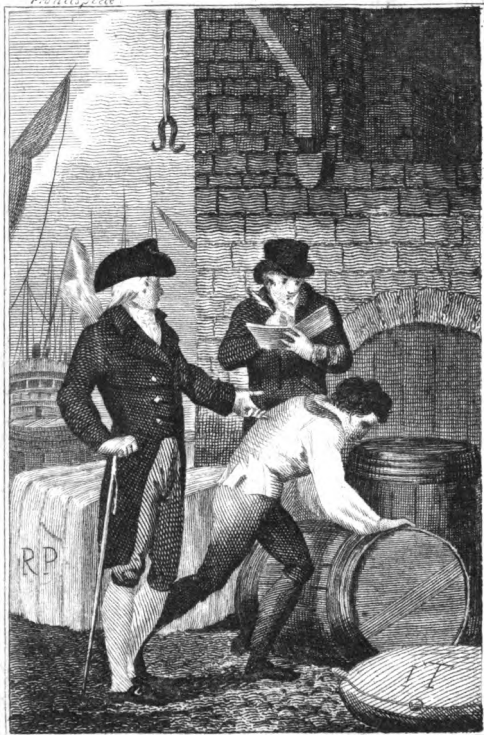
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M







A. Merchant.

Published Sept 1805 by Tabart & Co 157 New Bond St

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Coach-maker.

London, Published by Tabart & Co. Aug. 11-1844.



THE BOOK OF TRADES.

THE COACH-MAKER.

THE coach-maker makes coaches, chaises of all kinds, and other vehicles for travelling. Coaches were not known in Europe till the beginning of the sixteenth century, when they were used only by women of the first rank, it being considered disgraceful for men to ride in them. At that period, in Germany, when the electors and princes did not wish to be present at the meetings of the states,

VOL. II. 2 they

they excused themselves by informing the emperor, that their health would not permit them to ride on horseback.

The oldest carriages used by the ladies in England were known under the now forgotten name of *whirligig*; and according to Stow, coaches were introduced here from Germany about the year 1580, but it was not till more than twenty years after this that they began to be in common use. The celebrated duke of Buckingham was the first person who rode in a coach with six horses. To ridicule this new pomp, the earl of Northumberland put eight horses to his carriage.

Coaches consist of two principal parts, the *body*, and the *carriage*.

The

The body is that part which is intended for the passengers; and the carriage is that which sustains the body, and to which the wheels, that give motion to the whole machine, are fastened.

The business of a coach-maker is divided into several parts: there are those who make the body of the coach—those who make the carriage and wheels—those who prepare the leather for the top and sides—those who manufacture the various plated articles belonging to different parts of the carriage; and those who paint and varnish the body and carriage.

The body of the coach is built chiefly with ash, but the pannels are generally made of mahogany; the upper parts are covered with well

dressed and highly varnished leather. The inside of a coach is lined with woollen cloth, and stuffed with horse-hair. Coaches, however, made in very high style, are lined with silk, sometimes with velvet, and not unfrequently with exceedingly fine and beautiful leather.

The carriage consists principally of two pair of wheels, with axle-trees, and a perch.

The perch is that long pole which is fastened to the middle of the hind axle-tree, and passes between the fore axle and its bolster, being secured by the pole-pin, so as to move about it, and connecting the fore and hind wheels together. It is plain, that in turning a carriage of this construction, the larger the wheel the sooner it

it will strike against the perch: on this account the fore wheels are usually made smaller than the hind ones.

As the business of a coach-maker is divided into a number of parts, a journeyman will earn wages in proportion to the particular department in which he engages: the most lucrative branch is that of painting the arms; but a coach-body maker, if clever and industrious, can earn two or three pounds a week.

Coaches are distinguished with regard to their structure, into coaches, chariots, landaus, berlins, &c. some of which, as the two last, take their names from the places at which they were first made. Chaises also, the making of which forms a consider

able part of a coach-maker's business, have different names, and have very different constructions: thus we have gigs, curricles, tandems, post-chaises, &c. But a post-chaise is a sort of chariot without a box.

Coaches are also distinguished according to the uses for which they are designed: thus we have travelling coaches, stage-coaches, hackney-coaches, &c.

Hackney-coaches are those which ply in the streets of London and other large cities for hire, at rates fixed by some authority. These were introduced in London about the year 1625, when there were only twenty; in 1715 the number was limited to 800; and now there are 1100 which ply in the streets of London six days out of seven: on

Sunday

Sunday the number is much less. Hackney-coachmen are subject to strict regulations, and liable to be punished for any offences, or for over-charges.

Modern European coaches were unknown in China till lord Macartney's embassy to that empire. With his lordship, two of Hatched's most splendid carriages were sent as presents to the emperor. These puzzled the Chinese more than any of the other presents. Nothing of the kind had ever been seen at the capital; and the disputes among themselves, as to the part which was intended for the seat of the emperor, were whimsical enough. The hammer-cloth that covered the box of the winter carriage, had a smart edging, and was ornamented with festoons

toons of roses. Its splendid appearance and elevated situation determined it at once, in the opinion of the majority, to be the emperor's seat; but a difficulty arose how to appropriate the inside of the carriage. They examined the windows, the blinds, and the skreens; and at last concluded, that it could be for nobody but his ladies. An old eunuch sought particularly for information: and when he learned that the fine elevated box was to be the seat of the man who managed the horses, and that the emperor's place was within, he asked with a sneer, if it could be supposed that the emperor would suffer any man to sit higher than himself, and to turn his back towards him? He wished the coach-box to be removed, and placed behind the body of the carriage.

THE TALLOW-CHANDLER.

IN France, and in other countries on the continent, the person who exercises the profession of tallow-chandler is called by the more appropriate name of candle-maker.

A candle is a cotton-wick loosely twisted and covered with tallow, wax, or spermaceti, in a cylindrical figure; which being lighted at the end, serves to illuminate the place in the absence of the sun.

Tallow candles should be made of equal parts of bullocks' and sheep's tallow. They are of two kinds; the one dipped, the other moulded.
The

The cotton used for dipped or common candles is brought from Smyrna in the wool, which grows on trees like nuts enclosed in a shell, and is here carded and spun into balls. The cotton for moulds comes from Turkey and the adjacent places, packed in bales, which when brought to England is made to perform quarantine.

The tallow-chandler employs women to wind the cotton into large balls: he then takes five, six, or eight balls, and, drawing out the threads from each, cuts them into proper lengths, according to the size of the candles wanted.

The machine for cutting the cotton is a piece of smooth board made to be fixed on the knees; on the
upper

upper surface is the blade of a razor, and a round piece of cane, placed at a certain distance from one another, according to the length of the cotton wanted: the cotton is carried round the cane, and, being brought to the razor, is instantly separated from the several balls.

The next operation is what is denominated *pulling the cotton*, by which the threads are laid smooth, all knots and unevennesses removed, and, in short, the cotton is rendered fit for use. It is now spread, that is, for dipped candles, placed at equal distances, on rods about half an inch in diameter; these are called *broaches*; they are something more than three feet long.

Tallow-chandlers' business in London

don is generally performed in a cellar, of which, with the stairs down to it, we have a representation in the plate.

The tallow is first melted in a large copper, and after it is well skimmed and refined it is brought into a vessel called a *mould*, in which the cottons are dipped. The workman holds three of these broaches between his fingers, and immerses the cottons into the mould: they are then hung on a frame for the purpose, till they become cold and hard; during which others are dipped. When cold, they are dipped a second and a third time, and so on till the candles are of the proper size.

During the operation, the tallow is stirred from time to time, and the
mould

mould supplied with fresh tallow, which is kept to the proper heat by means of a fire under it.

Such was the laborious method universally adopted in making common candles, till within these fifteen or twenty years, when an invention was introduced, which is represented in the plate, and may be thus described:—In the beam three pulleys are let in; round these proper-sized ropes run, and are fixed to a machine on which six broaches are placed. In the scale are weights sufficient to draw up the broaches: these are increased as the candles become larger and heavier. The workman, by means of this very simple and excellent contrivance, has only to guide the candles, and not to support

14. *The Tallow-chandler*

the weight of them between his fingers.

In the left hand corner of the plate is the mould, in which the moulded candles are cast. The frame is of wood, and the several moulds are hollow metal cylinders, generally made of pewter, of the diameter and length of the candle wanted : at the extremity of these is the neck, which is a little cavity, in form of a dome, having a moulding within side, and pierced in the middle, with a hole big enough for the cotton to pass through. The cotton is introduced into the shaft of the mould, by a piece of wire being thrust through the aperture of the hook till it comes out of the neck : the other end of the cotton is so fastened as to keep

keep it in a perpendicular situation, and in the middle of the candle ; the moulds are then filled with warm tallow, and left to be very cold before they can be drawn out of the pipes.

Besides these, there are other candles made by tallow-chandlers intended to burn during the night, without the necessity of snuffing : the wick has been usually made of split rushes ; but lately very small cotton wicks have been substituted for the rush : these are lighted much easier, are less liable to go out, and, owing to the smallness of the cotton, they do not require the aid of snuffers.

The business of most tallow-chandlers includes the melting of tallow,

16 *The Tallow-chandler.*

which is done by chopping the fat as it is taken from oxen and sheep, and then boiling it for some time in a large copper, and when the tallow is extracted by the process of fire, the remainder is subjected to the operation of a strong iron press, and the cake that is left after the tallow is expressed from it is called a greave: with this dogs are fed, and the greater part of the ducks that are reared in the vale of Aylesbury, and which supply the London markets in a great degree: it is also sometimes given to oxen and pigs, but certainly without benefiting the flavour of the meat.

Large quantities of tallow are every year imported from Russia in casks; such as that which stands on the





Tallow-chandler.

London Published by T. Smart & Co Aug. 21-1854.

right hand corner of the plate, and is manufactured into soap and inferior candles.

The price of candles in London used formerly to be regulated by the master and wardens of the tallow-chandlers' company, who met at their hall on Dowgate Hill every month for the purpose. But now the price of every article belonging to the trade is fixed at the weekly markets.

Journeymen generally board in their master's house, and receive from twenty to thirty pounds a year, exclusive of board. There are also day-men, who work by the day, and are paid according to the number of candles made. Besides their common wages, it is the custom of the trade to allow *beer-money*, for melting

THE GARDENER.

A GARDENER is employed in the management and cultivation of fruit-trees, flowers, plants, and vegetables of all kinds.

Gardens are distinguished into *flower-gardens*, *fruit-gardens*, and *kitchen-gardens*: the first are for pleasure and ornament, and are, therefore, placed in the most conspicuous situation; the two latter are for service, and made in more obscure and retired places. They were formerly distinct, but they are now generally united, because they both require a good soil and exposure, and are generally

nerally placed out of the view of the house.

The principal operations of the gardener are planting and transplanting, engrafting, inoculating, pruning, sowing, &c. Most of these are so well understood, that we shall only speak on the subject of *engrafting*, which is the art of inserting a shoot of one tree in the stock of another, in order to correct or improve its fruit.

The implements necessary for this business are a grafting-knife, a quantity of strong bass string for bandages, to tie the stocks and grafts firmly together, and some well wrought clay to put over the tying, to secure them from the air and the wet.

When the grafts or shoots, which must be of the last year's growth, are quite ready, fix upon a smooth part of the stock, and there pare off the rind with a little of the wood in a sloping direction, about an inch in length ; then, having the shoots cut into lengths with four or five eyes on each, prepare one to fit the stock exactly where it is cut, so that the rinds of both may join in every part ; then cut a slit or tongue about half an inch in length upwards in the shoot, and cut a slit the same length downwards in the stock, to receive the said tongue ; and in that manner fix the graft in the stock, taking care that the sap and rind of both may join as exactly as possible in every part. Having





A Gardner.

London, Published by Tabart & Co. Aug. 12. 1789.

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thus fixed the graft, let it be immediately tied with a string of soft bass, bringing it in a neat manner several times round the graft and stock, taking care to preserve the graft in its due position; and let the bandage be neatly tied, and the place be covered with some grafting clay, in such a manner that neither the wind, nor the sun, nor the wet, can enter. This is called whip-grafting, and is only one of several ways in which engrafting is performed.

The gardener represented in the plate is in the flower-garden, in the act of digging with his spade: the watering-pot, rake, &c. stand before him: on his right hand is a bed of tulips; and beyond them, on a stand, several pots of auriculas: on his left

hand is the aloe, which blossoms once only in a century. In the smaller pot are some young plants of the same kind, not yet transplanted into separate boxes or tubs made for the purpose. The cultivation of flowers is a very pleasing employment: by a proper attention many flowers are brought from a mean and simple appearance to a large, brilliant, and beautiful one.

