there is a lesson which is cheering as well as moral: the place where plots were aforetime hatched, as well against the safety of the kings of England as against the liberties and lives of their subjects—where patriotism has been immured from the light of the sun—and where blood, too pure and ardent in its love of man for the age, has been spilt, is now devoted to the peaceful, the exhilirating and the enriching labors of commerce. Royalty has sped westward, and all that is called fashionable in life has followed; but old father Thames still sweeps along by the Tower, and the burden of his every wave is provision to a thousand of the human race. The great may shift their places of abode, and alter the forms of their observances; but wheresoever Nature places the grand elements of utility, thither will mankind throng and prosper."

It has been contended that the Tower of London is of Roman origin. The controversy, which is of an antiquarian nature, need not be introduced here. Mr. Bayley is decidedly of opinion that there is no evidence whatever for such a conclusion; and Messrs. Britton and Brayley go no farther than supposing that the site might have been occupied by the Romans as a station for a military encampment or fortress. They say, "That the Londinium of the Romans was at once a fortress, a fort, and a municipium, is attested by the best informed historians and antiquaries; and that the site of the present Tower would be the most likely spot to be chosen for a place of defense, is deducible from its situation. It is a tract of land gently raised above the river, the Essex marshes, and those on the opposite side of the Thames, where a fortification was afterwards formed by the Saxons, and called South-Wark."

But the creator of the Tower as a palace was undoubtedly Henry III. He bestowed great labor and expense in adorning the interior and extending the fortifications. Two successive similar accidents occurred to the walls and gates which he erected. When first erected they fell down, and were destroyed; and on being reconstructed met with a similar disaster. This was in 1240 and 1241. The cause of these accidents was probably the defective nature of the foundations. The citizens, who regarded the Tower with a jealous eye, and were suspicious of everything done to it, as indicating the power of the sovereign and their weakness, rejoiced at this repeated destruction. Popular belief ascribed the accidents to the interference of Thomas à Becket, the reputed guardian of the city, who was supposed to have risen from his grave for the purpose. The accidents have also been ascribed to earthquakes, though without any appearance of probability. Henry resided in the Tower during a large portion of his troubled reign. "Indeed, to him," says Mr. Bayley, "the Tower owed much of the splendor and importance which it possessed in early ages; and to his time may be ascribed the erection of some of the most interesting of the buildings that are now extant. The records of that era, which abound with curious entries, evincing Henry's great and constant zeal for the promotion of the fine arts, contain many interesting orders which he gave for works of that kind to be executed in different parts of the Tower. The royal chapels there, as well as the great hall and the king's chamber of state, are subjects of frequent and curious mention."

The last additions to the Tower considered to be of any importance were made by Edward I. Whatever has been subsequently done has consisted of repairs and reëdifications.

By the time of Henry VIII. the Tower had been falling into disuse as a royal residence, being only used on state occasions and at intervals of alarm. As a state prison, however, it rose into a horrid celebrity during Henry's reign, which character was tolerably well sustained during the reigns of his two daughters, and of those of the Stuarts. The old ceremonies of holding a court in the Tower, and proceeding in state through the city to Westminster previous to a coronation, were kept up, with some variations, till the reign of James II., when they were finally omitted. All the domestic apartments in the palace were taken down during James' reign, and that of William and Mary.

But in every reign great attention was paid to keeping the Tower in a state of repair. Various surveys and reports were made, describing its existing state and condition at the time, and pointing out the repairs which were requisite to be done. On the junction of the two kingdoms under James I. the rising spirit of commerce began to fill the port of London, and encroachments were made on the Tower precincts. By a report made in 1620, it appears that the Tower, which is set forth as having been fortified not only within the walls, ditches, and wharf, but care also taken in the Minories for the lodging of the principal officers, had, through the evil example and toleration of some lieutenants, been much encroached upon; whereby the limits of the Tower, and of those other habitations and store-houses appointed for the public use, were perverted to private profit, "the splendor and magnificence of the said royal castle being by that means defaced, and the place itself, as it were, besieged in the wharf, ditches, and liberties thereof." Various alterations took place at this and subsequent times, for the purpose of remedying evils which were complained of.

Towards the end of the eighteenth century the Tower had been greatly neglected; the ditch was choked and looked like a stagnant pool, and the fortifications were out of repair. But in 1792, in consequence of apprehensions which were entertained, great exertions were made to put it into a suitable state of defence; the ditch was cleared out, and the water once more admitted to flow in from the Thames; flood-gates were constructed, and the walls and parapet of the counterscarp were repaired. It is now kept in a clean and efficient state, and though, from the number of old houses within it, and on the walls or parapet, it could not stand a modern cannonading with the destructive engines now employed, which would reduce it to ruin in an hour or two, it must have been a place of considerable strength formerly; and even now it could withstand an irregular assault. The visitor who has not seen a fortified city may regard the Tower as a representation of one in miniature.

The White Tower, though constituting, in fact, the original Tower of London, and having been the royal residence, is not open to the inspection of the general visitor. Under the basement floor are capacious vaults; the interior consists of three lofty stories, divided longitudinally, from the base to the summit, by a wall seven feet in thickness. The first or basement floor over the vaults, besides two spacious rooms, used as store-houses, contains a singular apartment, which appears to have been originally intended for a prison. In occupies the south-east corner of the floor; the walls were sixteen feet thick; light was admitted by four narrow loopholes, which are now, however, widened to the extent of four feet. In this dungeon it is traditionally, but not authentically, stated that Sir Walter Raleigh

DOCKS OF LONDON.

HUNGERFORD MARKET.

was confined, and that it was here that he wrote his celebrated "History of the World." The great majority of the state prisoners were not confined in the White Tower, but in a tower at the north-west side of the inner ward, now used as a mess-room of the officers of the garrison, and also in other towers round the inner ward. But prisoners were confined in the dungeon on the basement floor of the White Tower during the reign of Queen Mary, as is evident from the inscriptions written on the walls.

The entire White Tower may be termed a store-house, one portion being reserved for armories, containing many thousand stands of arms, the other portion being used as a Record store. The military stores comprise gun powder, armorers' tools, small arms, cavalry and nautical weapons, &c.

At the north-west extremity of the pavement in front of the Grand Storehouse is the church, or chapel, of the Tower, which was erected in the time of Edward I. It is supposed to occupy the site of a chapel still more ancient. It is a low edifice, void of all ornament, without buttress or battlement, but having a small tower at the west end, surmounted by a bell-turret. The dimensions of this church are sixty-six feet in length, fifty-four feet in breadth, and twenty-four feet from the floor to the roof. The chief interest of the chapel arises from its being the resting-place of many illustrious persons, who either died in the Tower, or were decapitated on Tower Hill.

Here lie Gerald Fitzgerald, ninth Earl of Kildare, and Lord Deputy of Ireland—the representative of one of the bravest and proudest of the Anglo-Hibernian families—who being committed to the Tower on a charge of treason, died of a broken heart; Anne Boleyn, the unfortunate, and Katherine Howard, the guilty wife of Henry VIII., with several of their friends and relations; Thomas Cromwell, the instrument, favorite, and victim of Henry; the Duke of Somerset, Northumberland, and Lady Jane Grey, with her husband; the Duke of Norfolk, who was beheaded for aspiring to the hand of Mary, queen of Scotts; his son, the Earl of Arundel; the brave but rash favorite of Elizabeth, the Earl of Essex; and, amongst others, three of the Scotch lords who suffered for the rebellion of 1745.

The armories in the Tower may be described as three; the "Horse Armory," "Queen Elizabeth's Armory," and the "Small-arms Armory," in which are piled immense stores of small arms ready for immediate issue. The first two armories are repositories of ancient weapons and armor kept for exhibition—the third not merely for exhibition but use.

A few years ago the state of indiscriminate confusion in which the collection of ancient weapons and armor was exhibited, and the startling names and uses which were assigned them, was a subject of regret or ridicule to intelligent persons. Dr. Meyrick, in his work on Ancient Armor, which was published in 1824, called public attention to it; and on his representations government accepted his offer of gratuitously arranging the collection in historical order. A building was erected in 1825 for the purpose of containing the equestrian figures. The improvement which has been introduced into the ancient armories has in some measure been extended to the guide-book which is sold to visitors at the Tower. But the spectator is still told, *viva voce*, a few of the old strange stories, which perhaps habit has rendered too familiar to be easily forgotten.

The commerce of the port of London, which had been gradually increas-

ing during the first half of the eighteenth century, outgrew in the second half the existing accommodation of the harbor. The "Legal Quays"—quays at which vessels were allowed to land their cargoes, and at which Custom-house officers were stationed—continued the same in number and extent as in the reign of Queen Elizabeth; and though to these were added a number of "Sufferance Wharfs," they were altogether inadequate to the wants of the shipping. The port, at particular seasons, was often nearly blocked up by fleets of merchantmen, many of them lying at anchor in the middle of the stream, and discharging their cargoes into lighters and barges. The only dock at that time was a small basin on the south side of the river, called the Greenland Basin, (since enlarged, and the name altered into the Commercial Docks) which was used only by a few vessels in the Greenland fishery. The warehouse accommodation, too, at the legal quays and wharfs, was quite insufficient for the purposes of a trade and commerce, expanded with extraordinary and almost unexampled rapidity. The quays were frequently covered with sugar hogsheads piled six and eight high; bales, barrels, boxes, and bags were to be seen heaped together in confusion. At the seasons when the East and West India merchantmen arrived, the delay in the permission of the Custom House authorities to vessels to break bulk, and discharge cargoes—delay caused by the want of accommodation—was often most harrassing, as well as expensive to the parties concerned.

Along with this want of accommodation in the harbor, there existed a system of pillage and depredation, which, though it was in full operation only fifty years ago, we at the present day can scarcely think credible. The main body of depredators was composed of the lightermen, watermen, and laborers; but not in a few instances their practices were winked at and shared in by some of the revenue officers, numbers of the crews, and sometimes too by the mates and even the captains of vessels. These were backed by a host of receivers, who, either as publicans or as keepers of shops for the sale of marine stores, metal, and rags, carried on an extensive business in stolen property.

These are but specimens of the way in which the commerce of London suffered, and which, along with the want of accommodation, led to the establishment of the Thames Police and of the Docks. Yet it is astonishing to remark how long the annoyances were borne before remedies were provided. The merchants of London held meetings about the matter in 1793; and Parliament took up the subject in 1796, by instituting a formal inquiry. Nothing, however, was done as to the establishment of docks till 1799, partly owing to dissensions among the merchants as to the proper mode of carrying out their plans, and partly to the great opposition which was made by wharfingers and others interested in keeping the shipping wholly in the river. The West India merchants, who were the greatest sufferers from pillage, determined on having docks for their own trade; and were powerful enough to get their bill for the construction of the West India Docks passed in 1799, in which was a compulsory clause compelling, for a certain period, all the West India vessels to go into the docks. In the following year, 1800, the other merchants got the bill passed for the establishment of the London Docks, (or rather Dock, for the smaller Dock was not made for many years afterwards,) and in it, also, was a compulsory clause, requiring, for a certain period, all vessels laden with certain kinds of cargoes—wine, brandy, &c.— to enter. The

ELGIN GAS WORKS.

RAIL ROAD VIADUCT.

DD

bill for making the EAST INDIA DOCKS was passed in 1803. Nothing farther was done in the way of establishing Wet Docks, with the exception of converting the Greenland Basin into the Commercial Docks, until 1827, when the ST. KATHERINE'S DOCKS were begun, which were opened towards the end of 1828, their construction having been carried on with extraordinary rapidity.

Some idea of the excitement produced by the supposed diversion of the shipping from the river into the docks may be obtained from the fact that the sum demanded as compensation (without reckoning the purchasing of land and houses, which cost the London Dock proprietors especially an enormous sum) was nearly 4,000,000*l.* sterling. But of this only 677,382*l.* was paid, all the rest being disallowed. The government bought the legal quays for 486,087*l.*, and granted, as compensation to persons having vested in erests, in the "mooring chains" of the harbor, a sum of 138,791*l.* The amount paid out of the consolidated fund, by virtue of the several acts for improving the Port of London, and for constructing docks, was, including the purchase of the legal quays, 1,681,685*l.*

We may commence our inspection of the docks with those last constructed and nearest to London — the St. Katherine's. For many years great jealousy and precaution were exercised at the other docks in the admission of strangers and visiters, who were required to produce tickets, or orders for admission from a director, at the gates. .But all this is now done away; the gates of the different docks are freely open during working hours to the passing stranger, the vigilance of the gate-keepers, and of the dock constables or watchmen, being considered sufficient for the protection of the varied and valuable property within.

Although the different docks have each their characteristics, they may be described generally as basins for the reception of shipping, surrounded by warehouses and enclosed by walls. The St. Katherine's Docks lie immediately below the tower of London. The appearance of this establishment differs in many respects from that of the other docks. Beauty has been sacrificed to utility. Here are no spacious quays, nor long ranges of warehouses; and though the area enclosed is twenty-four acres, the place has a look of being crowded and confined. But the warehouses make up in height and depth what they want in length. They are six stories high, and are massive and capacious: the vaults below are extensive depositories. The ground-floors of the warehouses towards the docks, are eighteen feet high, open and supported by pillars, a contrivance by which labor and space are saved, for vessels in the docks can come close to the warehouses, and discharge their cargoes directly into them, without the necessity of the goods being laid down on a quay in their transit. The docks, of which there are two, with an entrance-basin, are capable of containing from 150 to 160 ships, besides craft. The lock leading from the river is 195 feet long and 45 feet broad, and is crossed by a swing bridge, 23 feet wide. The depth of the water at spring tides is 28 feet in the lock, and thus ships of 600 and 800 tons can come up the river with a certainty of admission into the docks. Altogether, though the St. Katherine's Docks are deficient in extent or spaciousness, as compared with the others, the solidity of the buildings, the completeness and ingenuity of the mechanical apparatus and arrangements, and the bustle and activity within, are calculated to make a strong impression on the visiter's mind.