There are several kinds of gardeners: some gain a living by looking after other people's gardens; for which they receive a certain sum per annum, according to the size of the garden. Others live in gentlemen's houses, and, like domestics in general, receive wages for their labour, from twenty to a hundred pounds

per

per annum, according to their merit, or to what may be expected from them. Some gardeners go out to day-work, and their wages are from three to five shillings a day.

Besides these we have market-gardeners, that is, persons who raise vegetables and fruits, which they expose to sale in markets and other places. Gardens, for the raising of vegetables for sale, were first cultivated about Sandwich in Kent. The example was soon followed near the metropolis; and perhaps there is not a finer sight any where than Covent-Garden market, about six or seven o'clock in the morning of a Saturday, during the early part of the summer.

Within a few miles of the metropolis, there are supposed to be about

five thousand acres of land constantly cultivated for the supply of the London markets with garden vegetables, exclusive of about eight hundred acres cropped with fruit of various kinds, and about seventeen hundred acres cultivated for potatoes.

In the parish of Fulham, the cultivation of gardens for the market is carried on to a greater extent than in any other in the kingdom. The parishes of St. Paul's, Deptford, Chiswick, Battersea, and Mortlake, are celebrated for their asparagus. Deptford is also famous for the culture of onions for seed, of which, on an average, there are about twenty acres annually.

THE HAIR-DRESSER.

THE HAIR-DRESSER cuts and dresses ladies' and gentlemen's hair; he makes wigs and braids, and in most cases the business includes the art of shaving.

The hair-dresser, who is represented in the plate engaged in his profession, requires scissars, combs, some powder and pomatum, things too well known to stand in need of description. This business was in much greater repute ten years ago than it is at present. In the year 1795 an annual tax of one guinea was laid upon all persons who should in future wear hair-powder: this

very much injured the trade: the following year, and also the year 1799, were seasons of uncommon scarcity with regard to wheat, from which hair-powder is manufactured; this circumstance led many others to abandon the fashion of hair-dressing.

The principal requisites in a hair-dresser are, a light hand, an aptness in catching the changing fashions of the times, and a taste to improve upon them.

Perukes or wigs are also less in fashion among gentlemen than they were formerly; but perhaps they were never more common among the fair sex than at present: and if we may judge from the splendid appearance of many shops in which ladies' wigs, braids, and curls are manufactured,

manufactured, no business is more flourishing or more profitable.

The fashion of wearing wigs and false hair is not peculiar to modern times; it was common to the Greeks and Romans. The peruke of the emperor Commodus is described as having been powdered with scrapings of gold, which were made to adhere to the hair by means of glutinous perfumes.

Perukes in their present form were introduced into Paris in the year 1629, whence they have spread, by degrees, through the rest of Europe. At first it was reputed a scandal for young people to wear wigs, because the loss of their hair at that age was attributed to a disease which was of itself disgraceful.

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They are now become so common, that few ladies, notwithstanding they possess the most beautiful hair, would be thought to be without false hair : and some, supposing that they can improve on nature, change their own for hair of a very different colour. Hence we sometimes see a fair skin and light eyes decorated with black hair; and a dark complexion, with black sparkling eyes set off with flaxen locks. Such is the taste at the commencement of the nineteenth century.

Hair makes a very considerable article in commerce. And the merit of good hair consists in its being well fed, and neither too coarse nor too slender ; the largeness rendering it less susceptible of the artificial
curl,





Hair-dresser.

London, Published by Tabart & Co. Aug. 1804.

curl, and the smallness making its curl of too short duration.

There is no certain price for hair; but it is sold from five shillings to five pounds per ounce, according to its quality and colour.

Hair which does not curl naturally is brought to it by boiling, and by baking, in the following manner: after having sorted the hair, it is rolled up and tied down upon little cylindrical instruments, either of wooden or earthen ware, called pipes, in which state they are put into a vessel over the fire, and boiled about two hours; they are then taken out and dried, and sent to be baked in the oven.

Hair thus prepared is woven on strong thread, and the threads are

D 3

sewed

sewed on a cawl, fitted to the head, for a peruke.

Formerly peruke-makers made no difference between the ends of the hair, but curled and wove them by either indifferently ; but it is now known that hair to curl well must be woven by the end which grows next the head.

Perukes much worn may with attention be made to look very smart, so long as they are kept from the wet ; a circumstance which reminds one of an amusing anecdote.

“ One day says an avaricious doctor in Lancashire to his barber’s lad, ‘ Jack, can’t you take this old wig of mine and dress it up a bit ? I’ll give you a shilling :—but be sure you don’t let your master know.’

The

The lad closed with the offer, but, feeling no fondness for his employer, told his master and fellow-apprentices of his private job: to work he went with irons so hot as scorched and destroyed the hair eventually, but kept for a time a fresh and stiff curl to the eye. ‘Aye! this is well done, Jack, indeed:—there’s a shilling for you.’ In a day or two the doctor went out in this *renovated busby*; but meeting unfortunately with a heavy shower in his ride, the curls hung down never to be raised again! and betrayed the canker at the root.

“When Jack made his regular visit, the next day, he saw the doctor ready equipped with a horse-whip in his hand to give him a
warm

warm reception. Jack's conscience smote him, he took to his heels, and consigned the beard and periwig of his reverence to another artist."

The operation of shaving, which is another part of a hair-dresser's business, stands in need of no description; the great art depends on a light hand and a good razor.

Journeymen hair-dressers earn from fifteen shillings to a guinea per week; but those who work on wig-making, and the weaving of hair, will, if very expert, earn much more than this.

THE

THE COMB-MAKER.

THE use of combs is too well known to stand in need of any description. They are generally made of the horns of bullocks, or of elephants' and sea-horses' teeth; some are made of tortoise-shell, and others of box or holly woods. Bullocks' horns are thus prepared in order to manufacture combs: the tips are first sawn off: they are then held in the flame of a wood fire; this is called roasting, by which they become nearly as soft as leather. While in that state they are slit open on one side

side, and pressed in a machine between two iron plates; they are then plunged into a trough of water, from which they come out hard and flat.

The comb-maker now saws them into lengths according to the sized combs he wants. To cut the teeth, each piece is fixed in a tool called a clam, one of which is represented in the plate standing behind the man. The comb-maker sits on a triangular sort of stool to his work, and under him is placed the clam that holds the horn, ivory, &c. that is to be formed into a comb. The teeth are cut with a fine saw, or rather a pair of saws, and they are finished with a file. A coarser file called a rasp, such as those that hang under the window in the plate, is used to reduce

reduce the horn to a proper thickness; and when the combs are made, they are polished with charcoal and water, and receive their last finish with powder of rotten-stone.

The process used for making ivory combs is nearly the same as that already described, except that the ivory is first sawed into thin slices. The best ivory comes from the island of Ceylon and Achen, in the East Indies, since it has the property of never turning yellow: of course the ivory from these places is much dearer than that brought from other parts.

Having described the usual method of making combs, it is right to inform the reader, that about eight years ago Mr. Bundy, of Camden Town, obtained a patent for cutting
combs

combs by means of machinery. It will be thought a very singular circumstance, that, before this period, no method was practised in this country for cutting the teeth of combs, but that in which a pair of saws, rudely fastened in a wooden back, was directed by the human hand. With these implements, however, it is, that the very delicate superfine ivory combs, containing from fifty to sixty teeth in an inch, are manufactured.

By Mr. Bundy's machine the business of comb-making is greatly expedited; the teeth of two combs may be cut in about three minutes. The combs are afterwards pointed by applying them to an arbor or axis clothed with cutters having chamfered edges and teeth.



A Comb Maker.

London, Published by Tabart & Co. Aug. 11. 1804.



Tortoise-shell combs are very much used, and there are methods of staining horn so as to imitate tortoise-shell; of which the following is one :—The horn to be dyed must be first pressed into a flat form, and then spread over with a paste made of two parts of quick-lime and one of litharge, brought into a proper consistence with soap-ley. This paste must be put over all the parts of the horn, except such as are proper to be left transparent, to give it a nearer resemblance to tortoise-shell. The horn must remain in this state till the paste be quite dry, when it is to be brushed off. It requires taste and judgment to dispose the paste in such a manner as to form a variety of transparent parts, of different magnitudes and figures, to look like nature. Some parts should also be semi-transparent ;

which may be effected by mixing whiting with a part of the paste, to weaken its operation in particular places; by this means spots of a reddish brown will be produced, so as greatly to increase the beauty of the work. Horn thus dyed is manufactured into combs, and these are frequently sold for real tortoise-shell.

Combs are not only made for the purpose of cleaning the hair, but for ornament; they are sometimes set with brilliant stones, pearls, and even diamonds; some again are studded with cut steel; these are of different shapes, and are used to fasten up the hair when ladies dress without caps. Of course combs may be had of all prices, from the value of a few pence to almost any sum. Journeymen comb-makers will earn a guinea or thirty shillings a week. The

The comb-maker represented in the plate is cutting the teeth of a comb: on his left-hand is a bench with combs already finished; on the ground are the horns from which he manufactures them; and in the right hand corner is a heap of shavings.

Horn, from which combs are generally made, when very thin becomes transparent, and has been used instead of glass, for windows. When heated it may be bent to any shape, and wrought into trinkets of all forms. Tortoise-shell, upon being analized, is found to consist of very thin membranes laid over each other, and is in its nature very like the nails that defend the human toes and fingers from injury.

THE LACE-MAKER.

THE LACE-MAKER is represented in the plate, busily engaged in her work in the open air, which even in this country is no uncommon sight during the summer months.

Lace is not woven, and of course it requires in the operation neither warp nor woof. It is made of silk or of thread, which is wound on little bobbins, made of bone or ivory, about the thickness of a skewer: hence the name bone-lace. The pattern, to which the lace is to be made, is drawn on paper or parchment, pricked with pin-holes, and then put on the pad or cushion which the woman holds on her knees. All the ends of the thread are first fast-
tened



Lace Maker.

London, Publish'd by Tisdart & C^o Aug 11-1804.





ened together, and the lace-maker twists them variously, over and under each other, round the pins, which are stuck into the holes in the pattern: these pins they remove from one part to another, as their work goes on; and by these means are produced that multiplicity of eyes, or openings, which give to lace the desired figures.

For this operation much art and ingenuity are not necessary: it is, however, very tedious work; and when the thread is fine, and the pattern full and complex, it requires a degree of patience which can rarely be expected in persons of easy circumstances. Lace-making, therefore, is consigned to the hands of indigent women and young girls, who, by their skill and dexterity, raise the value of materials, originally of little worth, to almost any sum. But

the time required to produce this beautiful manufacture is always in proportion to the value of the work ; so that after all, little money is earned in the business.

The origin of the art of lace-making cannot be distinctly traced : by some it has been supposed to be the same as that which is called in Latin authors the *Phrygian art* ; but this probably consisted rather in needle-work, than in that sort of netting used in the making of bone-lace. Borders sewed upon cloths and tapestry, which are mentioned by antient writers, were a kind of lace worked with a needle : this lace is undoubtedly of much older date than that made by netting. Of the former kind much is still extant among old church-furniture, which was probably the work of nuns, or ladies of fortune, who devoted

voted their time to the business on religious motives: but had it been manufactured as an article of commerce, something more would have been found concerning it in contemporary authors.

A lace manufactory was established in Paris, under the auspices of the celebrated Colbert, in the year 1666; but this was done by the needle, and was similar to what is called *point*.

The Germans, however, claim the honour of having invented the art of lace-making by means of the cushion and bobbins: they ascribe the invention to Barbara, the wife of Christopher Uttmann, who died about the year 1575. At this period the mines in Germany were become much less productive than they had been for centuries: the wives and daughters therefore,
of

of the miners, were induced to turn their hands to the making of lace, which, owing to the low price of labour, they were enabled to sell so cheap, that it became fashionable, in opposition to the Italian lace worked with the needle, and even supplanted it in commerce.

The best laces are now made at Mechlin, Brussels, Ghent, Antwerp, and Valenciennes, which still enrich the country around, and induce the farmers to cultivate flax on the poorest soils. In France, lace was made in large quantities in the convents.

In our own country, the manufacture of lace is carried on to a greater extent and perfection in Buckinghamshire than in any other part of the United Kingdom, particularly in the town and neighbourhood of Newport-Pagnel, which is a sort of mart for that article, and flourishes considerably by its means.





Milliner.

London, Published by Tabart & Co. Aug 11-1851.

THE MILLINER.

THE business of a MILLINER, and the articles which she makes up for sale, are very well displayed in the plate. In the window of the shop are exhibited hats, caps, and bonnets; a cloak, a muff, and a fur tippet; while the milliner herself is busily employed at her counter in making up a hat. The boxes on the floor are intended either to send home her work when finished, or they are meant to hold some of the articles belonging to her trade; as feathers, artificial flowers, muslin, gauze, crape, &c. The drawers in the counter are usually devoted to ribands of different widths, colours, and prices; thread, laces, &c.