From St. Katherine's Docks we enter, crossing Nightingale Lane, the London Docks. This is a magnificent establishment; it covers upwards of 100 acres of ground, and cost in its construction about 3,000,000*l.* sterling. There is cellarage here for nearly 60,000 pipes of wine, and the tobacco warehouses can hold 24,000 hogsheads. The two docks, the larger and the smaller, can accomodate 800 ships. From the extent of the place, and the capacity of its warehouses (which are inferior in height and massive ponderousness to those of the St. Katherine's, though imposing from their range,) there is less of bustle and seeming confusion than in the docks which we had previously inspected.

From the London to the West India Docks there is a walk of about a mile and a half. If the extent of the London Docks surprised us, that of the West India Docks will astonish still more. The entire ground occupied by them is 295 acres! This includes the canal across the Isle of Dogs, made by the corporation of the city of London at the same time that the West India Docks were constructing; the object of it was to enable vessels to avoid the circuit of the river, those availing themselves of it being required to pay a toll. But the speculation proved unsuccessful, and the canal was sold to the West India Dock Company, who have turned it into a dock for wood-laden vessels. There have been at one time in these docks, on the quays, under the sheds, and in the warehouses, as much as 20,000,000*l.* worth of colonial produce;—sugar, coffee, rum and wine, mahogany, dyewoods, &c. &c. The West India Docks have been an exceedingly successful speculation—the shareholders receiving for many years an annual dividend of ten per cent., while, at the same time, a large sum was accumulating as a reserve fund. Competition has lowered the rate of profit.

The East India Docks at Blackwall, though inferior in extent to the London and West India, are yet sufficiently capacious. They are surrounded by lofty walls. Both the West India and the East India Docks have two basins, termed Import and Export docks, their names denote their uses. "Nothing," says Baron Dupin, "appears more simple than the idea of forming separate docks for the loading and unloading of importations and exportations: yet infinite as the advantages which it affords are, in preventing confusion and the frauds which it naturally produces, the English constructed docks for more than a century before this idea struck them." The East India Import Dock has a superficies of nineteen acres, the Export ten, and the basin three: having to receive large vessels, they were constructed so as to have never less than twenty-three feet of water.

The number of individuals who pour out of the docks when the hours of closing them have arrived is not a little remarkable. Revenue officers, clerks, warehouse-keepers, engineers, coopers, and laborers of every grade, seem actually to block up the way. There may be about, on an average, 5000 employed in the St. Katherine's, London, and the West and East India Docks.

The London station, or *terminus*, of the London and Birmingham Railway is behind Euston Square, on the north-western extremity of the metropolis. Euston Square lies on a portion of a line of road which interposes a belt, on the north and north-west, between a long and varied suburb and what is strictly London. It forms a great thoroughfare, connect

FISHMONGERS' HALL.

TUNNEL, PRIMROSE HILL.

ing the east and west ends, running by Islington; and is a distinct metropolitan boundary for about three miles of its extent, separated only from the open country by the increasing mass of suburban buildings on the north side. Here, then, close to this great thoroughfare, and yet lying on the very edge of London, is the station of the Railway, already become a place of importance, activity, and bustle.

The entrance to the station is of a grand and imposing character. A lofty gateway, like the entrance of a temple, is flanked by lodges and iron gates. Without putting forth any particular claims to originality, this work has the merit of exhibiting the Grecian Doric upon a scale hitherto unattempted in modern times, and far exceeding that of the generality of ancient examples; the columns being 8 feet 6 inches in diameter, which is only 3 feet 1 inch less than that of the York column. Owing to their being of such massive dimensions, they are not solid throughout, but have a hollow core. The structure is upon the plan of a Greek propylæum, that is, forms a covered entrance, open at both ends. On each side of the outer front are two lodges, connected by piers and lofty iron gates and railing. The height to the top of the pediment is 70 feet.

On passing within this gateway, we feel at once that as the mode of conveyance is different, so is the place. We are not within the narrow precincts of an inn-yard, jostled by porters and ostlers, incommoded by luggage; everything is on a large scale. Yet one's old associations are disturbed by the sight of men in uniform keeping strict "watch and ward," and by the neccessary yet rigid exactness of all the arrangements. Friends cannot pass through to see you "seated," or give you a parting look of recognition as the train moves off. "First" and "second" class passengers have their different entrances, and their separate booking desks; and on passing through the building have to produce their tickets as passports into the covered yard where the trains lie.

Passing under Chalk Farm bridge (Chalk Farm was noted, before London had approached so near, as being secluded enough for the purposes of duelling, and some unfortunate affairs have taken place at it,) we enter the deep cutting which leads to Primrose Hill Tunnel. The ground here is all elevated; but the tunnel is not cut through that particular elevation to which the name of Primrose Hill is more especially appropriated. This hill, as the reader is doubtless aware, has been long a favorite resort of the London citizens, as affording a very pleasant prospect, especially of the great metropolis. It lies a little to the left as we pass. Perhaps the best and most agreeable view of this Railroad in the neighborhood of London is to be obtained from the sloping sides of the cutting here. Accordingly numbers are to be found on fine days watching the passing trains, and certainly the view to the spectator is far more picturesque than to the passenger. The former may sit or stand on the slope of the green sward, and admire the train shooting along with an apparent ease, swiftness, and certainty of motion that seems quite charming: but the passenger, unused to such a mode of traveling, is annoyed by the thundering noise of the train, and, if not bewildered by the swiftness with which he is carried, left at least little time to fix his eye steadily on any particular object.

The handsome brick and stone entrance of the Primrose Hill Tunnel, built at an expense of 7000*l*., (and of which we give a view,) now seems to spread itself on either side, as if to enclose us in its embrace; and

straitway we are plunged into a most fearful darkness. Surely, if there ever is a time when the inexperienced traveler requires to sit still and fear nothing, that time seems to be when he first is whirled with most astounding noise through the darkness of a tunnel. Peeping out before you enter, you can see through Primrose Hill Tunnel, and it seems but a very little way; one can hardly fancy that it should be *so* dark. But after entering, the light becomes dimmer and dimmer; and though for a moment a gleam of light comes down from a shaft, in another moment it is profound darkness again. To attempt to speak so as to be heard by your neighbor is quite out of the question. We go through the tunnel (which is 1120 yards in length, and the excavation of which occupied a period of three years) in about a minute; yet it seems a long time, and one is really glad, by the appearance of the light, to discern that we are coming to the open air again. Tunnel traveling is certainly one of the most disagreeable things on a railroad. If you attempt to put your head out of the carriage, a strong cold breeze beats against your face; your eyes are somewhat in danger from floating particles of soot and dust; sparks from the engine chimney fly past; the noise is tremendous; and should a counter train pass, the chrashing, shattering kind of sound is most appalling, while you cannot ask your neighbor the cause, and can but imperfectly guess it yourself. This is more particulary descriptive of the state of things when the wind is blowing against the train; but at all times there is a current of air.

The shaft of the Primrose Hill Tunnel is raised about 10 or 12 feet above the field through which it is pierced. It looks like a dwarf round tower, and might puzzle a person ignorant of its use as to what might be its object, unless a train be passing, and a column of smoke ascend. The field round about gives no indication that man is not now merely walking, but flying through the earth below. In grasping at time, we have baffled natural obstacles; and so, as a railroad, like water, seeks its level, if we cannot carry it over a hill, we pierce the obstruction, and find the level on the other side.

The parks of London lie on its western side. St. James' extends from behind the Horse Guards and government offices in White Hall and Downing Street to the New Palace; its adjunct, the Green Park, reaches from thence to Piccadilly and Hyde Park Corner. The chief western entrance into the metropolis (the road from Bath, &c.), which runs into Piccadilly, separates the western extremity of the Green Park from the south-east side of Hyde Park, at what is called Hyde Park Corner; and at this particular spot the stranger, who is entering London for the first time, will receive a favorable impression of the splendor of the metropolis. On either side of the road or street, which is spacious, are handsome gateways, that on the right leading into the Green Park, and those on the left into Hyde Park. The central and side gateways leading into Hyde Park are connected by a fine screen; and the bronze gates in these and the Green Park gateway are beautiful specimens of art.

St. James' Park is the oldest of the metropolitan parks. It appears to have been a waste marshy piece of ground till the reign of Henry VIII.: it was partly drained and enclosed by him. He built a gateway in 1532 at the north end of King street and corner of Downing street, over which he had a passage from Whitehall Palace into the park. The park was much improved in the reign of Charles II., and it has been since that time a favorite resort; but it did not assume its present picturesque appearance

LONDON—HYDE PARK

LONDON—ST. JAMES' PARK.

till 1828, when Mr. Nash, the designer of Regent's Park, converted it from being a formal and almost swampy meadow into a beautiful and luxuriant-looking garden.

St. James' Park received its name from being connected with the palace of St. James, which Henry VIII. built on the site of St. James' Hospital. Hyde Park is so called, from the ground having formed a chief portion of the Manor of Hyde, belonging to Westminster Abbey. This park comprises nearly 400 acres. On its western side are Kensington Gardens, attached to the palace. Kensington Palace was purchased by William III., whose queen took much pleasure in improving the gardens. They were, however, laid out in their present form by Queen Caroline, the wife of George II. The gardens are about three miles and a half in circumference, and contain a number of magnificent trees. On fine evenings—especially Sunday evenings—in spring and summer, they are thronged with visitors.

Regent's Park was formed in 1814. The ground was the property of the Crown, and was let to various persons—but the leases having expired, the property was converted into its present handsome and ornamental form, from the designs of Mr. Nash. The name, as the reader is doubtless aware, was given in compliment to George IV., then Prince Regent. The park is circular, and comprises about 450 acres. It contains a sheet of water; several handsome villas have been built in the interior; and around it is a spacious drive, or road, the exterior side of which is occupied by a number of fine terraces, or ranges of building, highly ornamented, some with colonnades and pillars, and others with allegorical groups and figures. The Zoological Gardens occupy a portion of the park.

St. James' Park, the smallest of the London parks, is certainly the prettiest. It is bounded on the east by the parade at the back of the Horse Guards, and at the western extremity is the new palace, converted into a royal residence by her present Majesty. On the southern and northern sides are the Bird Cage Walk and the Mall, the latter a fine avenue, planted with trees. An iron railing separates the Green Park from St. James'. Hemmed in, as St. James' Park is, by buildings on every side, the sheet of water, shrubbery and trees afford a pleasant landscape in the heart of a great city.

"The Park," as St. James' was formerly most usually termed, was a very favorite resort during the latter part of the seventeenth and the greater portion of the eighteenth centuries. Kensington Gardens, on the west side of Hyde Park, began to divide attention with it, as London spread Westward; but from the reign of Charles II. to that of George II. the fashionables who walked in the "Park," came not from Grosvenor or Berkeley squares or Portland Place, but from the Strand and Fleet street, from Holborn, Lincoln's Inn Fields, and Bow street.

To see Hyde Park at the present day, in its full glory, we must select a fine dry Sunday in April. At such a time the "town" is generally full; every house in every fashionable street and square is occupied; and West-end hotel-keepers are protesting, with politest asseveration, that they can accommodate no more. Passing along Oxford street, we may remark the striking contrast which the street presents with the scene we are about to witness. Shops are all shut, and business is suspended, except the business of omnibus men, chemists and pastrycooks.

Arriving at Hyde Park about four o'clock, and entering by Cumberland

Gate, we cross the carriage road, and having gained the green sward, we may either take possession of a seat, if there is room, or standing, walking, or leaning over the rail, watch the spectacle which has now commenced. The throng of carriages and horses seems to increase every minute. The stream flows in a circle—yet it is a long time before we remark again the same carriages and the same faces.

It is now upwards of five o'clock, and the throng in Hyde Park is at its height. Dukes, merchants, barristers, and bankers are all intermingled; "parliament men" on horseback—for Sunday is a "dies non" in the senate—bow to ladies whose figures and complexion make Frenchmen and Prussians talk with rapture of the "beauties of England;" tall footmen, shining in scarlet and lace, exchange knowing looks with smart diminutive "tigers" in frock coats and top-boots, who cling behind bachelor-looking cabriolets. By and by an occasional carriage may be seen to break out of the circle, and disappear by one of the gates—for the hour of dinner draws nigh. At six o'clock there is a visible declension in the numbers; and after that time the bustle dies rapidly away.

Those who have already dined may leave the whole fashionable West-end dining; and issuing from Hyde Park by the screen-gate, cross the road and enter the Green Park. Passing the new palace, we enter St. James' Park. Here, again, are hundreds, walking amongst the shrubbery, seated on chairs by the water-side, or amusing themselves with the water-fowl. The French fancy that the Londoners are much given to shutting themselves up on Sunday; but a bird's-eye view of the parks in April and May, or a wider survey of the suburbs in summer, would quickly remove the idea.

Rag Fair is a fit enough anti-type of Hyde Park, for the two places lie on the east and west of London; the one is associated with ideas of wealth, fashion, grace, and beauty, and the other with whatever is most sordid, mean, and base. Yet the contemplation of the two scenes would not be worth the time spent on it, if all that we derived was amusement from the contrast. In human society there will be trees from the oak to the bramble. Civilization and education will not have performed their duty to society, until the moral and physical incongruities of large cities are swept away, and such places as St. Giles and Rag Fair have no existence but in the memory of some old citizen, or on the pages of some antiquated guide-book.

It is the lower portion of Rosemary Lane, from the Minories upwards, that is known all over the world as Rag Fair. Yet Rag Fair is not immortal; its glory, like that of many other things of the olden time waxes dim. It was otherwise when gentlemen wore huge wigs, gold and silver laced suits, "blue or scarlet silk stockings, with gold or silver clocks; lace neckcloths; square-toed, short-quartered shoes, with high red heels, and small buckles; very long and formally-curled perukes, black riding wigs, bag wigs, and night cap wigs; small three cornered hats, laced with gold or silver galloon, and sometimes trimmed with feathers;" and, to crown all, the never failing sword dangling at the heels. Then many a faded dandy of his day, whose credit with the tailor was broken up, and many a poor coxcomb of pretension, trying to ape his superiors in externals, were fain to sneak to Monmouth Street, which was a refuge for the broken down, but

HARRIS
RAG FAIR

ARCHITECTURE—CASTLE HOWARD—ENGLAND.

not for the destitute. Even at a more recent period, when "cloth became the general material for the coat, and velvet, silk, satin, and embroidery, were reserved for court dresses, or waistcoats and breeches only," the dearness of cloth made Rag Fair a very great convenience to people of limited means. But now, thanks to machinery, and to that taste which has produced such a simplicity in male attire, nobody but the very poorest need resort to Rag Fair.

And what is Rag Fair? A collection of old clothes' shops, on each side of a dirty, narrow street, with tables and baskets set up on the edge of the pavement, where almost everything second-hand is sold—old coats, old shirts, old handkerchiefs, and old hats; old shoes that have been familiar with the cobbler's hand; old Tuscan and Dunstable straw bonnets that have been bathed in brimstone smoke again and again; old silk hats with the nap stripped off, and their glossy black turned into a "whity brown." But though wearing apparel is the staple article of commerce, there is but little objection, in this great mart, to deal in anything by which a penny may be made. Crockery of all kinds; pots and pans; you can get a second-hand dinner dish, or an old pair of bellows. Not a rag is lost with the Rag Fair merchants—scarcely an old rusty nail allowed to go astray. Walk up the lane, and mark the keen glancing eyes on the look-out for a customer, and how instinctively they detect him! If you wish to have nothing to say to the "merchants," show no halting irresolution, or one, with gentle coaxing violence, may clap you in his den, and it will go hard if you escape without buying something. Yet keen "Whitechapel sharps" though they are, they will not insult you, if you give the slightest indication of a determination not to be insulted; you may even make a bargain in Rag Fair, if you can, and know how. The place is unquestionably a great convenience to that numerous class whose wages are very low, and whose capacity or ambition does not range very high.

Rag Fair was formerly the "Stock Exchange" of the gatherers of second hand goods; there were regular exchange hours, and "business" was done quite in a business way. This is still the case to a considerable extent. That numerous body who traverse lanes, alleys, streets, and suburban districts, and barter crockery for old clothes, carry their collections to Rag Fair. There is also a large place, where hundreds of straw bonnets of every hue, suspended by strings, oscillate like pendulums; this is dignified by the name of the "East London Bazaar."

The "slop dealers" of Whitechapel carried on an extensive trade during the war, when the Thames was crowded with ships, and money was scattered about by the sailors in their reckless way. The "slop dealers" boarded vessels, as they arrived, bargained with the men and petty officers, carried off their old clothes, and supplied them with what was at least new to them. Trade is still carried on in the same way, but not in the same stirring spirit that it was; the sailors also frequently step ashore to make their own bargains.

Nowhere but in London can a man furnish his house or his person at so cheap or so dear a rate; nowhere else do articles of furniture or dress undergo such strange mutations, or if able to speak with a man's voice, could tell such wonderful and eventful histories. The pier-glass, which in Brook street or Grosvenor square has often revealed, in silent but eloquent language, the charms of a beauty to herself, may come at last, its frame

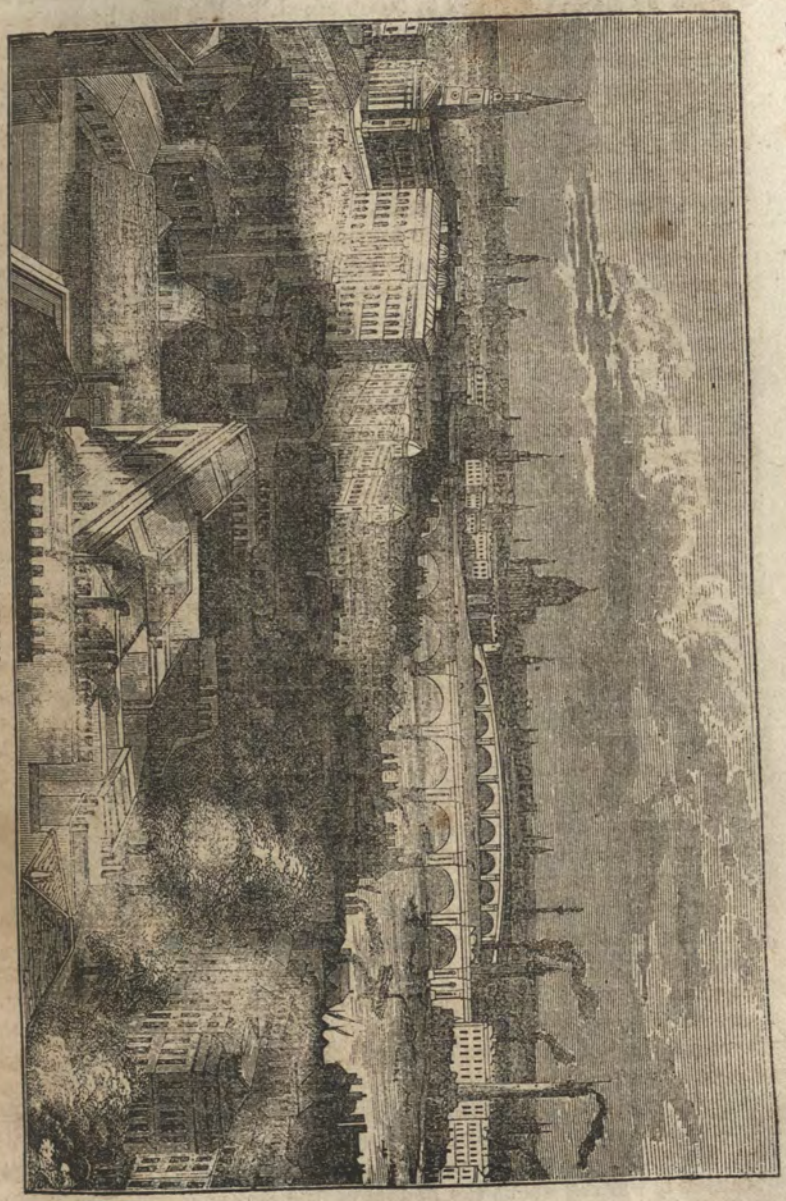
re-gilt, to decorate the parlor of a green-grocer in Goodman's Fields. The suit, which has been paraded in Bond street or Regent street, hangs now in Holywell street or Rag Fair, and passengers are asked, "will ye buy? will ye buy?" The hat which has covered the head of a duke, may now adorn a porter's brows on Sunday. An economical man, not very fastidious, may furnish his house, from kitchen to drawing-room, without paying a visit to an upholsterer.

But we have not yet mentioned "marine stores," those extraordinary dens which abound in the east of London, as spacious show rooms and magnificent looking furniture shops do in the west. Externally, they are the most repulsive looking places in the trading line a man can enter. They are hung round with fragments of old rusty iron, and other matters, which one would think, at first sight, not worth picking off the street; yet some of these places have large premises filled with valuable property. In Colquhoun's time, great complaint was made of these "marine stores," as being repositories of stolen goods. To what extent the charge is applicable at the present day it does not become us to say. Not very long ago, one of the Thames police magistrates, in adjudicating on a case, expressed an emphatic wish that one-half the marine store dealers "were hanged." It is doubtless to these places that the stolen pewter pots of the publicans are carried, and that the lead stripped from the roofs of houses, or pilfered brass and iron, are here converted into cash. But it would be wrong to stigmatize a whole body; there can hardly be a doubt but that some of the marine store dealers carry on a legitimate, although a heterogeneous traffic.

At one time the London fishmongers appear to have been the wealthiest and most powerful of the city companies. Originally they formed two great bodies—the Salt-fishmongers, who were incorporated by letters patent in 1433, in the reign of Henry VI.; and the Stock-fishmongers, incorporated by charter from Henry VII., in 1509. Like other crafts, however, the fishmongers certainly existed as a civic association long before the earliest of these dates. In ancient times the consumption of fish in England was undoubtedly much greater in proportion to the population than it now is. As long as the Romish religion prevailed, an abstinence from flesh was observed by all ranks for a considerable part of the year; and fish were of necessity consumed to a large extent, just as they still are in the Romish countries of the Continent, where at this day the produce of Newfoundland fishery finds its chief market. As in these countries, however, so in papal England—the great consumption was of dried and salted fish. The names of the two old London companies are an evidence of this. It would have been quite impossible in those days for many parts of the country to have obtained a sufficient supply of any other kind; and, indeed, even now a regular supply of fresh fish could not be generally commanded. Although London and some other large towns consume considerable quantities of the article in the uncured state, the great trade must necessarily be in that form of it which admits of being preserved for a length of time.

After the Reformation, the legislature attempted to do what the Church had formerly done, in encouraging the use of fish as an article of food among the people generally. A curious act of Parliament was passed in 1563, which provided "that, as well for the maintenance of shipping, the

LONDON—ST. PAUL'S.



LONDON

increase of fishermen and mariners, and the repairing of port towns, as for the sparing and increase of the flesh victual of the realm, it shall not be lawful for any to eat flesh on Wednesdays and Saturdays—unless under the forfeiture of 3*l.* for each offense—excepting cases of sickness, and also those by special licenses to be obtained." For these licenses peers were to pay to the poor 1*l.* 6*s.* 8*d.*; knights and their wives 13*s.* 4*d.*; and other persons 6*s.* 8*d.* Even the license, however, did not permit the purchaser to eat beef on the forbidden days, but only mutton, or other kinds of flesh. It is added, "But because no person shall misjudge the intent of this statute, be it enacted, that whoever shall, by preaching, teaching, writing, or open speech, notify that any eating of fish, or forbearing of flesh, mentioned in this statute, is of any necessity for the serving of the soul of man, or that it is the service of God, otherwise than as other politic laws are and be, then such persons shall be punished as spreaders of false news ought to be." By a subsequent statute, the prohibition against eating flesh was limited to Saturdays; but it was still commanded that no victuallers should sell flesh either on Fridays or Saturdays, or at all during the season of Lent.

These regulations must have tended to keep up among the people their old habit of living to a considerable extent upon dried and salted fish. Meanwhile the two city companies had been incorporated into one by Henry VIII., in 1536, under the title of "the Wardens and Commonalty of the Mystery of Fishmongers." Thus united, they form the fourth city company, standing immediately after the Drapers, and before the Goldsmiths.

In 1750, Mr. Tomkyns, the clerk of the company, in addressing Frederick, Prince of Wales, on his admission as a freeman, said, "This company, Sir, is famous for having had near threescore lord mayors of the city of London, besides many of the most considerable merchants and eminent citizens, free of it." At one period, so great was the influence of the company, that it gave to the city six lord mayors in the space of twenty-four years. Of these the most famous was the last, William Walworth, who, in 1380, slew Watt Tyler in Smithfield, at the head of 30,000 rebels. For this achievement Walworth was knighted by the king, Richard II.; and, according to a common, though somewhat doubtful tradition, the dagger was added to the city arms.

Before the Salt-fishmongers and the Stock-fishmongers were united, they had no fewer than six halls, each having one in the three streets then principally inhabited by the members of the trade; namely, Thames street, (anciently called Fishmonger Row,) Old Fish street, and New Fish street. On their incorporation into one society, they chose for their common hall one of their two houses in Thames street, which we are told had been given to them in the reign of Henry VI., by Sir John Cornwall, (Lord Franhope.) This old building, however, was destroyed in the great fire; and soon after a new hall was erected on the same site from a design by Sir Christopher Wren. It was a handsome and showy structure. Maitland, writing about the middle of the last century, says, "The front next the Thames, which has been lately repaired and beautified at a very extraordinary expense, exceeds everything of its kind in this city, and yields a most graceful and pleasant prospect, with a magnificent double flight of stone stairs on the wharf." It was taken down to make room for

the approaches to the New London Bridge; and a very splendid new hall has since been erected a little to the west of the place where its predecessor stood. Our engraving presents a view of it as seen from the street and the river. It stands between Thames street and the river, immediately to the west of the elevated road leading to the bridge, to the level of which the main part of the building is raised by two lower stories; the undermost disposed into cellars, warehouses and shops, and the higher into offices and other apartments for the use of the company. The superstructure commences about five or six feet above the level of the bridge road, and also consists of two stories. It is faced with Portland stone; and there are three distinct fronts, one to the east, another towards Thames street, and the third looking to the river. The last is ornamented by a colonnade of granite which supports a terrace. The Thames street front presents a receding center and two projecting wings. That to the east is the entrance front, and consists of a range of attached columns in the center, and two wings adorned with pilasters, with a lofty attic surmounting the entablature. These fronts are all separate compositions; and it is objected to the building that, however great may be their particular merits, they are not adapted to produce that unity of effect which would have been desirable.