In

In the milliner taste and fancy are required, with a quickness in discerning, imitating, and improving upon the various fashions, which are perpetually changing among the higher circles*.

Muslin, which is one of the chief articles in the millinery business, is a very fine substance, made wholly of cotton; and it takes its name from the soft downy nap on its surface resembling moss, or in French *mousse*. There are various kinds of muslins brought from the East-Indies: the best is said to come from Bengal. They are subject to a heavy duty upon importation, which is returned if exported into foreign countries.

* For the use of milliners and mantua-makers who reside in the country, and also to gratify the curiosity of ladies in general, a work is published in London every month, entitled "The Monthly Fashions of London and Paris;" containing from ten to fifteen fashionable dresses in each number, drawn from real life, in the first circles. Price 1s. 6d. each number.

Gauze is a very thin, slight, transparent kind of stuff, woven sometimes of silk, and sometimes only of thread. The gauze-loom does not differ very much from the common weaver's loom, but it has some appendages which are peculiar to it. There are a great variety of gauzes; some with flowers on a silk ground, some wrought with gold and silver. Gauze is chiefly made in this country, but part of what is used here is brought from China.

Crape is a very light transparent stuff, in some respects like gauze; but it is made of raw silk, gummed and twisted on the mill, and woven without crossing. It is used for mourning, and is now a very fashionable article in court dresses. Crapes used for mourning are either *crisped* or *smooth*: the first is *double*, and denotes the deeper mourning; the *single* or smooth crape

is for the slighter. Crapes are of different colours, but the silk is always dyed in its raw state. The chief manufacture for this article of dress is at Lyons, but a great deal is made in various parts of this kingdom.

Crapes when made into court dresses are ornamented in a thousand different ways: sometimes as caps, or turbans, they are ornamented with *spangles*, *artificial flowers*, and with *diamonds*.

Spangles are small thin round leaves of metal pierced in the middle, which are sewed on as ornaments to a dress. They are made in the following manner: a wire is twisted in the form of a screw; it is then cut into single spiral rings, like those used by pin-makers; and these rings, being placed on a very smooth anvil, are flatted, and spread by a smart blow of the hammer, so that

that a small hole remains in the middle; and the ends of the wire, which lie over each other, are closely united. Spangles were first made in the gold and silver manufactories of France, and the method was long kept a secret: at length, however, they were successfully imitated in Germany and other parts.

Artificial flowers are made, sometimes of very fine coloured paper, sometimes of the inside linings upon which the silk-worm spins its silk, but principally of cambric, which is a kind of linen made of flax, first manufactured at Cambray, in France; of which great quantities were imported into this country: but now, persons convicted of wearing, or selling, or making up for hire, any cambric or French lawns are liable to a penalty of 5*l*. The cam-

brics chiefly in use here are manufactured in Scotland and Ireland.

Ribands used by the milliners, are woven : of these there are several sorts, distinguished by different names ; as the China, the sarsenet, and the satin riband. Muffs and für tippets are sold by the milliner, but the manufacture of them from the skin is a distinct business.

Velvet is used by milliners, and is now much in fashion. Velvet is a sort of stuff or silk, the nap of which is formed of part of the threads of the warp, which the workman puts on a channelled ruler, and then cuts, by drawing a sharp steel tool along the channel of the ruler to the end of the warp.

THE FEATHER-WORKER.

THIS is another business in which women are chiefly employed. The person represented in the plate is at work on a military feather ; but the feathers which are represented as in the shop window for show, are those which ladies wear in full dress. Within these few years, the trade for feathers, especially for those worn by the military, has very greatly increased.

Before the feathers come into the hands of the person who makes them up for sale, they undergo several operations. They are curled, either by being baked, or by means of hot irons ; and when necessary, they are also dyed.

The feathers principally in use are

F 2

those

those of the ostrich, heron, the common cock, swan, peacock, and goose: of these, some are adapted to plumes with which hearses and horses are decorated at the funerals of the great; others are fitted for ornaments to the human head: to some we are indebted for the beds on which we lie, and to others for the pens with which we write.

Geese are plucked in some parts of Great Britain five times in a year: the first plucking is at Lady-day for feathers and quills, and four other pluckings are made between that time and Michaelmas for feathers only. In cold seasons many geese die by this barbarous custom. The fens in Lincolnshire abound with geese; and the produce of feathers is so great, that frequently three hundred bags, each containing



Feather Worker.

London, Published by Tabart & Co. Aug. 11. 1804.



taining one hundred weight and a half, are sent away in a year.

Military feathers are chiefly made of the *hackle* feathers, as they are called; these are plucked from the neck of the cock. The feathers of this bird are in great demand: his neck and back are clothed with long streaming feathers, intermixed with orange, black, and yellow; his tail is made up of stiff feathers, with two large ones waving over the rest in form of a sickle.

The plumage of the *wonderful Indian cock* is very beautiful, and consists of five different colours, viz. the black, white, green, red, and blue; and the tail is made up of twelve very beautiful feathers. But ostrich feathers are the most valuable: they are such as are represented in the plate. In their natural state they are mostly black and

white : the largest feathers are at the extremities of their wings and tails.

The feathers of the ostrich require dying and dressing before they can be used as ornaments in ladies' head-dresses. The spoils of this bird are so valuable, that it is no wonder the human race, who reside in the vicinity of his resorts, have ever been his declared enemies, and constant pursuers. The Arabs are so sensible of the value of the ostrich, that they train their fleetest horses for the purpose of hunting them. When the ostrich perceives that he is pursued, he sets off at first in a gentle pace, as if insensible of his danger, or sure of escaping. In running, he keeps his wings, like arms, in constant motion, corresponding exactly with that of his legs. At length, when he is worn out with fatigue and hunger, he resolves

solves to conceal himself; for which purpose he covers his head with the sand, or forces it into the first thicket he comes near, where he patiently waits until he is taken by his pursuers. The hunters always avoid killing their prey, because those feathers that are taken from the ostrich while he is alive are the most valuable; the others are dry, light, and liable to be spoiled by worms. Many tribes hunt and take them for the purpose of rendering them tame, that they may thereby obtain a supply of feathers, which is accomplished with very little trouble.

Round feathers, such as the woman in the plate is at work upon, are composed of a number of smaller ones: if they are taken from the cock's neck, they are neatly tied on wire with thread; but if they are small ostrich feathers,

feathers, they are twisted round an upright wire. The single ostrich feathers have usually a small piece of wire at the end, for the purpose of fixing into the cap, turban, or hair. Women that work at this business can earn two shillings a day.

Feathers make a considerable article of commerce, being used for beds, writing-pens, &c. Those imported from foreign countries pay a heavy duty to the revenue. There is also a duty upon ostrich feathers, both in the undressed as well as in the dressed state.

THE GOLD-BEATER.

GOLD-LEAF is gold beaten with a hammer, into exceedingly thin leaves. The fineness to which a body of gold may be reduced, is almost incredible. Mr. Boyle found that upwards of 50 square inches of gold, weighed but a single grain: and as a cubic inch of gold contains 4902 grains, the thickness of the gold-leaf was less than the two hundred and forty thousandth part of an inch thick.

Gold, to be made into leaf, is first melted in a crucible with some borax; it is then poured into an iron mould, from which it is taken and made red hot, and forged into a long plate, which

which is farther extended, by being passed repeatedly between polished rollers, till it becomes as thin as paper. It is now cut into pieces of equal size and weight, which are forged and well annealed to correct the stiffness, which the metal has contracted in the hammering and flatting.

In farther extending these pieces into fine leaves, it is necessary to interpose some smooth body between them and the hammer, for softening the blow, and defending them from the rudeness of its immediate action; as also to place between every two of the pieces, some proper intermedium, which, while it prevents them from uniting together, or injuring one another, may suffer them freely to extend. For this purpose Gold-beaters use three kinds of membranes; for the outside
cover,

cover, common parchment made of sheep-skin ; for interlaying with the gold, the closest vellum made of calf's skin ; and afterwards, finer skins made of ox-gut, stript off from the gut, slit open, and curiously prepared for the purpose ; hence the name *gold-beater's skin*. The preparation of these membranes is a distinct business, practised only by a few persons in the kingdom.

The beating of the gold is performed on a smooth block of marble, weighing from two to six hundred weight ; fitted into the middle of a wooden frame, so that the surface of the marble and the frame, may form one plane. Three of the sides are furnished with a high ledge ; and the front, which is open, has a leathern flap fastened to it, which the gold-beater takes before him

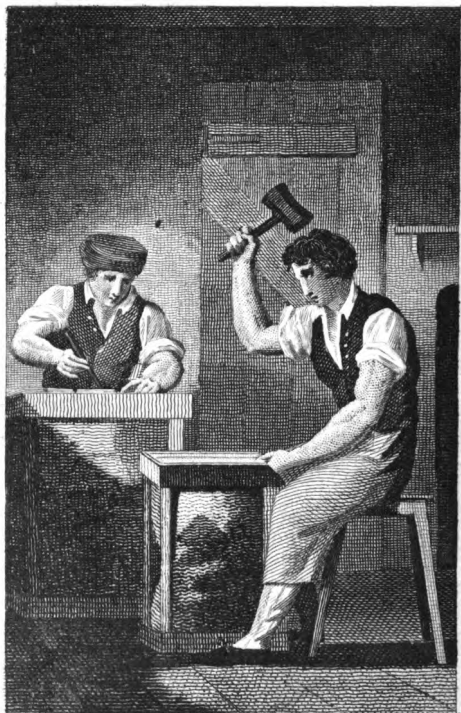
as

as an apron, for preserving the fragments of gold that fall off.

Three hammers are employed, all of them, with two round and somewhat convex faces, though the workman seldom uses more than one of the faces. The first hammer weighs fifteen or sixteen pounds, and is called the *cutch* hammer; the second is called the *shodering* hammer, and weighs twelve pounds; the third is the finishing hammer, and weighs about ten pounds.

One hundred and fifty pieces of gold are interlaid with leaves of vellum, three or four inches square, one vellum leaf being placed between every two of the pieces, and about twenty more of the vellum leaves on the outsides; over these is drawn a parchment case, open at both ends; and over this, another in a contrary direction, so that the assemblage
of





Gold Beater.

Pub. by Tabart & Co. Nov. 14-1845-46. No. Bond Street.

of gold and vellum leaves, is kept tight and close on all sides. The whole is beaten with the heaviest hammer, and every now and then turned upside down, till the gold is stretched to the extent of the vellum. The pieces, taken out from between the vellum leaves, are cut into four with a steel knife; and the six hundred divisions are next interlaid in the same manner, with pieces of ox-gut skins, five inches square. The beating is to be again repeated, till the golden plates have acquired the extent of the skins; when they are a second time to be divided into four. The instrument used for this division, is a piece of cane cut to an edge, the leaves being now so light, that the moisture of the air, or the breath condensing on a meta'line knife, would occasion them to stick to it.

After a third beating in a similar way, the leaves are taken up by the end of a cane instrument, and being blown flat on a leathern cushion, are cut to a size, one by one, with a square frame of cane, made of a proper sharpness ; they are then fitted into books of twenty-five leaves each, the paper of which is well smoothed, and rubbed with red bole, to prevent their sticking to it.

The process of gold-beating, is very much influenced by the weather ; both damp and frost, are very injurious to the operation.

Gold-leaf ought to be prepared from the finest gold, as the admixture of other metals, though in too small a proportion to sensibly effect the colour of the leaf, would dispose it to lose a part of its beauty in the air. Besides
the

the greater hardness of alloyed gold, occasions as much, or even more to be lost in point of time and labour, than can be gained by adulterating the metal.

Gold-leaf is applied, in the art of gilding, to the surfaces of bodies, and it is done in two ways.—Wood, leather, paper, and other like substances, are gilt by fastening on leaves of gold, by means of some cement ; but metals are gilt by a chemical application of the gold to the surface. This last is called water-gilding.

THE PAVIOUR.

THE nature of the paviour's business is known to every one who has resided but a short time in any city or large town. The tools required in the work are few, viz. a pick-axe to loosen the earth sufficiently deep to admit the stones; a large wooden hammer, such as the man in the plate is represented as holding in his hand; and a birchen broom, with which he brushes the small gravel into the joints between the stones.

The utility of this work, will be obvious, when it is considered that previously to the paving of the streets of London, Holborn which had long been



Pavior.

London, Publish'd by Tabart & C^o Aug 11-1804.



been a principal street, “ was so deep
“ and miry, that many perils and
“ hazards were thereby occasioned, as
“ well to the king’s carriages passing
“ that way as to those of his sub-
“ jects*.” The other streets are de-
scribed as having been very foul, full
of pits and sloughs, perilous and noi-
some, as well to persons on horse-back
as on foot. On this account Henry V.,
about the year 1417, ordered two
vessels, each of twenty tons burthen,
to be employed at his expence for
bringing stone, with which to pave the
streets. From this period it appears
that London has been gradually paved,
according as the several parts became
more populous, or were devoted to

* See Anderson’s Commerce.

particular purposes. Smithfield was not paved till the year 1614.