The application of riches to the encouragement of learning has always been regarded as a liberal and munificent direction of charity. It is unnecessary to go back to very remote periods, but it could be shown that the Anglo-Saxons looked upon the training of youth as an object of great importance; and children were received into the monasteries, not only to be instructed in learning, but to be taught useful occupations. In the reign of Stephen there were, according to Stow, schools attached to the three principal churches in London. It is believed, also, that at this time nearly every collegiate cathedral and church had a school for "poor scholars" in connexion with it. The higher classes at this time thought learning beneath them; and hence, if these "poor scholars" had not been aided by the benevolent, there would have been a lack of educated men for the church, and other liberal offices. The income arising from charitable bequests for the purposes of education in counties which have been fully investigated by the Commissioners of Charities, amounts, for counties which contain one half of the population of England and Wales, to about 480,000*l.* per annum; and it may be presumed that the total for all the counties is not less than 900,000*l.* In Yorkshire and Lancashire together, the sum of 40,000*l.* a year, arising from endowments and charities, is applicable to the purposes of education. We have yet to speak of the large amount raised every year by voluntary subscriptions and contributions in aid of the same object. The educational endowments of Middlesex, exclusive of London and Westminster, amount to above 12,000*l.* a year; those of Westminster to above 5000*l.*; the parochial endowments of London to more than 13,000*l.*, or more than one-third of the total value of endowed charities of every description; and to these sums must be added the charities administered by chartered companies, which amount to about 60,000*l.* per annum, a considerable portion of which are devoted to the purposes of education. Many endowments were made prior to the Reformation, but the greater number of them originated in the sixteenth century, a period of general mental activity and excitement. St. Paul's School, Christ's

OXFORD STREET—SUNDAY.

CHEAPSIDE.

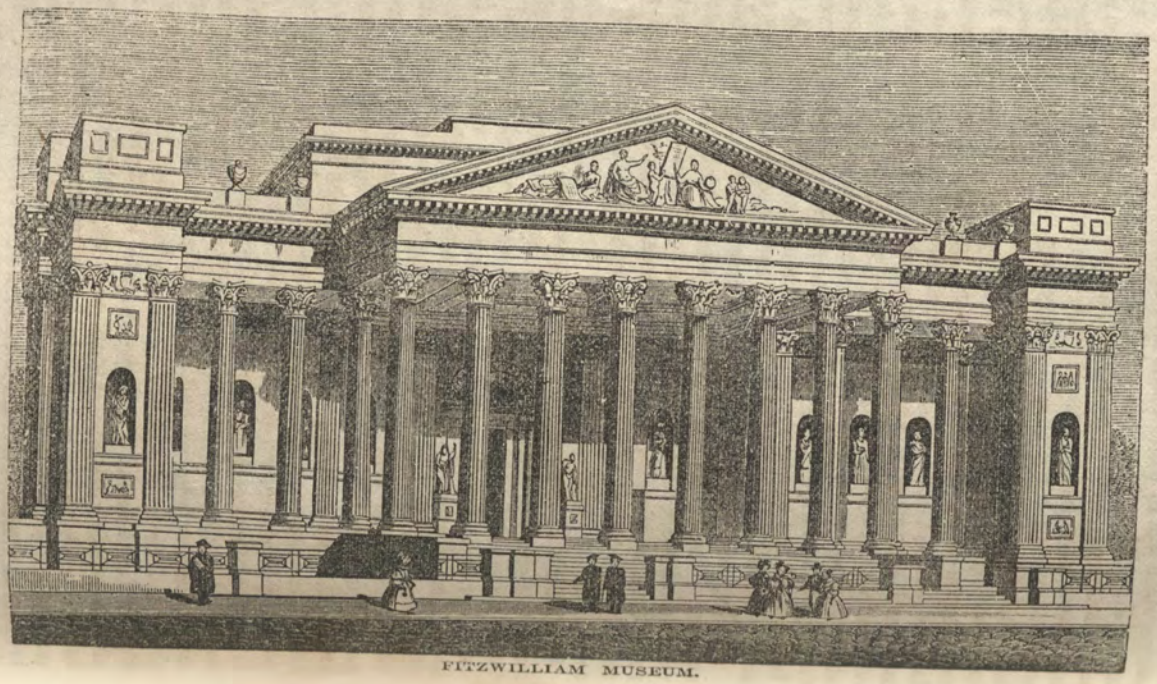
Hospital, Westminster, Merchant Tailors' Free School, were all instituted at this period. Without adopting any forced division, the benevolent exertions for the promotion of education may be ascribed to four great periods of renewed activity since the commencement of the sixteenth century; and around these culminating points it may be desirable to place the information collected relative to educational charity.

Two causes contributed to render the sixteenth century a period in which much was done to promote education. After the termination of the wars between the houses of York and Lancaster, the aristocracy became less turbulent, and had no longer the same arena for the display of its warlike propensities. Learning then became an object of attention. The nobility and gentry began to send their sons to college, and the path was open to their advancement in political and civil life. Latimer, in one of his sermons, says, "the devil causeth great men and esquires to send their sons to the universities, and put out poor scholars that should be divines." A great economical change was also taking place in the various interests of the country, by which the yeomanry, whose sons had formerly been sent to colleges and other places of education, were placed in a state of temporary suffering which precluded them putting their sons to school. Latimer remarked, as a consequence of this state of things, that, "Universities do wonderfully decay already;" and said, "I think there be at this day 10,000 students less than were within these twenty years." Hence he exclaimed, "thus much I say unto you, magistrates, if you will not maintain schools and universities ye shall have brutality." The hopes which had been entertained of rendering the property of the religious houses available to some extent in promoting learning, had apparently been disappointed; although, in 1539, a bill was passed, in the preamble of which an intention was expressed of converting it to other purposes, that by this means there should be "clerkes norished in the unyversities," "children brought upp in lerning," and that "reders of Grece, Ebrewe, and Latten should have good stipend." The second great cause which occasioned a demand for education was the change which was taking place in the ecclesiastical constitution of the country, which opened new sources of inquiry, and spread abroad a desire for information. The schools at which "poor scholars" had been maintained in order to provide a succession of officers for the church, were inadequate to the growing desire which persons acquiring wealth in trade experienced for the fit education of their children. In the reign of Edward VI. the Clergy of Great Allhallows, St. Andrew, Holborn, St. Peter, Cornhill, and St. Mary Colechurch, addressed the parliament and the king requesting that grammar-schools should be established in their respective parishes. Their petition was granted, and a few years afterwards several schools of a similar description were established in other parishes in London. These schools were endowed by the bequests of liberal and wealthy persons. Individuals who had become rich by the pursuit of trade, and retired to that part of the country from which they originally came, founded and endowed schools there which were necessarily rendered applicable to the class for whose advantage they were intended. Gratuitous education thus became "popularized," and extended itself over the country. There was not sufficient demand for education in remote parts of the country to render it independent of eleemosynary aid. In these schools the boys were to be taught "in learning and good manners;"

or, "in grammar and other good learning;" or, "freely and carefully taught and instructed;" or, "piously educated;" or, instructed "in religion and other good literature." It too often happened that instruction in the classics was insisted upon, especially in the schools first established. This provision, which was of some value at the time, has long ceased to be advantageous; the children have been driven from the school; and the master, being without pupils, has enjoyed the benefits of the foundation as a sinecure; or, in some cases, it has happened that, as instruction in the classics was of no use to the class for whose advantage the school was established, they have been forced out of the establishment, and a superior class has been introduced. By the statutes of St. Paul's school, drawn up by Dean Colet, the founder, in 1508, the boys were to be taught good literature, both Latin and Greek, "and good autors, that wrote theire wisdom with clean and chaste Laten, other in verse or in prose." The disadvantages of this rule are smaller in a large city than they would be in a small town, where schools, founded on a similar plan, have been left without scholars. Cranmer, who had hoped to see grammar-schools founded in every shire in England, lived but to see the commencement of the work. A century or more had elapsed after his death before they became generally established

But though much had been done towards establishing and endowing free schools and grammar-schools, yet they were chiefly for the benefit of the richer and middle classes; and another impulse was requisite to cause the establishment of schools of a more popular character, and adapted for the poor. This brings us to the second epoch in the history of educational exertions.

The straitness of manners which characterized the period preceding and during the Commonwealth, was followed by a reaction; and the Restoration was the signal for the unrestrained license, which depraved the general tone of morals, and evils naturally followed which could not fail to arrest the attention of society. Men confederated together for the purpose of "Promoting the Reformation of Manners;" societies were established for this object, and the grand juries of counties made presentments on the general prevalence of vice and immorality, which rendered such exertions neccessary. The general looseness of the times had seriously affected the interests and happiness of the poorer classes, and their condition became an object of greater concern than it had heretofore been. Mr. Nedham, in his "Discourse concerning Schools and Schoolmasters," published in 1663, remarked that "it must needs pity any Christian heart to see the little dirty infantry which swarms up and down the alleys and lanes, with curses and ribaldry in their mouths, and other rude behavior, as if they were intended to put off their humanity and degenerate into brutes;" and added, "The public have their part in this guilt and neglect; little has been done, and that little, too, has been so little looked after and observed." He proposed as a remedy for these evils that the children of the poor should be taught by the parish clerks, under the direction of the minister, who should catechize them every week. He said, "I should propose that there should be no allowance for any one whatsoever to keep a private school upon his own account, except the clerk of the parish, whose office it should be (with an allowance for it) to teach all the children of the parish." The Society for the Promotion of Christian Knowledge originated in 1698, out of the interest which the moral state of the poor excited. It began immediately to apply



FITZWILLIAM MUSEUM.

VICTORIA ROOMS.—BRISTOL.

itself to encourage "the setting up of charity schools for the instruction of poor children in the knowledge and practice of the Christian religion, as professed and taught in the Church of England." It adopted this course as "a sure means of a general and lasting reformation," proceeding on the principle that "the growth of vice and immorality was greatly owing to gross ignorance of the principles of the Christian religion." In 1709 the St. Anne's Society was established in London, with the design of affording the means of instruction, and clothing the children of every class of poor and necessitous persons.

The first English charity school, according to the general acceptation of the term, was, as it has generally been understood, opened in Westminster in 1698; but the old charity school-house in Hatton-Garden, over each of the doorways of which are effigies of two of the children, bears the date of 1696. The same causes which have since given rise to so many other schools, in part contributed to the setting up of the charity school in Westminster; for, in the previous year had been established, also in Westminster, the "Jesuits' Charity Grammar Schools." Two other charity schools in St. Botolph's, Aldgate, and Norton Folgate, were established about the same date. The Society for the Promotion of Christian Knowledge, under whose superintendence these schools were placed, issued an annual report for several years after its establishment, in the form of "A Letter from a Member of the Society for Promoting Christian Knowledge in London to a Correspondent in the Country." In the account given in the "Letter" for 1701, the writer states that "about 2000 children are actually put to school, in and about the cities of London and Westminster, and the greater part of them clothed upon charity." The children were frequently catechized publicly, as a means of exciting public interest and sympathy. In the above letter, it is stated that "a certain person unknown, being lately present at the catechizing the poor children in the parish of Whitechapel, was very much affected therewith, and immediately gave the sum of 1000*l.* to be laid out in land, for the perpetual maintenance of a school for the poor of that parish." To encourage each other in their work, the patrons of the schools assembled the children together, for the first time, in 1704, in St. Andrew's, Holborn, where a sermon was preached on the occasion. The number of children present was 2000. These anniversaries were subsequently held at St. Bride's in Fleet Street. In the "Spectator" for Feb. 6, 1711, there is a paper containing reasons for supporting these schools, in which the writer says, "I fell into this discourse from a letter sent to me to give notice that fifty boys would be clothed and take their seats, at the charge of some generous benefactor, at St. Bride's Church on Sunday next." He remarks, that "the charity schools which have been erected of late years are the greatest instances of public spirit the world has produced." Again, in the "Spectator" for July 14, 1712, the writer says, "I was last Sunday highly transported at our parish church. The gentleman in the pulpit pleaded movingly in behalf of the poor children, and they for themselves much more forcibly by singing a hymn." The schools made rapid progress in public favor, though their design excited many popular prejudices.