Paris was paved at a much earlier period. Philip II., standing one day at a window of his palace, and observing that the dirt and mire which the carriages in passing threw up, produced a most offensive stench, resolved to remedy the nuisance by causing the streets to be paved ; for which purpose he issued his orders in the year 1184 : and on that occasion the name of the city, which had been *Lutetia* on account of its dirtiness, (from *lutum* the Latin of clay, mud, or mire,) was changed to Paris.

The stones made use of for paving the coach-ways in the streets of London come chiefly from Scotland, or from the islands of Guernsey and Jersey.

The

The former are a granite of a reddish colour ; the latter are collected on the sea-beach, and are, perhaps, the most durable kind of stone that is used.

Square Guernsey or granite stone paving, laid in the best skreened gravel, the stones to be nine inches deep, and the bottom of each stone to contain four-fifths of the superficies of the top, is charged at ten shillings a yard. The curb stone, to the foot-pavement, not less than twelve inches wide and seven inches thick, is charged at about two shillings and three-pence *per foot run*. Yorkshire paving, that is, the stones in the foot-path within the curb, is charged at about eleven-pence per square foot.

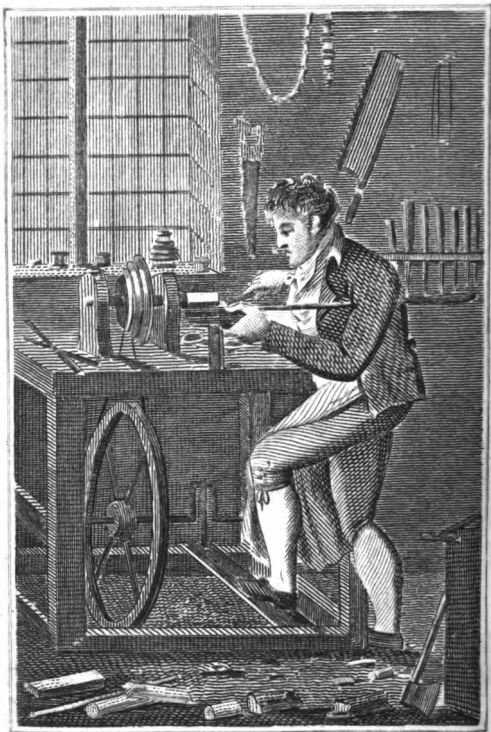
The journeyman paviour earns three shillings and tenpence a day, and his labourer two shillings and eight-pence. Gravel is purchased by the load, and the

the pebbles are bought by the ton-weight.

In no place is the convenience of foot-passengers more consulted than in London : there are but few of the streets which have not good foot-ways raised above the carriage road ; whereas in Paris there is no path distinguished for people on foot ; the consequence of which is the loss of many lives every year, by persons being beaten down, and run over by horses and carriages.

In Venice, the pavement is of brick : in France, it consists of a sort of free-stone : in Amsterdam, the middle of the street is stone or flint, and the foot-paths are made with bricks,





Turner.

London, Published by Tabart & Co. Aug. 11 - 1804.

THE TURNER.

TURNING is a very ingenious business, and the operation is very well represented in the plate. The principal engine made use of in this employment is the *lathe*, which is exceedingly useful for the turning of wood, ivory, and various other materials, such as brass, iron and silver, into a round or oval shape.

This art was well known to the ancients, and by them carried to a considerable degree of perfection. It is of great importance in many of the arts of life. The architect uses it for the ornaments both within and without highly finished houses, and the mechanic

nician and natural philosopher have recourse to it not only to embellish their instruments, but to adapt them to their different uses.

There are various kinds of lathes; that represented in the plate is as useful for small work as any. Some require the aid of one or two men to turn the wheel; but in this the wheel is turned by means of the treadle, by the same man that is employed in turning the wood. The thing to be turned is fixed on the lengthened axis of the smaller wheel, and upon the prop or rest the chisel or other cutting instrument is supported; and being brought to touch the wood while it is swiftly turning round, it takes off shavings to the greatest nicety.

The piece to be turned should be rounded before it be put on the lathe; either

either with a small hatchet, such as that which stands just behind the man, or with a plane, &c., shaving it down till it is every where nearly of an equal thickness, leaving it a little larger than it is intended to be when finished off.

The young turner should endeavour to acquire the complete management of the gouge and chisel, which are the instruments by far the most frequently used, and the most necessary in this art: by them almost all the soft woods are turned; and as to the hard woods, as box, ebony, ivory, &c. they are scarcely ever turned except by shaving off. In that case gravers are to be used with square, round, or triangular ends. These should be held horizontally while applied to the wood; but the gouge and chisel must be used obliquely.

When

When the work is completely turned, it is next to be polished. Soft woods, as the pear-tree, the hazel, and the maple, may be polished with fish skin or Dutch rushes. Fish-skin, which is the skin of the shark, is always much better after it has been used, because in its natural state it is too rough for bringing work to a proper degree of polish. The oldest plants of the Dutch rush are the best; but before they are used they must be moistened with water. When the work is finished in this way, it is to be rubbed up with a little wax or olive oil. Ivory, horn, silver, and brass are polished with pumice-stone finely pounded and put upon leather. Different methods, and different substances are made use of, for this purpose by different workmen.

According to Dr. Paley, not a man
in

in a million knows how an oval frame is turned: it may be thus made: Take two ovals of metal exactly of the size of the oval wanted, fix them firmly on the spindle of the lathe, so as to turn round with it: fix between them the wood to be turned, and then it is readily cut with chisels or other tools, as the lathe goes into exactly the figure of the external ovals.

In fixing a lathe, great care should be taken that it be placed in a light situation near a window, and neither so low as to oblige the workman to stoop in order to see his work, nor so high, that the chips should come in his eyes.

A journeyman in this business may earn a guinea and a half a week, and those who work on toys and smaller articles much more. The lathes used in the nicer sort of turning are very

expensive: consequently the stock of a master turner is valuable; and no lad should be brought up to the trade, that has not something of a mechanical genius, because there is an almost endless variety in the trinkets made for sale, as may be seen in any large retail shop window.

Ivory is much used by the turner, which is the tooth or tusk of the elephant, growing on each side of his trunk, somewhat in the form of an horn. Ivory is much esteemed for its colour, the fineness of its grain, and its polish. That from Ceylon and Achen is the best, as it never becomes yellow. It is easily stained to any colour.

THE

THE BRUSH-MAKER.

THE nature of this man's business is very well displayed in the plate. He makes brushes of all sorts, hair-brooms and carpet-brooms, and mops of different sorts: he is generally the manufacturer of wooden coal-hods and of measures for corn and coals, of all which articles there are representations in the engraving.

The wooden part of brushes is generally of oak, which is cut to its proper size by the instrument which the man in the figure is supposed to be using. The instrument is a large knife, fastened down to the block with a staple at one end, in such a manner that it is

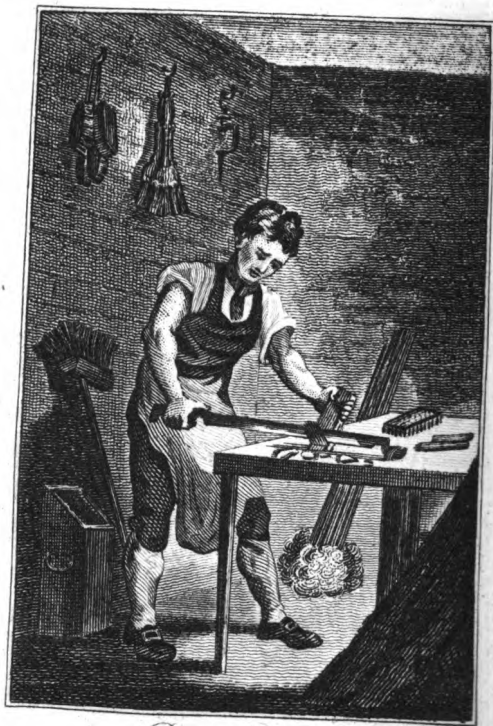
movable up and down ; to the other end is a handle. The wood to be cut is held in the left hand, while the knife is worked with the right. The knife is always kept very sharp ; and, by its make and mode of using, hard wood is very readily reduced to any shape and size. This wood, when cut into the proper sizes, is drilled with as many holes as is necessary, and into these the hair is put.

The hair made use of by brush-makers is hogs' bristles, vast quantities of which are imported every year from Germany. These are subject to a heavy duty.

There are brushes of various sorts, shapes, and sizes ; but the structure of them all, is the same or nearly so. When the bristles are sorted, combed, and picked, a certain portion of them

is





Brushmaker.

London, Published by Tabart & Co 1866.

is taken and tied together in the middle with string, or with fine copper or iron wire: in this double state they are fastened into the wooden stock with glue or with pitch. The ends of the hair are now to be cut off, and the surface to be made even or uniform.

Common hearth-brushes and hair brooms are made in a slighter way. As soon as the stock is brought to its proper shape it is drilled, the hairs doubled, and each bundle is put into the hole with some hot cement made with pitch and rosin.

In some brushes, as those represented hanging on the beam at the left hand corner of the plate, the wires are visible on the back; in others the backs are smooth, there being thin slices of wood glued over the wires. The brush resting with its head against the wall is

called a scrubbing-brush; brushes of this kind are sometimes used to dry-rub oaken floors; in that case the backs are loaded with lead, and it is the business of a man to work them.

Mops are made of woollen yarn spun for the purpose. Besides these there are other kinds of mops manufactured of woollen rags, which are collected by poor women from the dust taken from houses, from dunghills, &c.

The coal-hods are usually made of oak, with two wooden or iron handles on the sides: they are not so neat as copper ones, or as those made of iron and varnished; but they are much cheaper, and will last much longer than the iron hods.

Great nicety is required in making the corn measures which stand behind the man: they must contain a certain
exact

exact quantity. The standard for measuring corn, salt, coals, and other dry goods, is the Winchester gallon, and it must contain $272\frac{1}{4}$ cubic inches; the bushel contains eight such gallons, or 2178 inches.

A journeyman in this business will earn a guinea or thirty shillings a week ; the profits to masters are pretty considerable where the returns are great.

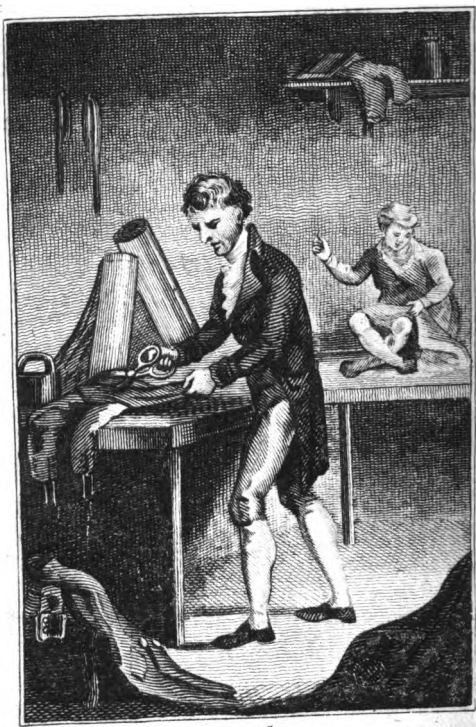
Such are the divisions of labour in this country, that the same persons do not make the brushes and the long handles. In Kent-street, and several other places, there are broom-stick manufactories.

The making of birch brooms is a distinct and profitable trade. The birch will grow in land which is fit for hardly any thing else. Ground covered with

with moss has been known to produce birch trees so well. that in a few years they have sold for ten pounds per acre, and the after produce has been considerably increased.

Besides broom-makers, who are constant customers for the birch; hoop-benders are considerable purchasers of the same article. The largest trees are often bought by turners, and the wood is used for yokes and other instruments of husbandry. In the northern countries of Europe, birch wood is used for wheels of carriages.





Taylor.

London Published by Tibbatt & Co 1806.

THE TAYLOR.

THE TAYLOR makes clothes for men and boys, and riding-habits for ladies. In a taylor's shop where much business is carried on, there are always two sorts of workmen: first the foreman, who takes the measure of persons for whom clothes are to be made, cuts out the cloth, and carries home the newly finished garments to the customers. The others are mere working taylors, who sit cross-legged on the bench, like the man near the window represented in the plate; of these very few know how to cut out, with any degree of skill, the clothes which they sew together.