In the Annual Report of the Christian Knowledge Society for 1714, it is stated that "in the cities of London and Westminster there are 117 charity schools, in which are taught above 3000 boys and more than 1700

girls, and most of the children are clothed. From these schools there have been about 1650 boys and upwards of 824 girls put out apprentices. Towards the maintenance of these schools there is now above 5000*l.* a year subscribed; besides which there has been collected, upon this occasion, the last year, above 3400*l.*" In England, exclusive of London, there were 900 schools, at which several thousand children of both sexes were instructed, many clothed, and some wholly maintained. In 1716, the children of the different schools held their anniversary for the first time at St. Sepulchre's, instead of St. Bride's, and assembled to the number of 5000. "After all," it is stated, "there are more children in divers parishes than the richer inhabitants are able to educate, and much less able to set to work." Many of the London clergy made the most praiseworthy exertions in behalf of education. Monthly lectures were delivered in several parishes upon week-days for the purpose of promoting the success of the schools, after which collections were made. The exertion of the laity were not less zealous. The extent to which this zeal proceeded may be inferred from Mandeville's "Essay on Charity and Charity Schools," published in 1723, in which he speaks in a cynical spirit of "the enthusiastic passion for charity schools," and asserts that "whoever dares openly oppose them is in danger of being stoned by the rabble." This work of the author of "The Fable of the Bees" was noticed in the anniversary sermons for several successive years after its publication. But the cause of the popularity of the schools was in the real and visible improvement which they produced upon those who frequented them. In the anniversary sermon for 1738, preached by Dr. Conybeare, dean of Christ Church, Oxford, he stated that "in a course of more than forty years, from the first institution of these schools to the present time, there have been scarce any (if any at all) who, having gone through the discipline of these places, have been afterwards convicted of any capital crime.

There were two schools, in 1738, in the parish of St. Margaret, Westminster, at one of which the children were clothed in blue, and at the other in grey. These schools still exist. At a school at Greenwich, established in 1700, the children spun and made their own clothes, both linen and woolen. The nature of the education received at these charity schools was of the most simple kind—reading, writing, and accounts. In the parish of St. Andrew's, Holborn, there was a school for teaching navigation to thirty children (increased to forty in 1740), who were elected out of eight other charity schools. In St. James', Clerkenwell, was a school for children of the age of five years, where they were received until qualified for other schools. At a school in Lambeth, the boys were employed one-half of the day in spinning yarn, and the girls in knitting and sewing alternately. At the school of St. Martin's-in-the-Fields, one-third of the boys were employed daily in labor, so that all worked two days each week in rotation. Notwithstanding the simple education given to the children of the charity schools, those who were active in promoting the work were met by absurd objections. Many of the promoters of education condescended to lower their notions to the level of their prejudiced assailants; and some actually engaged in establishing schools held opinions very slightly differing from those who opposed education altogether. Apprehensions were entertained in some quarters, that the masters of the schools, through a false affectation of letting the benefactors see the great improvements the

ST. EDWARD'S CHAPEL.

ST. GEORGE'S CHAPEL—WINDSOR

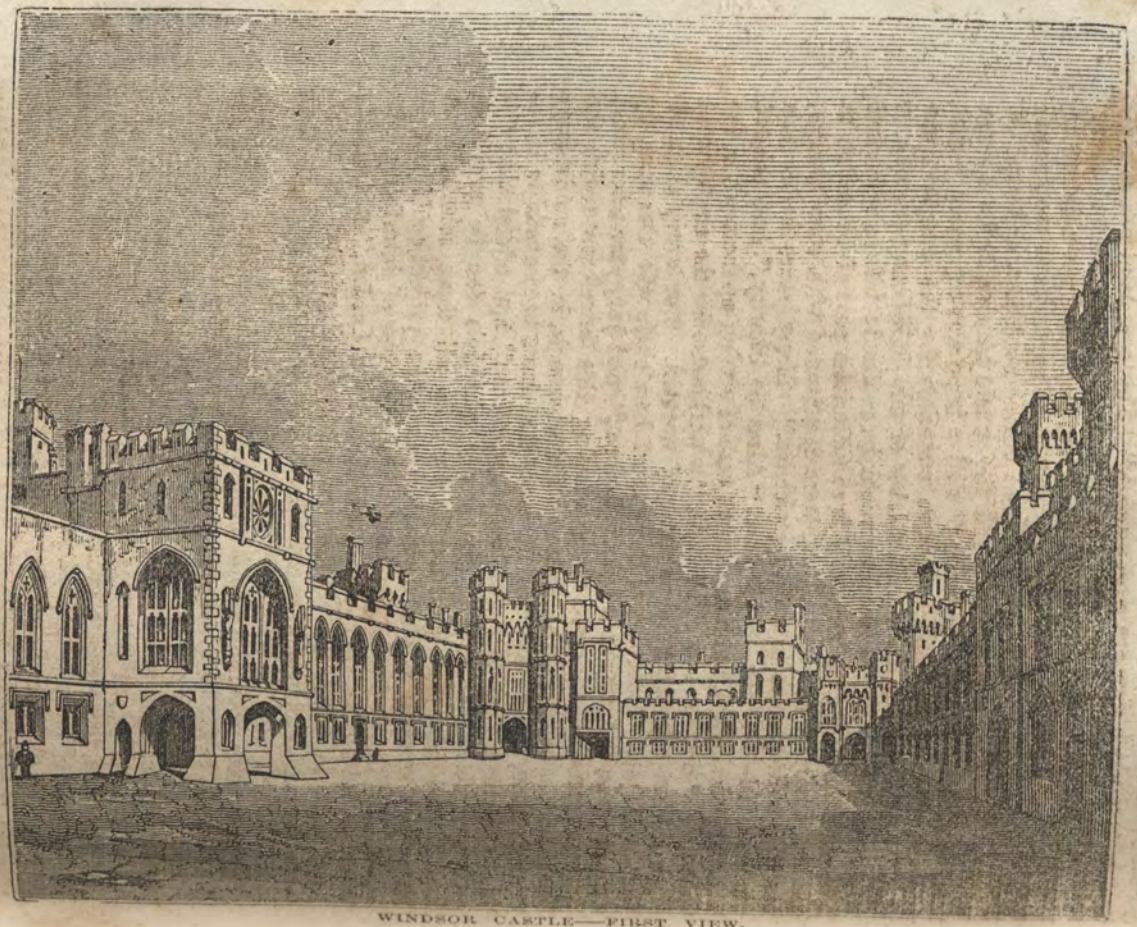
children receive from their bounty, "caused them to attain such a proficiency in working arithmetic, singing, and displaying their memories in their public examinations, as lifted their thoughts above the stations of life in which Providence has placed them."

The bishop of St. Asaph, in a sermon preached in 1741, fell into this timid advocacy of the work of education; but in printing this sermon, he added the following note, which is curious and deserving of attention, as showing that while the popular prejudices against the education of the poorer classes have nearly died away, the very suggestions made a century ago for its improvement are still ineffectually urged, or have only been very partially adopted. The note is as follows:—"Several gentlemen of great knowledge in business, true friends of these schools, and prudently desirous to establish a suitable plan of education in them, have yet been of opinion, that if the children were taught, as they might be at small expense, something of the art of *drawing*, it would prove beneficial in several respects. For this they urge the great perfection to which silk manufactures are now advanced in England, so as to equal, if not exceed, a rival nation in that commodity, except in the figure, and what is called the 'fancy of a pattern,' which this instruction might supply: that in France the very poorest of the children are all taught to draw; that the benefits of that branch of skill are very great; for it not only multiplies persons capable of drawing patterns, and thereby lessens the expense to the manufacturer, but likewise greatly assists in the performance of the work itself, as a workman who can himself draw a pattern will finish with greater truth and dispatch any given pattern, whether drawn by his own or by another hand. That not only in this and similar branches of manufacture, but in several other cases, drawing might be of great use, and in none could it do any mischief. The carpenter, the smith, the mason, and many other inferior laborious employments would be usefully improved by this piece of knowledge. It might also be of great use in the moral way, as a method of governing the children; this branch of learning being dispensed as a reward to the most regular, diligent, and best behaved boys, and would certainly furnish to many of them an innocent and improving exercise, very proper to engage some of those vacant hours when they do not attend school." If these recommendations had been acted upon a century ago, the popular taste would have been much more refined than it is at present; and it is not easy to estimate the effect which would have been produced had it fortunately happened that instruction of the kind here recommended had been added to the other advantages possessed by English artisans. Nearly everything on this point has yet to be commenced; and the demand for some steps to be taken chiefly proceeds now from the same motives as those which existed in 1740.

Another objection strongly urged against the charity schools during the early part of the century was, that they were rather "nurseries of sloth and idleness, than the schools of diligence and labor." In the anniversary sermon for 1741, this point was grappled with, and the Bishop of St. Asaph, who preached, said, "The children are destined to, and engaged in, the lowest class of labor; the plough and the spade are put into the hands of some; others are sent to sea; several are engaged in laborious mechanical employments; and many are placed in families as the meanest servants." The girls "are duly exercised in the lowest offices of household service

By practice and habit they become qualified for a low station." In this manner was it sought to tranquilize the jealousy of those who said, that "the children are trained up so long at school in an habitual disuse of labor, that their unaccustomed hands will not easily submit afterwards to those servile employments in which they are most wanted." This complaint was considered so reasonable at the time, that the trustees of the schools took every means to remedy it. A plan was put forth for employing the children in spinning, which was printed for several years as an appendix to the Annual Reports of the schools. "The spinning of coarse wool, flax, or hemp," it was said, "is a thing easily learnt, and the waste which will be always made by beginners, will not be much;" and a hope was expressed "that many good people would send in coarse materials for the benefit of the schools." At a profit on each child's labor of one half-penny per day, it was assumed that a considerable sum would be realized; but as remarked in the sermon for 1741, "labor itself is so material a part of education to children of this rank especially, that, were it attended with some charge, it would be an improvement worth purchase." Many years before this period—in 1704—De Foe, in his tract "Alms no Charity," had pointed out the economical effect, in an analogous case of setting up factories in the workhouses. "Suppose now," he says, "a workhouse for the employment of poor children sets them to spinning of worsted. For every skein of worsted these poor children spin, there must be a skein the less spun by some poor person or family that spun it before;" and yet, year after year, the most eminent divines were recommending this interference with the labor of the community. The Dean of Peterborough, in the anniversary sermon for 1740, stated that "all attempts that have been made to introduce manufactures have met with encouragement;" and added that "it cannot be doubted, but as soon as proper materials can be provided, instruction and labor will go hand in hand in all these schools." A year or two afterwards it was discovered that the project could not be successful, and that it was inexpedient. The "danger of interfering with the present industrious poor, who would become a burden," was clearly pointed out. In 1742, Dr. Secker completely extinguished the notion of employing the children in manufactures with a view to profit by their labor.

The party from whom the complaint proceeded of the children not being brought up in habits of labor, and to satisfy whom the attempt to introduce manufacturing processes was made, raised another outcry against the schools, which exhibits not a little inconsistency. They asserted that so many children were put to trades, who had heretofore been brought up in other capacities, there was a great difficulty in obtaining good servants, and a scarcity of laborers in husbandry. To counteract opposition from this source, the clergy in the country were directed to encourage the children being put to agricultural employments; and in 1738, the trustees of the charity schools in the parish of St. Andrew, Holborn, issued an address "to all farmers, gardeners, and other occupiers of land in England," in which they allude to the alleged "great want of hands in divers parts of the kingdom, for tilling the ground and performing other parts of husbandry;" and state that, "being heartily disposed to do all in their power to render their charity children useful to the public, they will bind boys apprentices for seven years to learn the art of husbandry, and girls



WINDSOR CASTLE—FIRST VIEW.

WINDSOR CASTLE.—SECOND VIEW

FF

for five years to do household work." This clamor, like many others against education, was at length put down by the good sense and perseverance of the supporters of the schools.

In 1782 the children educated in the schools of the metropolis assembled for the first time in St. Paul's, on their anniversary meeting; a practice which has been followed ever since. The sermon was preached by Dr. Porteus, Bishop of London. The circumstances of this anniversary meeting are thus noticed by the Rev. R. Hodgson, who wrote a life, and edited the works, of Bishop Porteus, in a note to the sermon delivered on this occasion: "The trustees of the charity schools obtained permission this year, for the first time, to range the children, (amounting to near 5000), in a kind of temporary amphitheatre, under the dome of St. Paul's, where the service was performed and the sermon preached,—the congregation occupying the area. The effect of so large a number of children, disposed in that form, and uniting with one voice in the responses and in the psalm-singing, was wonderfully pleasing and affecting." In his sermon the Bishop said: "You here see near 5000 children, collected together from the charity schools in and about London and Westminster. A spectacle this which is not to be paralleled in any other country in the world; which it is impossible for any man to contemplate without emotions of tenderness and delight;" and he added, that "the number of children in this place bears but a small proportion to the whole number in the schools of Great Britain and Ireland, which exceeds 40,000." This spectacle was commemorated in the following simple lines by Blake, an eccentric but powerful artist, who published them in a curious little volume, entitled "Songs of Innocence:"

"'T was on a Holy Thursday, their innocent faces clean,
The children walking two and two, in red and blue and green,
Grey headed beadles walk'd before, with wands as white as snow,
Till into the high dome of Paul's they like Thames' waters flow.

"Oh, what a multitude they seem'd, these flowers of London town,
Seated in companies they sit, with radiance all their own:
The hum of multitudes was there, but multitudes of lambs,
Thousands of little boys and girls raising their innocent hands.

"Now like a mighty wind they raise to heaven the voice of song,
Or like harmonious thunderings the seats of heaven among;
Beneath them sit the aged men, wise guardians of the poor;
Then cherish pity lest you drive an angel from your door."