The

The tools requisite in the business of a taylor are very few and unexpensive: the shears for the foreman, who stands to his work; for the others, a pair of scissars, a thimble, and needles of different sizes. In the thimble there is this peculiarity, that it is open at both ends. Besides these, there are required some long slips of parchment for measures, such as those represented hanging against the wall, and an iron called a *goose*: with this, when made hot, they press down the seams, which would otherwise take off from the beauty of the goods. The stand for the iron is generally a bright horse-shoe. Before the foreman, or master, (for where the trade is not extensive the master cuts out, measures gentlemen, and carries home the clothes,) is an open box; this contains buckram, tapes, bindings, trimmings,

trimmings, buttons, &c. with which every master taylor should be furnished, and from which they are said to derive very large profits. On the shelf is a piece of cloth ready to be made into clothes, and also a pattern-book.

The taylor purchases his broad cloths of the woollen-draper, who buys his goods from the Blackwell-Hall factory, or from the clothiers settled in the west of England. At Bristol fair, which is held in September, for fourteen days, an immense number of broad cloths are sold by clothiers, who assemble there, and hire shops for the purpose. The taylor deals also with the mercer for fancy waistcoats and other articles of dress ; with the haberdasher for all his small wares ; but when he makes clothes for-officers, he must go to the gold and silver-lace-maker for the necessary ornaments.

The

The wages of a journeyman taylor are regulated by act of parliament, and he now has four shillings and sixpence a day: the trade is overstocked with hands, though men that are sober, industrious, and skilful in their business, are seldom out of employment. In times of general mourning for any branch of the Royal Family the wages of the men are double, but they work more hours in the day.

A writer on this subject says, that a master taylor "ought to have a quick eye, to steal the cut of a sleeve, the pattern of a flap, or the shape of a good trimming at a glance: any bungler may cut out a shape when he has the pattern before him; but a good workman takes it by his eye in the passing of a chariot, or in the space between the door and a coach: he must be able not only to

cut

cut for the handsome and well-shaped, but bestow a good shape where nature has not granted it : he must make the clothes sit easy in spite of a stiff gait or awkward air. His hand and head must go together ; he must be a nice cutter, and finish his work with elegance.”

The woollens in which the taylor principally deals, is a vast branch of English manufacture. And so jealous are we of our woollens, that besides the precautions taken to use our own wools ourselves, we insist upon selling them ourselves, and of carrying them to the places where there is a demand for them.

THE SHOE-MAKER.

THERE are few trades more useful than that of the Shoe-maker, and perhaps not many that are more profitable when it is carried on to a considerable extent. Some Shoe-makers carry on a snug private trade without any show ; others have large shops, and exhibit in them shoes of all sorts, for ladies and gentlemen, together with boots, gaiters, and spatterdashes.

The master shoe-maker, or, if he be in a very large way, his foreman, measures his customers, and cuts out the leather for his work-people to put together. In some instances, especially in the country, he is the leather-cutter
to

to all the little traders in the surrounding villages. In this case he buys the leather in skins and half hides from the dresser, and cuts them out into soles and upper leathers, which he either uses in his own business, or sells to those who cannot afford to go to the wholesale market.

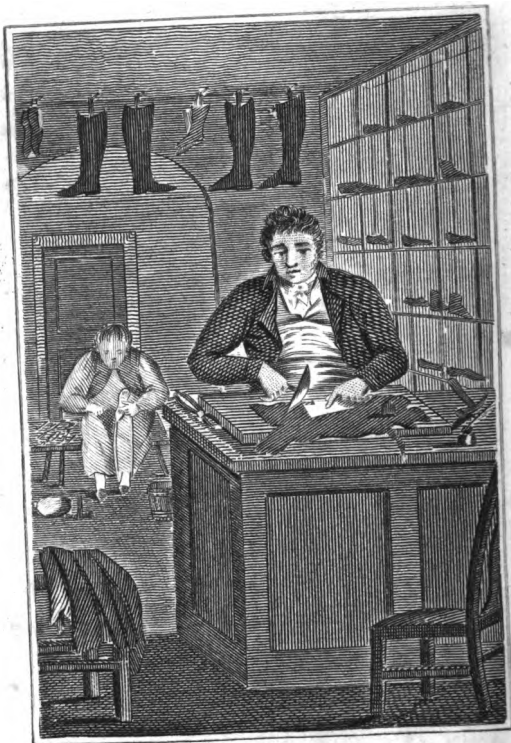
To render this business profitable, a considerable-degree of knowledge is required with regard to the properties of leather, and an accurate judgment to cut the leather in such a manner as to yield the greatest quantity with the least waste.

In the plate is a representation both of the master and the journeyman shoe-maker. The *former* is cutting out an upper leather of a shoe to a paper pattern which lies upon it. A small leaden weight is placed on the skin at

the corner to keep it from slipping: on his left lies the hammer, which he uses to beat down any rough parts which stand up in the inside of the leather; and on his right hand is a pair of pincers, which are made with teeth, in order to gripe the leather tight in the act of stretching it.

The journeyman is in the act of joining the upper leather to the sole of a shoe. On his bench near him are his awl, his knife, and a stone with which he sharpens his tools. Before him, on his right, are the hammer and lapstone, and on the other side a tub of water, in which he keeps a quantity of wax in balls. These are the principal implements necessary for his trade. He sews the leather together with thread waxed over, and thereby made a strong and durable substance: as, however,
he





Shoemaker.

London, Published by Tabart & Co. Aug. 11. 1804.

he makes no use of a needle, to the end of the thread is fastened a hog's bristle, which guides the thread through the holes made in the leather with an awl.

Journey-men in this trade are distinguished into women's shoe-makers, and those who make shoes and boots for men. Few can follow both branches with advantage; the greater ingenuity is required in manufacturing women's shoes, because the seams must be neater, as the materials are much finer.

Women are employed to bind shoes of all kinds, and to sew the quarters together of those that are made of silk, satin, and stuffs.

Shoes and boots are made on *lasts*, which are manufactured of some soft wood, by means of an engine or knife such as that which we have described in the brush-maker's trade. The same

man that makes *lasts*, makes also the wooden heels for women's shoes. The *last* for shoes is made of a single piece of wood to imitate the foot; but that for boots is slit into two parts, between which a wedge is driven when the boot-leg is wished to be stretched.

It appears from history that the Jews, long before the Christian æra, wore shoes made of leather or wood; those of their soldiers were sometimes formed out of brass or iron. The Grecian shoes generally reached to the middle of the leg. The Romans used two kinds of shoes: the *calceus*, which covered the whole foot, something in the shape of our shoes; and the *solea*, or slipper, which covered only the sole of the foot, and was fastened with leathern thongs. The *calceus* was worn with the toga when a person went abroad, and slippers

pers were put on during a journey and at feasts. Black shoes were worn by the citizens of ordinary rank, and white ones by women. Red shoes were put on by the chief magistrates of Rome on the days of ceremony.

In Europe, about a thousand years ago, the greatest princes of Europe wore shoes having the upper part of leather and the under of wood. In the reign of William Rufus the shoes of the great had long sharp points, stuffed with tow, and twisted like a ram's horn. The clergy preached against these points ; they continued, however, to increase till the reign of Richard II. when they were tied to the knees with chains of silver or gold. At length parliament interfered by an act in the year 1463, and prohibited the use of shoes or boots with pikes exceeding

ing

ing two inches in length: and shoe-makers were forbidden, under severe penalties, to make them contrary to the statute.

A journeyman shoe-maker, if he be a good hand, sober, and industrious, will earn thirty shillings a week.

Shoemakers use large quantities of Morocco leather, which is the skin of a goat, dressed in sumac, or gall; and coloured at pleasure: it is used also for trunks, book-binding, and various other work that requires neatness.

THE TRUNK-MAKER.

THE persons employed in this trade make trunks, chests, portmanteaus, cases for holding plate and knives, and buckets.

Trunks, of which there are various shapes and sizes, are generally made with wood and covered with leather, or the skins of horses or seals dressed with the hair on, and they are lined with paper. To some trunks, as that upon which the man is at work, represented in the plate, there are a number of thin iron cramps put on for the sake of strength. Those which are well finished are ornamented with several

ROWS

rows of brass-headed nails, such as that which stands in the left hand corner of the plate. That at the opposite corner which is represented as open, is divided by several partitions, and lined with baize or cloth; it is intended for holding a service of plate, which is usually sent to the banker's for safety, when the family to whom it belongs retire to their country residence.

The trunks standing on the shelves are intended either for holding linen at home, or for carrying clothes on a journey. The upper one of the two on the lower shelf is the best adapted as a travelling-trunk. Travelling-trunks are fastened either before or behind the carriage with leathern straps and buckles, or by means of chains. A patent was taken out some years since for

for a method of fastening trunks and portmanteaus to travelling carriages, so as to defy the art of robbers, who in and near the metropolis are ever on the watch to cut off trunks from coaches as they come in or go out of town.

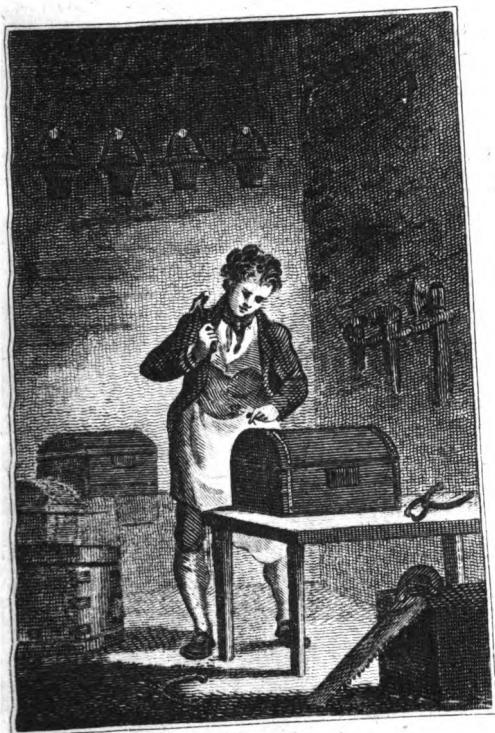
Portmanteaus are all of leather, and are adapted for the carriage, or may be placed behind the rider on his horse. These will contain a large quantity of linen or other clothes, and are very convenient for families. Journeymen in this business will earn a guinea or thirty shillings a week.

The buckets hanging from the ceiling are formed also of strong and stout leather soaked and boiled. They are very useful in extinguishing houses which have taken fire. Most large houses in the country have fifty or
sixty

sixty of these, as well as a fire-engine, in case of accidents ; but it generally happens, through the inattention of servants, that if a fire breaks out neither engine nor buckets are fit for use.

Water is sometimes raised out of deep wells by what is called a chain of buckets, that is, a number of buckets attached to a chain or rope, which by the turning of a wheel descend into the water and are brought up full.

Trunk-makers often use, in very neat work, shagreen, which is a kind of grained leather prepared from the skin of a fish, by exposing it to the weather, being first covered with bruised mustard seed, and afterwards tanned. The best shagreen comes from Constantinople, and is extremely hard ; but
being



Trunkmaker.

London, Published by Tabart & Co 1806.



being soaked in water it becomes soft and pliable, and adapted to the use of case-makers. It takes any colour, as red, green, black, &c. and is frequently counterfeited by morocco formed like shagreen; but morocco scales, which is not the case with shagreen.

THE WHEELWRIGHT.

THE business of the WHEELWRIGHT consists in the making of the wood work for wheels, in putting the parts together, and in fixing on the iron.

A wheel is composed of several parts; as the *nave*, which is the center piece; the *spokes*, which are inserted at one end of the nave, and at the other into the *fellies*, which make up the outside rim. These three parts constitute a wheel; but, for the sake of giving strength to the whole, some iron work is used: this we shall describe in its proper place.

The nave is that short thick piece of wood in the center of each wheel,
which

which receives the axle-tree, of which one is represented standing on its end in the left hand corner of the plate, with holes ready to receive the spokes, which are made to fit in accurately. When the spokes are fitted in the nave, the rim, or fellies, are next put on the spokes. Each felly is of sufficient length to receive two spokes, so that if there be twelve spokes in a wheel, the rim consists of six pieces or fellies.

The nave is bound at each end on the outside with strong iron hoops, called nave-bands; within-side also there is a ring of iron called the *wisher*, to prevent the hole from wearing by the friction of the axle. To the outside rim or fellies is an iron tire fastened with very strong nails or spikes. The parts of the tire are made red hot before they are put on the wheels, in order that they

may burn a small depth in the wheel, or at least all that roughness which might hinder it from lying flat with the wood: besides, by being in this state, they may be easily bent, so as to conform most accurately with the curve of the wheel. Another advantage is, that iron when hot expands, and as it becomes cold, it contracts into shorter lengths; and as the tire of the wheel contracts, it must have a tendency to draw the several parts of the fellys closer together. To give the man power over his work, the wheel is placed in a sort of pit made in the floor, on the sides of which the nave may rest, so that little more than half of the wheel stands above the surface. The wheelwright in the plate is represented putting on the tire of the wheel; and the smoke is made to pour forth from the



Wheelwright.

London Published by Tabart & Co Aug 11-1804.



the burning of the wood. The large pincers at his feet enable him to bring the red hot iron from the fire, and place it on the wheel. The axe resting against the other wheel, has a bended blade, and is used for hollowing out the fellies.

By thus scooping out the wood, the grain is often so much cut and injured as to weaken it in a very great degree. To remedy this, a method has been invented of bending timber into a circular form, so that the whole rim of the wheel consists of not more than two pieces, which are cased with a tire in a single piece. By this mode of construction, the circumference of the wheel is every where equally strong, and much more durable than wheels made in the usual form, though not more than half the quantity of wood is employed,

Wheelwrights in the country are the makers also of carts and waggons; the wood they principally use is elm, and some oak. Their business is a very laborious one, and requires that no lad should be brought up to it, who does not possess a strong constitution: a journeyman will earn from a guinea to thirty shillings a week.

Elm which is used by wheel-wrights for axle-trees is also much in use for chopping blocks, not being liable to chip. Carvers make use of it for foliage, and other curious works of fancy.



THE IRON-FOUNDER.

ALTHOUGH iron is not esteemed the most precious metal, it is beyond all question the most useful. It is employed in three different states, each having peculiar properties, by which it is applicable to various purposes.

The first is *cast iron*, the second *wrought* or malleable iron, and the third is called *steel*.

Our business at present is with the cast-iron manufactory, of which we have a representation in the plate: the founder has just taken from the furnace a ladle full of liquid metal, with which he is going to cast, perhaps, the front of a stove, or some other article, the

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form of which is moulded out in stiff sand. It will be readily conceived that this business requires great strength and a constitution that will bear a vast degree of heat.

Iron is dug out of the earth in the form of stones, and in this state it is called ore. The richest ores, that is those which yield most pure metal, are heavy, and of a brownish colour inclining to a red.

Before the metal can be extracted the ore must be roasted or calcined: this is done by a different process in different places: at the iron-works in Staffordshire, after the ore is dug, they calcine it in the open air with small charcoal, wood, or sea-coal, in order to break it in small pieces. This process requires three days. But at Forest-Dean, in Gloucestershire, the ore is cal-



Ironfounder.

London, Published by Tabart & Co. 1806.



cined in kilns made like common lime-kilns : these are filled up to the top with coal and ore, one layer upon another alternately ; and then setting fire to the bottom layer of coal, it burns till the coal is wasted away. By this means the ore becomes brittle, but the metal is not fused.

It is now taken to the furnace to be melted, or as it is usually termed, to be *smelted*, that is, to extract the metal from the dross. The furnace, such as is represented in the plate, is built of brick, and is about twenty-four feet square on the outside, and near thirty feet in height within ; the middle or widest part of which is not above eight or ten feet, the top and bottom being brought into a narrower compass, something like the shape of an egg. Behind the furnace are fixed two pair of bellows

bellows, which are worked by means of a water wheel; and they are contrived so as to play alternately, the one giving its blast while the other is rising: but in many founderies, the bellows used are constructed after Mr. Wilkinson's plan, by which a regular and uniform blast is continually produced. Holes are left in the furnace, which may be opened at any time to take away the scoria or dross, or to permit the metal to flow out.

The furnace is filled with ore, and charcoal or coke, and sometimes limestone is added as a flux. The ore gradually subsides into the hottest part of the furnace, where it is melted; and the metallic parts, being the heaviest, fall to the bottom, where there is a passage made for the purpose of taking off the scum. As soon as there is a sufficient quantity of metal in a com-

plete and strong state of fusion, it is let out by a tap-hole into furrows made in an immense bed of sand that lies before the mouth of the furnace: the large mass, which sets in the main furrow, is called by the founders a *sow*, and the lesser or side furrows are termed *pigs* of iron. The metal is generally made so hot before it is drawn off, that it will not only run to a great distance, but will keep boiling for some time in the sand.

For chimney-backs, hearths of ovens, the fronts of stoves, and other small articles, the founder takes the metal out of the receiver in large ladles, from which he pours it into moulds of fine sand.

When the furnaces are once at work, they keep them constantly employed for many months together, never suffering the fire to slacken night
or

or day, but still supplying the wasting of the fuel and the ore with fresh materials poured in at the top.

The excessive and long continued ignition kept in these furnaces gradually wastes the brick work, till the sides, which are many feet thick, become unable to sustain the weight of the melted metal; so that it has sometimes been known to burst out suddenly in a violent and dreadfully destructive stream. At certain intervals, therefore, the fire ought to be allowed to go out, whatever may be the expence of rekindling it, in order to examine and repair the furnace.

Three tons or 6000 pounds of iron are sometimes run off in 24 hours, with the application of the bellows, while the heat without these would scarcely melt a single hundred weight in the same time.

THE

THE COPPER-PLATE PRINTER.

THE principal things requisite in this business are ink, and a press called a rolling-press, to distinguish it from the common printing press. The art of copper-plate printing owed its origin to accident. In the year 1460, a goldsmith, at Florence, happened to pour some melted sulphur on an engraved plate, and found the exact impression of the engraving left in the cold brimstone marked with the black taken out of the strokes by the liquid sulphur: he attempted to do the same on silver plates, with wet paper, by

VOL. II. L rolling

rolling it ; and this succeeded : hence the principle of the rolling-press. The art was not applied in England, till the reign of king James I.

The rolling-press may be distinguished into two parts, the *body* and the *carriage* : the body consists of the two cheeks, or upright posts, joined at top and bottom by cross pieces, and placed perpendicularly on a wooden stand or foot, which sustains the whole press. From this foot rise four other perpendicular pieces, joined also by cross ones : this may be considered as the carriage, because it serves to sustain a smooth even plank, upon which the engraved plate is placed.

Into the cheeks are inserted two wooden cylinders, the ends of which,
being

being much smaller than the bodies, are called *trunnions*, and turn in the cheeks between two pieces of wood, in form of half-moons, lined with polished iron to prevent friction.

The spaces left vacant by the trunnion are filled with pasteboard or paper, that they may be raised or lowered at discretion, so as only to leave the space between them necessary for the carriage of the plank, loaded with the plate, paper, and cloths, which consist of swan's-skin and a piece of broad-cloth.

To one of the trunnions of the upper roller is fastened a cross, consisting of two levers, the arms of which give a motion to the upper roller, and that again to the under one, so that the

L 2

plank

112 *The Copper-plate Printer.*

plank is drawn by this means backwards and forwards.

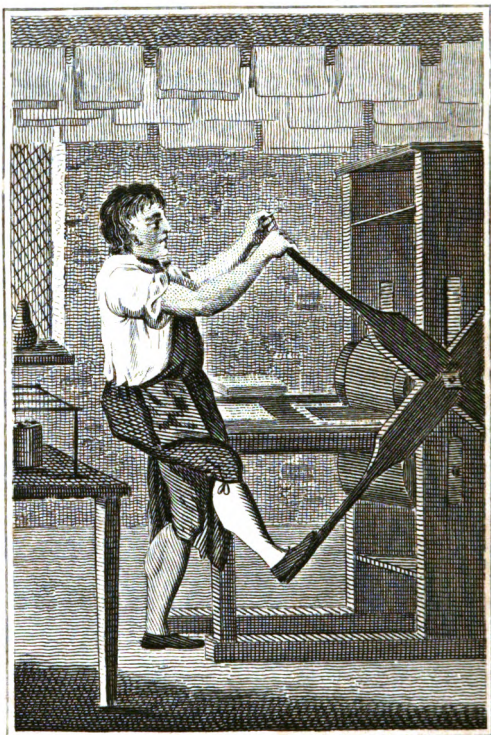
The best ink that is used in this business comes from Frankfort on the Maine, and it goes by the name of Frankfort black. It comes over in cakes ; and is ground by the printer with a muller on an ink-stone ; a palette-knife is also used in this part of the business.

The press and the ink being prepared, the printer takes a small quantity of this ink on a rubber made of linen rags, with which he smears the whole face of the plate, as it lies on a grate over a small fire made of old coal *.

* The grate, linen rubber, &c. are represented in the left-hand side of the engraving which accompanies this description.

The





Copper Plate Printer.

London, Published by Tabart & Co. Aug. 11 48 4.

The plate being sufficiently inked, the printer takes it to a part of the bench called a jigger, and wipes it first with a rag, then with the hand, over which he has rubbed a piece of whiting. The great art consists in wiping the plate perfectly clean, without taking the ink out of the engraving. The plate thus prepared is laid on the plank of the press : over the plate is spread the paper, which has been previously moistened ; and the arms of the cross are now to be pulled, and by that means the plate with its furniture is carried between the rollers, over which are the swan's-skin and broad-cloth : these pinching very strongly, yet equally, in every part, force the moistened paper into the

L 3

strokes

114 *The Copper-plate Printer.*

strokes of the engraving, whence it brings away the ink.

Some works require to be passed through the press twice, and once is sufficient for others, according as the graving is more or less deep, or as the print is required to be of a lighter or darker shade.

After the prints are taken off, the plate is rubbed over with olive oil, to prevent its rusting, and set by against a new impression. If the strokes get filled within, and hardened, in the course of working, the plates are boiled in strong ley before the oil is applied.

A journeyman copper-plate printer will earn forty shillings a week. And from a strongly engraved plate three or four thousand good impressions may be

be taken ; and even then the plate may be repaired, and fitted up for other editions.

It is said that Earl Stanhope has introduced such improvements in the art of engraving, as will enable the artist to take off from a well engraved plate, at least ten thousand impressions.

Thus the paintings of the greatest masters are multiplied to a boundless number ; and the lovers of the polite arts, in every part of the globe, are enabled to enjoy those advantages from which their situations seemed to have deprived them.

THE

THE PAINTER.

THIS artist paints portraits, historical pieces, landscapes, sea-pieces with shipping, &c. Some painters have peculiar talents for one department of the art, and some for the others ; but it rarely happens that the same man excels in them all, or even in more than one or two.

A portrait-painter, in large, is however frequently well skilled in history ; but an artist who paints in miniature is often unacquainted with any other part of the profession. Some painters who can execute almost any thing else, in a masterly manner, have no idea of shipping, which requires a
consi-



Painter.

London Published by Tabart & Co Aug. 22-1834.



considerable degree of nautical knowledge.

The implements made use of in this art are, a stone and muller to grind the colours; an operation which is sometimes performed with oil, and sometimes with water: hence the distinction between *painting in oil*, and *painting in water colours*. A palette and palette-knife are also required; the *latter* to take off the paint from the stone; and the *former*, which is made of walnut-tree or mahogany, is that on which the artist puts his colour for immediate use. The pencils or brushes are made of camel's hair, or badger's hair, or hog's bristles.

The stick in the painter's hand (see the plate) is about a yard long, with cotton wool tied round the end in a piece of soft leather, to prevent its
scratching

scatching the picture. On this the artist rests his right hand, to keep it steady. The canvas for the intended picture is placed on a wooden frame, called an *easel*, which is so constructed, by means of holes and pegs, that it may be raised higher or lower at pleasure.

The earnings of an artist cannot be defined : he is paid according to his talents, and to the celebrity which he has acquired. Some persons will require a hundred guineas for a piece which another of inferior merit, or little known to the public, would be glad to perform for a twentieth part of that sum.

THE ENGRAVER.

ENGRAVING on copper is employed in representing different subjects, as portraits, historical pieces, landscapes, &c. either after paintings, or after designs made for the purpose. It is performed either with the *graver*, the *dry point*, or with *aquafortis*.

The tools necessary for engraving in the first method are gravers, a scraper, burnisher, an oil-stone, a sand-bag, an oil rubber, and some good charcoal.

The gravers are instruments of tempered steel, fitted into a wooden handle. They are either square, or in the lozenge form; the first is used in cutting very broad strokes, and the other

other for fainter and more delicate lines.

The scraper is a three-edged tool for scraping off the bur raised by the graver.

Burnishers are for rubbing down lines that may be cut too deep, or for taking out any scratches or defects in the copper; they are made of hard steel, well rounded and polished.

The oil-stone is for sharpening the gravers, and the oil-rubber and charcoal are for polishing the plate when necessary.

The sand-bag or cushion is for laying the plate upon, for the convenience of turning it round in any direction: this is principally used by writing-engravers.

Having the copper, tools, and drawing ready, the first thing is to lay the design

design on the plate : for this purpose, the plate is to be covered over with a thin skin of virgin wax ; and the drawing or picture is to be copied on paper with a black-lead pencil, or any matter that is free from gum : this paper is to be laid upon the plate with its penciled side upon the wax, and pressed all over so completely, that when the paper is withdrawn the impression may remain upon the waxed plate then with a sharp-pointed tool trace the design through the wax on to the copper. The plate is now to be warmed, and the wax cleaned off ; after which the engraving is to be finished by means of the gravers.