But a period was coming when charity schools were found to be inadequate to the wants of an increasing population. This inadequacy led Mr. Raikes of Gloucester, in 1781 or 1782, to give religious instruction to children on Sundays before going to church. In 1785, a Society was established in London, "for the support and encouragement of Sunday Schools throughout the British dominions." Dr. Porteus, in a charge to his Clergy in the following year alluded to the insufficiency of charity schools. "The expense of founding them," he says, "necessarily prevents their becoming universal. In many towns, and by far the greater number of villages, there are no charity schools at all. In London, where they are generally established, they can take in only a very small part of the children of the poor; the rest are left without education. Charity schools, therefore, are partial and local remedies; they operate only within a narrow circle;

Sunday schools are therefore a proper appendage to them." In 1803, the Sunday School Union was established, with a view to stimulate and encourage those who are Sunday school teachers to greater exertions, to enlarge existing and establish new schools, and to supply books, &c. Other steps were soon made to render education more universal; and the work of instruction no longer proceeded to so great an extent under the auspices of the Church of England. In 1789, the Rev. Dr. Andrew Bell applied his plan of instruction at Madras; and in 1797, an account of it was published in England. In 1798, a school on the Madras system was established at St. Botolph's, Aldgate. This system was zealously advocated and adopted by Mr. Joseph Lancaster, a Quaker. In 1808, the "British and Foreign School Society," designed to promote the education of the working classes of every denomination, was established. Its object was "to uphold the principle of liberty of conscience and the utter abolition of religious tests in connection with common day school education." In 1811, three years afterwards, the National Society was established, "for promoting the education of the poor in the principles of the Established Church." Its object was to promote the establishment of schools of three kinds: namely, schools for infants under six or seven years of age; Sunday and daily schools, for children from six or seven to about thirteen; and Sunday schools, chiefly for those who are engaged in labor during the week. The schools of the British and Foreign, and National Societies are now the chief means of dispensing popular instruction in that country.

On a hill which is somewhat precipitous to the north, but is of gentle ascent in other directions, stands the Castle of Windsor, situated in Berkshire, about twenty-two miles from London. "It enjoyeth," says the old English topographer Camden, "a most delightful prospect round about; for right in the front it overlooketh a vale, lying out far and wide, garnished with corn-fields, flourishing with meadows, decked with groves on either side, and watered with the most mild and calm river Thames: behind it arise hills every where, neither rough nor over high, attired as it were with woods, and even dedicated as it were by nature to hunting and game." The magnificent castle which crowns this eminence is associated with some of the most interesting events and persons in English history. It has witnessed all the pomp of chivalry, and its courts have rang with the feasts and tournaments of the Edwards and Henries. Kings were born here—and here they are buried; and after every change of fashion and opinions, it is still the proudest residence of the sovereign of England, as it was seven centuries ago. The Parliament, within these few years, has thought fit to bestow very large sums upon the complete repair of this castle; and we cannot think the amount ill bestowed, for the ancient recollections of a people are amongst its best possessions.

There is scarcely a point within a few miles' distance where the Castle of Windsor is not seen to great advantage. To the traveler upon the Bath road it presents its bold northern front, which comprises the longest continuous range of its buildings. On the road to Windsor, by Datchet, the eastern front, with its four grand towers, appears of itself to exceed most other edifices in magnitude. To the great Park the southern front is displayed; and when this part is viewed from the extremity of the fine avenue called the Long Walk, nothing can appear more stately. In every situation, the Round Tower rises above the other buildings, and arrests the eye

by its surpassing dimensions. Burke has well characterized it as "the proud keep of Windsor."

The visitor to Windsor, upon turning up the street (Castle street) which leads to the Castle, will have the south front presented to him. The improvements that have been made in this part within the last few years are most striking. The road now leads boldly up to the Castle; and the observer looks without interruption upon the rich woods of the adjacent parks. A very short time ago a number of contemptible buildings were scattered about the Castle; and even the superb avenue, the Long Walk, was deprived of its natural object—the object doubtless for which it was planted—that of forming a road to the principal entrance to the Castle, by the avenue, and the entrance being crossed by a large plastered house and offices called the Queen's Lodge. All these excrescences have been judiciously removed.

The southern entrances to the Castle are reserved for private use. The visitor will approach it through what is called the Lower Ward. He enters into this ward by a noble gateway, with two towers, built by Henry VIII. The first object which arrests his attention, is the Chapel of St. George—a building unrivaled in England or in Europe, as a perfect specimen of that richly ornamented Gothic architecture, which prevailed in the latter end of the fifteenth century and the beginning of the sixteenth. This is represented in the engraving. Immediately to the east of this fine chapel is an ecclesiastical building of later erection, called Wolsey's Tomb-house; which is now used as the dormitory of the Royal Family. The buildings opposite St. George's Chapel are the residences of the decayed military officers, called the poor Knights of Windsor. The bold tower which terminates this row of buildings, as well as the opposite tower called the Winchester, (from its being the residence of William of Wykeham, Bishop of Winchester, the architect of the castle,) are the best preserved, without much change of the more ancient parts of the whole fabric. On the right, as he proceeds, the visitor looks down over a low battlemented wall, upon what was once the moat of the Round Tower. It appears to have been in part a garden, as long since as the time of James I. of Scotland, who was detained here for some time, and has celebrated this solace of his imprisonment in one of his poems. The tower itself rises in stern grandeur out of this depth. The mound upon which it is built is no doubt artificial. This immense tower has been considerably elevated within a few years, in common with many other parts of the Castle.

Proceeding through a gateway of two towers, whose low portal indicates its antiquity and its employment for defense, the visitor finds himself within the magnificent quadrangle of the palace. On the north are the state apartments, in which is included the celebrated Hall of St. George—on the east and south the private apartments of the queen and her court. The state apartments are exhibited to strangers, as we shall more particularly mention. Nothing can be more imposing than the general effect of this quadrangle. Every part is now of a uniform character. We look in vain for the narrow grated windows and pierced battlements of the times of feudal strife, when convenience was sacrificed to security. These characteristics of a martial age were swept away by Charles II., who substituted the architectural style of the age of Louis XIV. than which nothing could have been in worse taste. In the recent alterations of the Castle, the architect has

most judiciously preserved the best characteristics of old English domestic architecture. The engraving may give some notion of the richness and grandeur of this quadrangle.

Returning a short distance, the entrance to the terrace presents itself to the visitor. After descending a flight of steps, the scene is totally changed. A prospect, unrivaled in extent and beauty, bursts upon the sight. Few persons can look upon the scene without emotion. The eye delightedly wanders over the various features of this remarkable landscape. It traces the Thames gliding tranquilly and brilliantly along, through green and shadowy banks—sometimes presenting a broad surface, and sometimes escaping from observation in its sudden and capricious windings—it ranges as far as the distant hills—it counts the numerous turrets and spires of the neighboring villages—or it reposes upon the antique grandeur of Eton College. Gray has beautifully described this magnificent prospect in well-known lines:—

"From the stately brow
Of Windsor's heights th' expanse below
Of grove, of lawn, of mead survey,
Whose turf, whose shade, whose flowers among
Wanders the hoary Thames along
His silver winding way."

The north side of the terrace is constantly open to the public; and this is by far the finest part. To the eastern side, admittance is only granted on Saturdays and Sundays. At the north-east angle of the terrace, the northern front of the Castle is exhibited as shown in the engraving.

The earliest history of Windsor Castle, like that of many other ancient buildings, is involved in some obscurity. It is doubtful whether in the time of William the Conqueror, and of his son Rufus, it was used as a residence; but it was certainly then a military post. At Old Windsor, a village about a mile and a half from the present castle, there was a Saxon palace, which was occasionally inhabited by the kings of England. Henry I. held his court there in 1105 and 1107; but having enlarged the adjacent castle with "many fair buildings," he, according to the Saxon Chronicle, kept the festival of Whitsuntide there in 1110. In the time of Stephen, the Castle, according to Holingshed's Chronicle, was esteemed the second fortress in the kingdom. Henry II. and his son held two parliaments there. Upon the news of his brother Richard's imprisonment in the Holy Land, John took possession of the Castle; and after his accession to the throne remained there, as a place of security, during his contests with the barons. Holingshed says, that the barons, having refused to obey the summons of the king to attend him in his own castle, he gave them the meeting at Runnemede, which ended in the signature of Magna Charta. The fortress sustained several changes of masters during the wars between the crown and the nobility, which broke out again in the reign of John and of Henry III. Windsor Castle was the favorite place of residence of Edward I. and II., and here Edward III. was born. During the long reign of this monarch, the Castle, according to its present magnificent plan, was commenced, and in great part completed. The history of the building furnishes, in many respects, a curious picture of the manners of the feudal ages.

At a period when no man's possessions were thoroughly assured to him by equal laws,—when the internal peace of kingdoms was distracted by

the pretensions of rival claimants to sovereignty,—and when foreign wars were undertaken, not for the assertion of national honor or the preservation of national safety, but at the arbitrary will of each warlike holder of a throne, personal valor was considered the highest merit: and the great were esteemed, not for their intellectual acquirements and their moral virtues, but for their gallantry in the tournament and their ferocity in the battle-field. Amongst the legends of the old chroniclers and romance-writers (and there was originally small difference in the two characters,) the most favorite was the story of King Arthur and his Knights of the Round Table. Froissart, the most amusing of chroniclers, says, that Windsor was the seat of the solemnities of the Round Table, in the sixth century: and later historians affirm that Edward III. in a solemn joust (tournament,) held at Windsor in the eighteenth year of his reign, revived the institution. Walsingham, the historian, states, that upon this occasion Edward built a round chamber, two hundred feet in diameter, for the deliberations and festivals of the companions in arms that he gathered about him. This strange house was itself called the Round Table. It is probable that it was a temporary structure; for, within a short time after, various commissions for appointing surveyors and impressing workmen were issued; and in 1356, William of Wykeham, then one of the king's chaplains, was appointed architect of the various buildings which Edward's taste for magnificent display had projected. In one year three hundred and sixty were impressed to be employed at the king's wages. Some of them having secretly left Windsor to engage in other employments for greater wages, writs were issued for their committal to prison, and to prohibit all persons from engaging them under severe penalties. Such were the modes in which the freedom of industry was violated, before the principles of commercial intercourse were fairly established. Had workmen been at liberty to engage with whom they pleased there would have been no want of workmen for the completion of Windsor Castle, or any other public or private undertaking. The capital to be applied to the payment of wages, and the workmen seeking the capital, would have been equally balanced. Impressments of various artificers appear to have gone on for the same object, till the year 1373; after which there are no records of more commissions being issued. It is probable, therefore, that this immense work was completed, as far as Edward III. had contemplated, in about seventeen years from its commencement. Before it had been begun, Edward had founded the Order of the Garter; and during its progress, and after its completion, the festivals of this institution were celebrated at Windsor with every pomp of regal state. Knights-strangers were several times invited from all parts of the world, with letters of safe-conduct to pass and repass the realm; and one of these festivals is particularly described by the chroniclers as exceeding all others in splendor, which was given in honor of John, King of France, who was then a prisoner at Windsor. John, who appears to have been a shrewd observer, is recorded to have said, that he never knew such royal shows and feastings, without some after-reckoning for gold and silver.

Edward III. erected at Windsor a chapel dedicated to St. George, for the especial service of the Order of the Garter; but the present beautiful chapel is of later date. It was begun by Edward IV., who found it necessary to take down the original fabric, on account of its decayed state. The

work was not completed till the beginning of the reign of Henry VIII. So beautiful a monument of architectural skill could not have been hurried forward as the ruder buildings of the Castle were.

With the exception of occasional high pageantries on the festival of St. George, Windsor Castle does not appear to have been the scene of many public solemnities after the reign of its chivalrous founder. Richard II., however, heard here the appeal of high treason brought by the Duke of Lancaster against the Duke of Norfolk. But it was often the favorite country residence of the English kings; several of whom, particularly Henry VII., continued to make various additions and improvements. There is a curious poem by the Earl of Surrey, who was confined in the Castle for violating the canons of the church, by eating flesh in Lent, which presents the best picture we have of the kind of life which the accomplished gallants of the English court led in the country palaces, at a period when refinement had not taken away the relish for simple pleasures. He describes

> "The large green courts where we were wont to hove
> With eyes cast up into the maiden's tower;"

and he goes on to contrast his painful imprisonment with his former happiness amongst "the stately seats," "the ladies bright," "the dances short," "the palm-play," "the gravel-ground," "the secret groves," and "the wild forest,"

> "With cry of hounds, and merry blasts between
> Where we did chase the fearful hart of force."

There must have been somewhat of tediousness in such a life, for courtiers possessing fewer intellectual resources than Lord Surrey, before letters were generally cultivated, and the manifold enjoyments of taste awakened; and it is probable that the uninstructed high-born engaged in state intrigues, or stirred up useless wars, as much for the desire of excitement, as from less common motives.

The age of Elizabeth brought with it a love of letters, and here "the maiden-queen" occasionally retired from the cares of state, to dictate verses to her private secretary, or receive the flatteries of the accomplished Leicester. There is in the State Paper Office an original manuscript translation of Horace's Art of Poetry, composed by Elizabeth under such circumstances. This queen built the north terrace, and a gallery, still called after her name, and retaining the peculiar style of the architecture of her day. Some original orders for various repairs of the Castle show how little private accommodation was regarded in these days of public pageantry. The maids of honor requested to have the boarded partitions of their chambers carried up to the ceilings, as the pages could otherwise gaze in upon them, as they passed through the passages. There can be no doubt that an English palace of the 15th and 16th centuries had much fewer comforts than the most unpretending dwelling of a tradesman of the present day. The furniture was scanty and cumbrous; the linen was exceedingly scarce; of porcelain there was none; of glass scarcely any. The floors were covered with dirty rushes; the doors had crazy fastenings. Henry VIII. carried a smith about with him, with padlock and chain, to fasten "the door of his Highness' chamber;" and the cost and quality of the various materials for a new gown which the same king presented to Anne Boleyn,

are recorded with a minuteness and solemnity which the humblest servant maid would now scorn to bestow upon her finest holiday suit.

Windsor Castle was garrisoned by the parliament during the great civil war of Charles I.; and it was the last prison of that unfortunate monarch. Upon the restoration, Charles II. bestowed upon the Castle the doubtful honor of repairing it according to his foreign taste. We have no accurate records of what he destroyed; but the probability is, that in remodeling the interior he swept away some of the most valuable memorials that existed of the style of living amongst his predecessors. St. George's Hall was covered with paintings by Verrio, as were the ceilings of all the other state apartments; and truly nothing can be more disgusting than the nauseous flattery and bad taste of these productions. Most of the miserable improvements, as they were called, of this king, have been swept away from the exterior of the Castle; and, in many particulars, from the interior. St. George's Hall is once more a Gothic room, such as the "invincible knights of old" might have feasted in. Charles II., however, carried the terrace round the east and south fronts.

Queen Anne frequently resided at Windsor. In the reigns of the first and second Georges, it was neglected. George III. dwelt for many years in a white-washed house at the foot of his own palace; till at length he determined to occupy the old Castle. The apartments were little adapted to the notions of modern comfort, but the Royal Family continued to reside here till the death of the King. George IV. inhabited the Castle as it was, for a few months in 1823; but in 1824, its general decay and want of accommodation were brought under the notice of parliament. Commissioners were appointed for superintending the alterations, and a large sum was voted for the first outlay.

It does not fall within the object of this article to give any minute description of the interior of Windsor Castle. Round the east and south sides of the quadrangle runs a corridor, forming a magnificent gallery above, and connecting the various parts of the immense range of offices below. The principal floor of this corridor is superbly furnished with pictures and statues. The dining, drawing, and music rooms are of extraordinary dimensions, forming a fine suite whose grand oriel windows look out upon the eastern terrace. They are connected at the north-eastern angle, with the state apartments, some of which, particularly St. George's Hall, are used on occasions of high festival.

The state apartments are exhibited daily to the public. Several of them have been completely remodeled, under the parliamentary commission for the repairs of the Castle. The guard-room is now fitted up with great appropriateness: one of the most remarkable objects is a bust of Lord Nelson, having for its pedestal a portion of the mainmast of the Victory, his own ship, on the deck of which he gloriously fell. St. George's Hall has been entirely purified from the productions of the false taste of the time of Charles II. An adjoining chapel has been added to the original hall; so that it is now an oblong room of vast length, with a range of tall pointed-arch windows looking upon the square. Its walls, panneled with dark oak, are hung with the portraits of successive sovereigns of the Order of the Garter; and heraldic insignia of the ancient knights are borne on shields which surround the splendid room. Of the other new state apartments, the principal are the ball-room, glittering with burnished gold; and

the Waterloo gallery, in which are hung the fine series of portraits painted by Sir Thomas Lawrence, of the princes, warriors, and statesmen, who were instrumental in forwarding that great victory.

The remaining state apartments are pretty much in the same condition as they exhibited during the reign of George III. They present an assemblage of such objects as are usually shown in palaces and noble mansions. Here are state beds, whose faded hangings have been carefully preserved from periods when silk and velvet were the exclusive possessions of the high-born; chairs of ebony, whose weight compelled the sitter to remain in the place of the seat, and tables of silver, fine to look upon, but worthless to use. Here are also the gaudy ceilings of Verrio, where Charles II. and his Queen are humbly waited upon by Jupiter and Neptune; and the profligate who sold his country to Louis XIV. for a paltry bride, and degraded the English court by every vice, is represented as the pacificator of Europe, and the restorer of religion. But there are better things to be seen than these in the state apartments. There are many pictures of great beauty, and several of transcendant excellence. Here is the celebrated "Misers" of Quentin Matsys, painted, as it is said, by a blacksmith of Antwerp, as a proof of his pretensions to aspire to marry the daughter of a painter of the same place. The blacksmith, however, was no mean artist in other lines; for he is said to have executed the iron tomb of Edward IV. in St. George's Chapel—a most remarkable specimen of elaborate ingenuity. Here is the "Titian and Aretin," one of the finest specimens of the great master of the Venetian school; the "Death of Cleopatra," and the "Venus attired by the Graces," of Guido; the "Charles I. and the Duke of Hamiton," and "the Family of Charles I.," of Vandyck; and "the Silence," of Annibal Caracci. These are paintings, with many others that we cannot afford space to mention, which the best judges of art may come from the ends of Europe to gaze upon. Those who are captivated by gaudy colors, applied to the representation of meretricious charms, may gaze upon "the Beauties of the Court of Charles II."

The Round Tower is also exhibited to the public. There is nothing very remarkable in the apartments, except in the Armory, where there are some curious specimens of the cumbrous fire-arms that were carried by the infantry in the early days of gunpowder warfare, when matches held the place of flints, and the charge of powder was borne in little wooden boxes, hung about the shoulders. Here are two suits of mail, said to have belonged to John King of France, and David King of Scotland, who were prisoners in this tower. The legend is appropriate, but not trustworthy.

The object at Windsor which is most deserving the lingering gaze of the stranger, and which loses none of its charms after the acquaintance of years, is St. George's Chapel. The exquisite proportions, and the rich yet solemn ornaments of the interior of this unrivaled edifice, leave an effect upon the mind which cannot be described. The broad glare of day displays the admirable finishing of its various parts, as elaborate as the joinery work of a cabinet, and yet harmonizing in one massive and simple whole. The calm twilight does not abate the spendor of this building, while it adds to its solemnity; for then

"The storied window, richly dight,"

catches the last rays of the setting sun; and as the cathedral chant steals

over the senses, the genius of the place compels the coldest heart to be devout in a temple of such perfect beauty. The richly decorated roof, supported by clustered columns, which spread on each side like the branches of a grove—the painted windows, representing in glowing colors some remarkable subjects of Christian history—the banners and escutcheons of the Knights of the Garter, glittering in the choir above their carved stalls, within which are affixed the armorial bearings of each Knight Companion from the time of the founder, Edward III.—all these objects are full of interest, and powerfully seize upon the imagination. Though this building and its decorations are preëminently beautiful, it is perfectly of a devotional character; and if anything were wanting to carry the thoughts above the earth, the observer must feel the vanity of all greatness and all honor, save the true and imperishable glory of virtue, when he here treads upon the graves of Edward IV. and Henry VI., of Henry VIII. and Charles I., and remembers that, distinguished as these monarchs were for contrasts of good and evil fortune, the pride and the humility, the triumphs and the degradations, of the one and the other, are blended in the grave—

"Together meet th' oppressor and th' oppress'd"—

and they are now judged, as they wanted or exhibited those Christian excellencies which the humblest amongst us may attain. We shall not attempt any description of the various parts of this chapel.

There are not many monuments possessing merit as works of art in St. George's Chapel. The cenotaph of Princess Charlotte is a performance of some excellence in particular figures; but as a whole it is in vicious taste. Edward IV. is buried here, beneath the steel tomb of Quentin Matsys; his unhappy rival Henry VI. lies in the opposite aisle, under a plain marble stone. Henry VIII. and Charles I. are entombed under the choir, without any memorial. At the foot of the altar is a subterranean passage communicating with the tomb-house, in which is the cemetery of the present race of kings.

The Round Tower, the ancient Keep of the Castle, is famous in the romance of history as the prison for many years of King James I. of Scotland, a true as well as a royal poet. The youth of this prince was passed in the Castle of St. Andrews, under the care of one of the finest spirits of that age, Bishop Henry Wardlaw, who founded the oldest university of Scotland. In 1405, when James had reached the age of fourteen, being then, by the death of his elder brother, David, Duke of Rothsay, the heir to the crown, it was determined to send him for greater security to the court of France. On his voyage, however, although a truce then subsisted between England and Scotland, he was seized near Flamborough Head by the ships of Henry IV., and carried with all his attendants to London. He remained in captivity during all the reign of that king, and also throughout that of his successor, although he had become King of Scotland by the death of his father, Robert III., who died of a broken heart, about a year after thus losing his only remaining son. During this prolonged detention, James, although treated with the show of respect appertaining to his rank, appears to have been, for a considerable time at least, held in strict durance. He was confined for two years in the Tower of London; but Windsor, according to tradition, was the place in which his years of captivity were mostly spent. This at least is the spot upon which his love and

genius have left their immortal light. It was while imprisoned here that, looking from his high window in the keep, he first beheld walking in the garden below, the Lady Jane Beaufort, granddaughter of John of Gaunt, and consequently a near relation of the royal house. This lady, who was a person of distinguished beauty, made an immediate impression on the heart of the captive prince. He has himself related the story of his passion in his poem called the *King's Quhair* (that is, the King's Quire or Book,) which he appears to have composed after he returned to his native country, and which is not only the eldest production of the Scottish muse, but by far the noblest poetical work of which our language has to boast for at least a century and a half after the death of Chaucer. In melody of verse, indeed, tenderness of sentiment, and picturesque description, it betokens throughout the worthy pupil and follower of that great master.

James was at last liberated, in the beginning of the year 1424, by Henry VI., on condition of his subjects undertaking to pay a sum of £40,000, which, oddly enough, was not demanded as his ransom, but as compensation for the expense of his maintenance, at the rate of £2,000 a year for the nineteen years of his detention. Before leaving England, he married the lady who had won his heart before he could offer her his hand, and she accompanied him to Scotland to share his throne. The latter portion of his life was almost as strangely variegated as his earlier years had been by the contrasting colors of romance. The light burned brightly for a short space, and was then quenched in blood. "He found," says Washington Irving, who has devoted a paper in his Sketch Book to this interesting royal bard, "his kingdom in great confusion, the feudal chieftains having taken advantage of the troubles and irregularities of a long interregnum to strengthen themselves in their possessions, and place themselves above the power of the laws. James sought to found the basis of his power in the affections of his people. He attached the lower orders to him by the reformation of abuses, the temperate and equable administration of justice, the encouragement of the arts of peace, and the promotion of every thing that could diffuse comfort, competency, and innocent enjoyment through the humblest ranks of society. He mingled occasionally among the common people, in disguise; visited their fire-sides; entered into their cares, their pursuits, and their amusements; informed himself of the mechanical arts, and how they could best be patronized and improved; and was thus an all-pervading spirit, watching with a benevolent eye over the meanest of his subjects. Having in this generous manner made himself strong in the hearts of the common people, he turned himself to curb the power of the factious nobility; to strip them of those dangerous immunities which they had usurped; to punish such as had been guilty of flagrant offences; and to bring the whole into proper obedience to the crown. For some time they bore this with outward submission, but secret impatience and brooding resentment. A conspiracy was at length formed against his life, at the head of which was his own uncle, Robert Stewart, Earl of Athol, who being too old himself for the perpetration of the deed of blood, instigated his grandson, Sir Robert Stewart, Sir Robert Graham, and others of less note, to commit the deed. They broke into his bedchamber, at the Dominican Convent, near Perth, where he was residing, and barbarously murdered him by oft-repeated wounds. His faithful queen, rushing to throw her tender body between him and the sword, was twice wounded in

the ineffectual attempt to shield him from the assassin, and it was not until she had been forcibly torn from his person, that the murder was accomplished.

"It was the recollection of this romantic tale of former times, and of the golden little poem which had its birth-place in this tower, that made me visit the old pile with more than common interest. The suit of armor hanging up in the hall, richly gilt and embellished, as if to figure in the tournay, brought the image of the gallant and romantic prince vividly before my imagination. I paced the deserted chambers where he had composed his poem; I leaned upon the window, and endeavored to persuade myself it was the very one where he had been visited by his vision; I looked out upon the spot where he had first seen the Lady Jane. It was the same genial and joyous month; the birds were again vying with each other in strains of liquid melody; every thing was bursting into vegetation, and budding forth the tender promise of the year. Time, which delights to obliterate the sterner memorials of human pride seems to have passed lightly over this little scene of poetry and love, and to have withheld his desolating hand. Several centuries have gone by, yet the garden still flourishes at the foot of the tower. It occupies what was once the moat of the keep; and though some parts have been separated by dividing walls, yet others have still their arbors and shaded walks, as in the days of James, and the whole is sheltered, blooming, and retired. There is a charm about a spot that has been printed by the footsteps of departed beauty, and consecrated by the inspirations of the poet, which is heightened, rather than impaired, by the lapse of ages. It is, indeed, the gift of poetry to hallow every place in which it moves; to breathe round nature an odor more exquisite than the perfume of the rose, and to shed over it a tint more magical than the blush of morning.