The dry-point or needle, so called because not used till the ground is taken off the plate, is principally employed

ployed in the extremely light parts of water, sky, drapery, &c.

Etching is a method of engraving on copper, in which the lines or strokes, instead of being cut with a tool or graver, are corroded in with aquafortis or nitrous acid, and it is thus performed : the copper-plate is first warmed, and then thinly covered with varnish ; it is then to be blackened over with the smoke of a wax candle.

The ground being now laid, and suffered to cool, the next operation is to transfer the design to the plate. For this purpose, the drawing must be traced on oiled paper, with pen and ink, having some ox's gall mixed with it. Another piece of white paper must be rubbed with flake-white, and laid on the varnished copper, with the
white

white side next the plate : upon this is to be put the traced oil paper, and fastened with a piece of bordering wax to the copper.

When this is done, all the lines in the tracing must be gone over with a blunt etching needle, by which means the lines will be transferred to the ground when the papers are taken away.

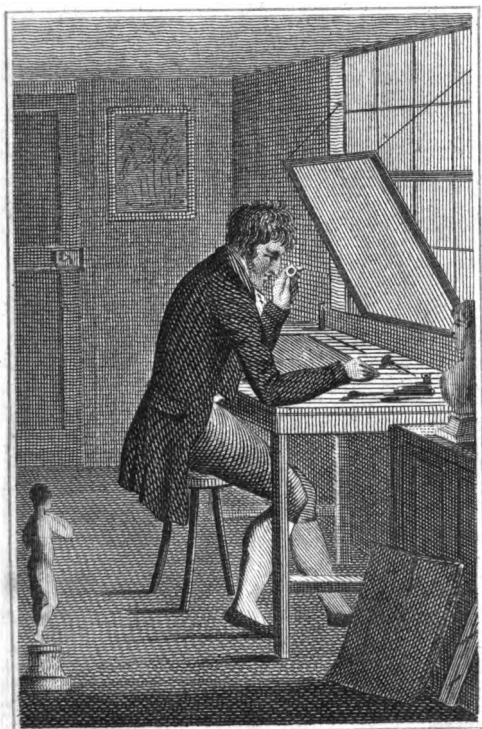
The plate is now prepared for drawing through the lines which have been marked upon the ground. For this, etching points or needles are employed, leaning hard or lightly according to the degree of strength required in the lines.

A margin or border of wax is now to be formed all round the plate, to hold the aquafortis when it is poured on ; where it is to be left till the operation

ration is completed. The *biting-in* of the plate, as it is called, is the most uncertain part of the process, and nothing but experience can enable a person to know when the plate is sufficiently bit.

When the acid has been on long enough to bite the lines that are to be the faintest, the aquafortis is poured off, the plate washed and dried, and those lines that are to be made no deeper must be stopped with turpentine varnish, mixed with a little lamp-black, and laid on with a camel's-hair pencil; and when thoroughly dry, the aquafortis may be poured on again, to bite the other lines that are required to be deeper.

When the *biting-in* is finished, the bordering wax and ground are to be taken off, the plate cleaned, and an impression



Engraver.

London, Published by Tabart & Co. Aug. 10. 1794.



impression taken upon paper by a copper-plate printer; which impression is called a *proof*.

In almost all engravings on copper that are executed in the stroke manner, etching and graving are combined; the plate being generally begun by etching, and finished with the graver. Landscapes, architecture, and machinery, are subjects that receive most assistance from the art of etching; it is not so applicable to portraits and historical designs.

The screen that is suspended before the window is to keep off the glare of light, which would be mischievous to the engraver's business. The screen consists of four laths joined at their ends, and covered on both sides with silver-paper.

The art of engraving is ascribed to a

goldsmith at Florence, who, having placed a sheet of oiled paper under a plate of silver that was engraved, and on which by accident he had laid a heavy weight, was surprised to find a complete impression of the plate on the paper.

THE STATUARY.

THIS artist carves images and other ornaments in stone, marble, &c. The art is one of those in which the ancients surpassed the moderns. Phidias was the greatest statuary among the former, and Michael Angelo among the latter.

Statues are formed with the chisel, of several substances, as stone, marble, and plaster; they are sometimes cast of various kinds of metal, particularly gold, silver, brass, and lead.

When a statue is to be formed of stone, marble, &c. a drawing is first made of the subject intended to be carved; a model is next made, by laying

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ing a mass of moist clay on a board, and reducing it to shape and form with knives and spattles. Sometimes a model is made without any previous drawing, and sometimes the stone is cut from a drawing without a model.

The marble or stone is carved with steel chisels of different sizes, and a wooden maul, according to the representation in the plate. The statue is not made in a single piece, but of several, which when finished are fastened together, with a cement of the powder of calcined alabaster, called plaster of Paris; this is mixed with water to the thickness of batter, which in a short time becomes as hard as the marble itself, and is as durable. The earnings of a statuary are as varied as those of painter.

The Parian marble is the most celebrated ;





Statuary.

London, Published by Tabart & Co. Aug. 11-1854.

brated; and from this, which is of a most beautiful white, the greatest part of the Grecian statues were made. It is also called *statuary* marble, and is generally supposed to have had its name from the island Paros, one of the Cyclades in the Ægean sea, where it was found: by others the name is derived from Agoracritus Parius, a famous statuary, who gave it celebrity by cutting a statue of Venus from it.

Among the many statues of antiquity cut out of this marble, was that of Laocoon and his two sons, which is mentioned by Pliny, and has escaped the injuries of time.

Almost all white marbles now go under the name of Parian marble; and among the workmen they have the common name of alabasters, though they

they come from different places, as from Spain, some parts of France, Italy, &c. Marble is also found in this country, but not in very large quantities.

Dædalus has been celebrated as the inventor of statues, but it is certain that there were statuaries before his time. He was, however, the first person that found the method of making them appear as if they were alive. Till his time statues were made with their feet joined together: he loosened their feet, and gave them the attitudes of people walking and acting.

Statues are usually distinguished into four general kinds. The *first* are those less than life, of which kind are the statues of great men, of kings, and of the gods themselves. The *second* are those equal to the life; with these the
antients

antients celebrated the deeds of men eminent for learning or valour. The *third* are those that exceed life; among which some surpassed the life once and a half: these were for monarchs and emperors, and those double the life for heroes. The *fourth* kind were still larger: these were called colossuses, or colossal statues. Of this last, the most eminent was the colossus of Rhodes, one of the wonders of the world, a brazen statue of Apollo, so high that ships passed in full sail between its legs. It was the workmanship of Chares, who spent twelve years in making it.

THE BREWER.

THE art of brewing is of very high antiquity, but in no country has it been carried to greater perfection than in our own. The different counties are, many of them, celebrated for their peculiar ales, and London porter is famous in almost all parts of the civilized world. Different as these several sorts of liquor are, they are nevertheless composed of the same materials variously prepared,

Malt liquor, in general, is composed of water, malt, hops, and a little yeast; and the great art is to find out the proper proportions of each ingredient, and

to

to know to what degree of heat the water must be raised before it is poured on the malt.

There are two kinds of malt, distinguished by the colour; these are called *brown* and *pale* malt, and they depend on the degree of heat that is used in drying. The malt which is dried by a very gentle heat differs in its colour but little from the barley; but if exposed to a higher temperature, it acquires a deeper hue, till at length it becomes of a dark brown.

When the malt is made, it must be coarsely ground in a mill, or, what seems to be still better, bruised between rollers; it is then fit for the brewer, in whose hands the process of making beer is completed.

The first part of the operation is called *mashing*, which is performed in a large circular vessel, such as that represented in the upper part of the plate.

This vessel has a false bottom, pierced with small holes, fixed about six or eight inches above the real bottom. There are two side-openings in the interval between the bottoms; by the one water is conveyed into the vessel, and by the other it is drawn off. When the malt is put on the false bottom of the *mash-tun*, the water, being at a proper heat, is admitted, by means of the side pipe, from the copper, which is contained within the brickwork represented in the upper part of the plate. The water first fills the space between the false and real bottom; then forcing
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its way through the small holes in the false bottom, it soaks into the malt, and when all the water is let in, the process of *mashing* begins. The object of this part of the operation is to effect a perfect mixture of the malt with the water, so that the sweet part of the grain may be extracted by the fluid : for this purpose the mass is kept constantly stirred by means of iron rakes, or long wooden poles, as is represented by one of the men in the upper part of the plate ; the other man is in the act of mending the fire under the copper.

In large breweries, such as that in Chiswell-street, the process of mashing cannot be performed by human labour, it is therefore effected by machinery

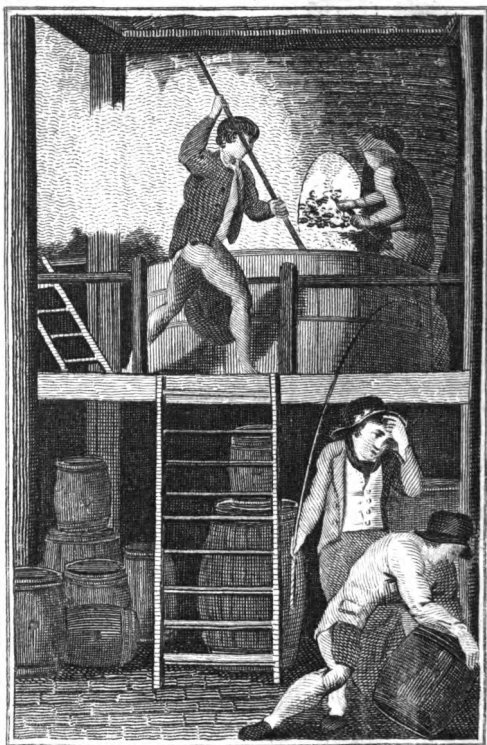
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that is kept moving by means of the steam-engine. As soon as the mashing is completed the tun is covered in to prevent the escape of heat, and in this state it is suffered to remain till all the sweetness of the malt is extracted; then the side spigot is withdrawn, and the clear wort is allowed to run off into a lower or boiling-copper. The heat of the water used in mashing should be about 180° of Fahrenheit's thermometer. Before the goodness of the malt is exhausted it is usual to pour upon it two or three waters, but the wort which is drawn off the first is by much the richest. The proportion of malt to the water depends on the strength of the liquor wanted. It is said that good small beer may be brewed

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Brewer.

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ed at the rate of thirty gallons to a bushel of malt, and excellent ale may be made in the proportion of one bushel of malt to five or six gallons of water.

The wort when run into the lower copper is to be boiled with a certain quantity of hops; the stronger the wort, the more hops are required; the common proportion in private families is a pound of hops to a bushel of malt. When the hops are mixed with the wort in the copper, the liquor is made to boil; and it must be kept boiling as fast as possible, till, upon taking out a little of the liquor, it is found to be full of small flakes, something like curdled soap.

The boiling copper is, in small con-

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cerns uncovered, but in large breweries it is fitted with a steam-tight cover, from the centre of which passes a cylindrical pipe, that terminates in several branches in the upper, or mashing-copper; thus the steam produced by boiling, instead of being wasted, is let into the cold water of the upper copper, by which it is made almost hot enough for mashing without any additional expence of fuel; the steam carries also with it the flavour of the hops, which, when the operation is carried on differently, is lost in the air.

When the liquor is sufficiently boiled, it is drawn out into a number of shallow tubs, called coolers, in which it remains till it is cool enough to be submitted

mitted to fermentation. Liquor made from pale malt, and intended for immediate use, need not be cooler than 75° or 80° , and can of course be made in almost every part of the summer; but that which is for keeping should not be hotter than 65° or 70° when it is put together for fermentation.

From the coolers the liquor is transferred into the fermenting or working-tun, in which it is well mixed with yeast, in the proportion of one gallon of yeast to four barrels of beer. This part of the process takes from 18 to 48 hours, according to the state of the weather.

The last part of the operation is that of transferring the liquor from the working-tun to the barrels, when the fermentation

fermentation is completed. For a few days there will be a copious discharge of yeast from the bung-hole, during which the barrels must from time to time be carefully filled up with fresh liquor. After this discharge is finished the barrels are bunged up, and the beer is fit for use in the course of a few weeks.

The lower part of the plate represents the brewhouse-yard, with the casks ready to be taken away by the carman.

To see the several operations of this business I would recommend the reader to obtain permission to go over the immense works in Chiswell-street, and to be very attentive to the several parts of the business; to examine the
structure

structure of the steam-engine, and to observe how much of the laborious part of the work is performed by this stupendous machine. He will see how the mashing is performed ; how the malt is drawn up into the granary ; how the vessels are filled with beer ; with what ease they are refilled after having worked over ; and a multitude of other curious contrivances, of which, without an actual inspection, he cannot form the most distant conception.

Malt is used also for distilling spirituous liquors. For this purpose it is ground, and the wort taken as in common breweries : this is fermented, and then it is called *wash*, and is put into a still about three parts full. A brisk fire is

is made under it till the wash is nearly boiling, when the head of the still is fixed on and luted to the worm in the worm-tub. The fire is allowed to decrease till the spirit begins to run. The first produce is called *low wine*, which is distilled a second time, and then it is pure malt spirit.

Compound distillers mix with malt spirits juniper berries, aniseeds, &c. and distil the whole over again, the produce of which is gin, spirit of aniseed, &c. which, though useful in certain medical cases, never fail to injure and debilitate the constitution when drunk as common beverage.

Distillers obtain a great quantity of spirit from sugar, treacle, and molasses, in the same way as they do from malt ;
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to these they are always obliged to have recourse in those years in which there has been a scanty crop of corn. The revenue of the state is greatly enriched by distilleries, but the morals and the health of the people are unquestionably injured by them.

Rum is distilled from sugar, and the sugar cane, in the West Indies; that sold in Europe is generally very much adulterated before it comes into the consumer's possession.

Brandy is extracted from wine by distillation. French brandy is esteemed the best, on account of the superior quality of the wines made in France. The brandy made in Cogniac, Bourdeaux, and Rochelle bears the highest price. Brandy distilled a
second

second time is called *spirit of wine*; and this, after another rectification, is called *pure alcohol*, or *rectified spirit*.

Brandy in its pure state is colourless, and it obtains its yellow tint by extracting the colouring matter from the new casks in which it is kept. But if it should not have acquired the usual tinge in this way, it is coloured artificially, to give it the appearance of having been kept some time.

THE CUTLER.

THE cutler makes knives, forks, razors, scissars, lancets, and all other sorts of cutting instruments. The chief art in this business consists in bringing the steel to a just temper, for which no particular rules can be given, as it can be acquired only by practice.

The principal places in this country for the manufactory of cutlery wares are Birmingham and Sheffield, and at these towns goods of all kinds, in steel, are made much cheaper than in any other part of the world. In London

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the same goods bear a much higher price than those manufactured in the country, though the latter may be as good in quality, but perhaps not so neatly finished or so highly polished. It is said, however, not to be a very uncommon practice for London cutlers to fix their own names and marks on goods wrought at Birmingham or Sheffield, by which means they charge for them the price of town-made goods.

The blades of knives and forks are forged by fire; and after they are brought to the proper shape and size, they are then polished, ground, and put into the handles.

The man represented in the back part of the plate is supposed to be forging some instrument, while the other,
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in the front, is grinding a knife on the stone, which is turned round by the labourer at the wheel.

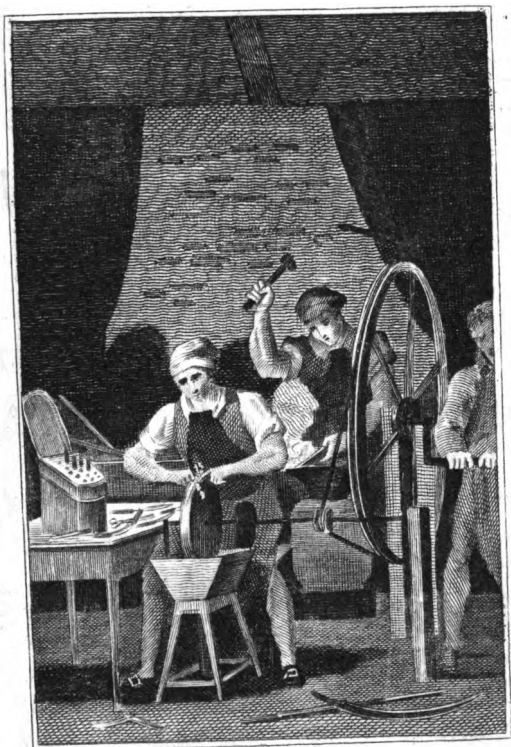
On the ground are supposed to lie a pair of irons for skates, and two sword-blades. The manufacture of skates is a considerable part of the cutler's business in severe winters : and in some of the principal shops swords are also mounted, but this does not properly belong to the cutler's profession. The sword-blades almost all come from abroad, where they are forged by large hammers moved by water-mills. In this manner the celebrated sword-blades of Vienne are made. Here the cutler is only concerned in mounting the blades, and in making the scabbards, the expense of which may be carried to

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almost

almost any extent. It is no uncommon thing for a sword highly finished to be worth from 150 to 300 guineas; many of these have, within these few years, been presented to naval and military officers, by a society called the "Patriotic Fund," who have associated for the express purpose of rewarding those heroes who have performed any great exploits in their country's service.

The manufacture of razors is another part of the cutler's business. As shaving to many people is a very painful operation, cutlers, in different countries, have long exerted all their skill to remove the inconvenience, but without that sort of success that may always be relied on. To whatever price we go for razors, we cannot depend upon their goodness ;



A Cooper.

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goodness ; and it often happens that in a case of razors purchased at Sheffield, at a shilling a piece, one may find as many good ones as in a case bought in London at ten times the price.

The handles of knives are chiefly made of ivory, which is cut from the tusks or teeth of the elephant. They are brought to us from the East Indies, and from a particular part of Africa. They are valuable in proportion to their size. Ivory may be turned like wood, and it may, by a chemical process, be softened, worked to any particular form, and hardened again. There are methods also of colouring or staining ivory, so that we have red and green ivory as well as white.

The surgical instrument-maker is

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another

another species of cutler: he makes use of the best steel, and is supposed to be more careful in finishing his instruments with a neater polish than the common cutler.

It has been recommended by a professional gentleman, to dip all surgical instruments in oil, previously to using, except the lancet intended for inoculation.

A journeyman cutler will, with ease, earn two guineas a week; those employed in the bettermost sorts of work much more. In all large shops of business, one man is employed a certain number of days in each week in grinding old work; and this part of the business pays the master well.

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THE MERCHANT.

THE merchant is a person who buys and sells almost every thing ; and as merchandize includes all goods and wares exposed to sale in fairs or markets, so the name merchant, formerly extended to every kind of traders. In France and Holland all buyers and sellers, whether in the wholesale or retail way, are called merchants. But in this country the term is appropriated to those who carry on commerce by importation and exportation, or by way of barter or exchange.

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To carry on the business of a merchant with a high degree of credit, a man should possess a large stock of general knowledge, and a considerable capital ; the one will prevent him from falling into errors, and the other will enable him to give credit to his customers both at home and abroad.

The merchant should be perfectly acquainted with all the departments of writing, arithmetic, and the keeping of books. He should be expert in the forms of invoices, account of sales, policies of insurances, in the nature of charters, bills of lading, and bills of exchange. He should understand the agreement and difference which subsist between the moneys, weights, and measures of different countries, or of different
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ent counties in his own country. He ought to have a general and accurate knowledge of all the different manufactures in which he deals, at least of the places where they are best made, and of the materials of which they are composed. He should know the best season for bringing his own goods to market, and be well acquainted with the nature of *exchange*, according to the course of different places, and with the causes of its rise and fall. He should know what merchandizes are permitted or prohibited, as well on entering as in going out of the kingdoms or states where they are manufactured. He should know the customs due on the importation or exportation of goods, according to the usage and regulations
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of the places to which he trades. He should understand the best methods of packing merchandizes, either to preserve them in warehouses or to adapt them for short or long voyages. He should know the price and condition of freighting and insuring ships and goods ; and if the vessels, or any part of them, are his own property, he should be acquainted with their value ; the expense of first building and subsequent repairs ; the wages given to the several officers and sailors who work them, and the best method of engaging them in his service. He ought to be able to write letters with ease and elegance, and to understand as many foreign languages as he can. The following are, however, the most important for him to know :
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the *Spanish*, which is used not only in Spain, but on the coast of Africa, from the Canaries to the Cape of Good Hope; the *Italian*, which is understood on all the coasts of the Mediterranean, and in many parts of the Levant; the *German*, which is understood in almost all the northern countries; and the *French*, which is current in most parts of Europe. Finally, the merchant should be well acquainted with the laws, customs, and regulations of the countries to which he does or may trade.

Such are the branches of knowledge necessary to a person carrying on an extensive commerce as a merchant to foreign parts; of course, any young man intended for that business should lay the foundation by a good education,
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and should be very diligent during the years which he spends as clerk, to prepare himself either for business of his own, or as a partner in a house already established.

The trade carried on by merchants in this country may be divided into *inland* and *foreign*. The inland trade is the transporting of the commodities of one part of the kingdom to another, or to London. The chief articles imported into London from other parts of the island are, corn, coals, hops, woollens, cottons, and linens. Corn and hops are sold by persons called *factors*. Woollen goods are sent up by the clothiers, and sold by the factors of Blackwell-hall. Linen cloth, from Ireland and Scotland, and printed cottons, &c. from Manchester,

ter, are consigned to the factors for those commodities.

The factors are a species of merchants who deal by commission, and sell the goods of other people consigned to them, for a certain premium. Thus, a farmer in the country has a thousand quarters of wheat to sell at the London market; he cannot come conveniently to town, therefore he sends his wheat to a corn-factor, who sells it to the best advantage, receives the money, and remits it to the farmer, after having deducted his commission-money for trouble and expense.

There are also factors who deal in foreign commodities in the same manner. These are distinguished either by the countries they deal with, or by the goods usually assigned to them.

Merchants export the goods of this kingdom to the proper markets, and import the commodities of other countries in exchange. They are distinguished from one another either by the goods they traffic in, or by the countries with which they have their chief correspondence. Thus, a merchant who deals chiefly in tobacco is called a tobacco-merchant ; a dealer in wines is a wine-merchant.

West-India merchants export all manner of materials for wearing apparel, household furniture, cutlery, and haberdashery wares, watches, jewels, and toys, likewise some goods previously obtained from the East Indies, French wines, porter, linen cloths, &c. ; and our ships generally touch at Ireland
and

and take in provisions. The returns from the West-India islands are, rum, sugar, cotton, indigo, mahogany, log-wood, and other woods for dying.

From the states of North America our merchants import tobacco, rice, indigo, timber, hemp, flax, iron, pitch, and tar, sending in return the same articles as to the West-India islands.

From the East Indies and China they import tea, rice, drugs, colours, silk, cotton, salt-petre, shawls, and other products of the loom; but the chief export to those countries is silver bullion.

In the plate that accompanies this article, the merchant is attending to the receipt of some casks of sugar and rum, and bags of cotton, just landed from a

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West India ship. The clerk stands on his left taking an account of the things delivered, and behind him is a bale of linen ready for exportation : being at the warehouses by the side of the Thames, we get a distant view of the shipping in the back-ground.

Merchants have in their dealings much business with the *Custom-house*, which may be readily explained. Rum, sugar, and almost all articles imported from abroad, pay certain duties to government before they can be taken away : these duties are to be accounted for at the Custom-house. Many articles manufactured here, as glass, leather, &c. pay very heavy taxes : now, to encourage trade, these taxes, or part of them, are returned when the same articles

ticles are exported into foreign countries. These returns are called *draw-backs*. Merchants, therefore, or their clerks, must go to the Custom-house and take oath as to the quantity and quality of goods exported, in order to obtain the customary draw-backs.

Bankers, though not properly merchants, are so connected with commerce as to claim notice here. A banker is a trustee to other people, and his house the repository for their money. The business and gains of a banker may be thus described and explained:—A merchant, or gentleman, possessed of a large sum of money, not choosing to keep it in his own hands, places it for security in the custody of a banker, from whom he draws it at such times, and in such sums,

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as may suit his convenience. The banker, who is, or ought to be, a man of large property, knows that the several persons who have lodged money in his hands cannot have occasion for it at once; he therefore lends out, upon good security, such sums as he thinks he can spare from his current demands; and from these loans, upon which he receives 5 per cent. arise his profits.

The banker deals also in *exchange*, that is, in remitting money from one place to another. If, for instance, I owe a man in Holland a thousand guilders, which I have promised to pay at a certain period, I must apply to a banker, to whom I pay the guilders, or their equivalent in pounds sterling, and he gives me a draft for the same sum
upon

upon his correspondent in Holland, which I remit to my creditor.

Insurers; or *Underwriters*, are a species of merchants who insure goods from one port to another for a certain premium. If I have a ship bound with goods for the East Indies, there is a risk of its being lost at sea, or, in time of war, of being taken by an enemy; I therefore go to an underwriter and pay him 5 per cent. more or less, upon condition that he pay me as many hundred pounds as I have insured in case the vessel should be lost, or captured by the enemy.

END OF PART II.