"Others may dwell on the illustrious deeds of James, as a warrior and a legislator; but I have delighted to view him merely as the companion of his fellow men, the benefactor of the human heart, stooping from his high estate to sow the sweet flowers of poetry and song in the paths of common life. He was the first to cultivate the vigorous and hardy plant of Scottish genius, which has since become so prolific of the most wholesome and highly flavored fruit. He carried with him into the sterner regions of the north, all the fertilizing arts of southern refinement. He did everything in his power to win his countrymen to the gay, the elegant, and gentle arts, which soften and refine the character of a people, and wreath a grace round the loftiness of a proud and warlike spirit. He wrote many poems, which, unfortunately for the fulness of his fame, are now lost to the world; one which is still preserved, called "Christ's Kirk of the Green," shows how diligently he had made himself acquainted with the rustic sports and pastimes, which constitute such a source of kind and solial feeling among the Scottish peasantry; and with what simple and happy humor he could enter into their enjoyments. He contributed greatly to improve the national music; and traces of his tender sentiment, and elegant taste, are said to exist in those witching airs still piped among the wild mountains and lonely glens of Scotland. He has thus connected his image with whatever is most gracious and endearing in the national character; he has embalmed his memory in song, and floated his name to after ages in the rich stream of Scottish melody. The recollection of these things was kindling at my heart, as I paced the silent scene of his imprisonment. I have visited Van

cluse with as much enthusiasm as a pilgrim would visit the shrine at Loretto; but I have never felt more poetical devotion than when contemplating the old tower and the little garden at Windsor, and musing over the romantic loves of the Lady Jane and the Royal Poet of Scotland."

EMINENT MECHANICS AND THEIR INVENTIONS.

IT may not be uninteresting to our readers, nor aside from the plan of this work, to give some brief sketches of the lives of Eminent Mechanics, together with an account of their several inventions, and the important changes which have been wrought in the labors and occupations of men. We begin these notices with a sketch of that eminent individual,

SIR RICHARD ARKWRIGHT, the Founder of the Cotton Manufacture, born on the 23d of December, 1732, at Preston, Lancashire, England. He was the youngest of thirteen children. His parents were poor, and his education extremely limited. For nearly three years, he folowed the profession of a barber. His first effort in mechanics was an attempt to discover the perpetual motion. Failing in this project, in 1767 he became acquainted with a clock maker, in whose employment he continued for some time.

Previously to the year 1760, the cotton manufacture of England was extremely simple and limited. The spinning was effected by the female part of the numerous cottagers, dispersed through the country, while the families were employed in weaving the yarn or thread into cloth. This operation was slow, and the quantity manufactured did not at this time equal the demand for home consumption, and for that which arose from abroad. To meet the exigency which had arisen, Arkwright, in 1767, seriously entered upon some invention for facilitating the spinning of cotton. Leaving Lancashire he removed to Nottingham, where, in 1769, he obtained his first patent for the *spinning frame*, a machine, in other words, for spinning that material with rollers. This was an original idea, suggested to him by seeing a red-hot iron bar elongated by being made to pass through two rollers. With this suggestion he constructed his frame. It consisted of two pairs of rollers turned by machinery. The lower roller of each pair was furrowed or fluted longitudinally, and the upper one was covered with leather, by which means the two had a sufficient hold upon the cotton passing between them. The cotton, when passing through the first pair of rollers, had the form of a thick but very soft cord, which is slightly pressed; but no sooner had the cotton carding or *roving*, as it is technically called, began to pass through the first pair of rollers, than it was received by the second pair, which were made to revolve with twice, thrice, or ten times the velocity of the first pair, according as was desired, so that the cotton was necessarily drawn out twice, thrice, or ten times smaller than when delivered from the first rollers.

The first mill erected for spinning cotton after this method, was at Nottingham, and was worked by horse power; but in 1771, another mill was built at Cromford, in Derbyshire, to which motion was given by water, from which circumstance the machine was called the *water frame*, and the thread received the name of *water twist*.

By the year 1775, Arkwright had made important additional improvements in the processes of carding, roving and spinning, for which he took out a fresh patent. After a lapse of five years from the erection of his works at Cromford, the tide of fortune set in, and he and his associates, notwithstanding that his patent had been canceled by law, began to receive a large income from his establishments. In 1786, Mr. Arkwright received the honor of knighthood. For many years he labored under a severe asthma, yet to the latest period of his life he gave unremitted attention to his business. He died at Cromford on the 3d of August, 1792, in the sixtieth year of his age, leaving behind him a fortune of nearly half a million. In the Encyclopedia Britannica, it is well and justly remarked of him: "No man better deserved his good fortune, or has a stronger claim on the respect and gratitude of posterity. His inventions have opened a new and boundless field of employment; and while they have conferred infinitely more real benefit on his native country than she could have derived from the absolute dominion of Mexico or Peru, they have been *universally* productive of wealth and enjoyments."

Thus did a single individual, and he in the outset a poor barber, become the founder of a new branch of national industry, which has wrought wonders, not only in England, but throughout the civilized world. Previous to Arkwright's inventions, the number of persons employed in the cotton manufacture, has been estimated at 30,000; that number is now probably not much less than one million, and now, by the use of machinery, it is stated that one man and four children will spin as much yarn as 600 women and girls could spin seventy years ago.

JAMES HARGRAVES, the inventor of the spinning jenny, like Arkwright, was an Englishman. He was a weaver of Lancashire, and the inventor of a machine called the *spinning jenny*, and which owed its title, as tradition affirms, to a fair damsel, by the name of *Jane*.

Hargraves is said to have received the original idea of his machine from observing a one-thread wheel accidentally overturned upon the floor, when both the wheel and the spindle continued to revolve. The spindle was thus thrown from a horizontal to an upright position; and the thought struck him, that if a number of spindles were placed upright, and side by side, several threads might be spun at once. Upon this, he set himself to work; and, at length, constructed a machine by which, instead of one spindle and one thread at a time, a single person could spin eight threads at once, with the same facility as one. The date of this invention was some years before Arkwright obtained the patent for his water-frame. It was subsequently so improved that a little girl could work from eighty to one hundred and twenty spindles. But the jenny was applicable only to the spinning of cotton for weft, being unable to give to the yarn that degree of fineness and hardness, which is required in the warp. A linen warp was still obliged to be used, and no goods could yet be made all of cotton. Another invention was therefore wanting to complete the manufacture of cotton cloth. This was effected by Arkwright's water-frame, already mentioned.

After the invention of Arkwright's machinery, Hargraves' spinning jennies were still used, the former being the best adapted for spinning twist, the latter producing a softer thread, better fitted for the weft. The two inventions did not interfere with each other; but by neither of these admirable machines could the finer kind of yarn be made, since a thread of great tenuity had not strength sufficient to bear the water-frame. Another invention, which we shall soon notice, supplied this deficiency.

For a time, Hargraves kept his invention a secret, but its value at length becoming known, an outcry was raised against it, that it would throw multitudes out of employment, and a mob broke into his house, and destroyed his jenny. He fled to Nottingham in 1768, where he entered into partnership with a Mr. Thomas James, by whom conjointly, jennies were made and put into operation. In 1770, Hargraves obtained a patent for his jenny, but he seems to have received but little if any income from his invention. The spinning business, however, the partners continued until the death of Mr. Hargraves, which occurred in 1778. His widow received £400, from the surviving partner, for his share of the business.

Samuel Crompton, the inventor of the mule-jenny, was born on the 3d of December, 1753, at Firwood, in Lancashire, where his father held a farm of small extent; and, according to the custom of those days, employed a portion of his time in carding, spinning, and weaving. His father died while Samuel was very young. His mother was a pious woman, who brought up her son in the love and practice of the virtues which adorned her character.

When about sixteen years of age, young Crompton learned to spin upon a jenny of Hargraves' make, and occasionally wove what he had spun. Dissatisfied, however, with the quality of his yarn, he began to consider how it might be improved, and was thus naturally led to the construction of his novel spinning machine. He commenced his enterprise at the age of twenty-one years, and at the end of five years completed a machine, which, from its combining the principles of Arkwright's water-frame and Hargraves' jenny, was named the *mule*, or *mule-jenny*. Like the former it had rollers, and like the latter, spindles, to give the twist. This excellent machine has superseded the jenny, and to a considerable extent the water-frame, having been subsequently much improved, and worked by steam. Some of these machines, now at work in Manchester, turn from 1,100 to 2,200 spindles. Mules have even been made, called *self-acting mules*, that perform their work without the aid of a single spinner, and the only manual labor employed in them is that of children, who join the broken threads. Mule-spinning is the least laborious, owing to the slowness with which the machinery moves in making fine threads.

Edmund Cartwright, the inventor of the power-loom, was born in the year 1743, in Nottinghamshire. At the usual age he entered the University College, Oxford, from whence he was subsequently elected a Fellow of Magdalen College. For the first forty years of his life, he gave no attention to the subject of mechanics; but at length a circumstance occurred, which led him to turn his attention to Arkwright's spinning machinery. The result of his deliberations on the subject, was the invention of his celebrated loom, which being worked by mechanical power, instead of the hand, was called the *power-loom;* and although his machine was imperfect, it was the parent of others, which are improvements, and which are now in

use. Cartwright's invention met with serious opposition for a time; one of his establishments containing 500 looms, built at Manchester, being destroyed, in 1790, by an exasperated mob. His invention, however, at the time of his death, which occurred in 1823, had surmounted all opposition, and it is stated that his looms had then so greatly increased as to perform the labor of 200,000 men.

His next invention was to *comb wool* by machinery, which caused still greater dissatisfaction among the working classes than even his power-looms. A petition, signed by the great body of wool-combers, was preferred to Parliament to suppress the obnoxious machines, but in this they failed.

We have already stated that great improvements have been made upon Cartwright's power-loom. The loom now generally employed in England, is called *Horrock's loom*. It is constructed entirely of iron, and is a neat, compact, simple machine, moving with great rapidity, and occupying so little space that several hundred may be worked in a single room of a large factory. It appears that the power-loom has several advantages over the hand-loom for some fabrics, not only producing them with greater expedition and at a cheaper rate, but of better quality, the regularity of the machinery being commanded with more certainty than that of human force. But it is chiefly in making cottons and other strong fabrics, that they can be used; fine muslins are yet mostly made by hand-looms. At present, there are in England and Scotland above 100,000 power-looms. And it is supposed that there are an equal number, if not greater, of cotton hand-looms. The improvements in relation to the power-loom, and other machinery employed in the manufacture of cotton, which have been introduced into various cotton establishments in the United States, some in one and some in another, we have not space to describe, though it is believed they are many.

ELI WHITNEY, the inventor of the cotton-gin, was born in Westborough, Worcester county, Massachusetts, December 8th, 1765. His parents were highly respectable and industrious. His father was a farmer.

Young Whitney early manifested indications of great mechanical genius, and at the age of fifteen or sixteen years, he suggested to his father the project of making nails, which at the time of the revolutionary war were in great demand, and bore a high price. His father, acceding to his plan, procured him a few tools, and permitted him to set up a manufactory. He entered upon his project with great spirit, and though he wrought alone, his enterprize was successful, and to his father profitable.

At the age of nineteen, he conceived the idea of obtaining a liberal education, and although many difficulties were thrown in his way, he surmounted them all, and entered Yale College in 1789. On taking his degree in the autumn of 1792, he engaged as private tutor, in the family of a Mr. B. of Georgia. On his arrival, however, he was informed that that gentleman had employed another person; upon which he took up his residence, for a time, in the family of a Mrs. Green, where he employed himself in making a kind of frame called tambour.

"While here employed, the family of his hostess were visited one day by a party of gentlemen, consisting principally of officers who had served under the general in the revolutionary army. The conversation turning upon the state of agriculture, it was regretted that there were no means of cleaning the seed from the green seed cotton, which might otherwise be profitably raised on lands unsuited for rice. But, until ingenuity could

devise some machine which would greatly facilitate the process of cleaning, it *was vain to think of raising cotton for market. Separating one pound of the clean staple from the seed was a day's work* for a woman; but the time usually devoted to the picking of the cotton was the evening, after the labor of the field was over. Then the slaves, men, women and children, were collected in circles with one whose duty it was to rouse the dozing and quicken the indolent. While the company were engaged in this conversation, 'Gentlemen,' said Mrs. Greene, 'apply to my young friend, Mr. Whitney; he can make anything;' at the same time showing them the tambour frame and several other articles which he had made. She introduced the gentlemen to Whitney himself, extolling his genius, and commending him to their notice and friendship. He modestly disclaimed all pretensions to mechanical genius, and on their naming the object, replied that he had never seen cotton seed in his life. Mrs. G. said to one of the gentlemen, 'I have accomplished my aim—Mr. Whitney is a very deserving young man, and to bring him into notice was my object. The interest which our friends now feel for him, will, I hope, lead to his getting some employment to enable him to prosecute the study of the law.'"

Whitney at once entered upon the task of inventing and constructing the cotton-gin, which has added so much to his fame, and which has produced an entire revolution in the history of the cotton manufacture in the United States, and indeed of the world.

It is not necessary in this place to enter into a description of this important machine. Nor will it consist with our limits to give an account of the troubles and perplexities which this eminent man encountered—the numerous lawsuits to which he was subjected—the vast expense which he incurred in efforts to establish his legitimate claims. Few other men, it is believed, could have sustained such excessive fatigue and privations, or could have borne up under such complicated difficulties and vexations, as were his lot. At times, his health was seriously affected, and even his life jeopardized. Before the final decision in favor of his patent was had, the term of his right had nearly expired. And it is stated that "more than sixty suits had been instituted in Georgia, before a single decision on the merits of his case was obtained." A gentleman who sometimes acted as his legal adviser observes, that "in all his experience in the thorny profession of the law, he has never seen a case of such perseverance, under such persecution; nor," he adds, "do I believe that I ever knew any other man, who would have met them with equal coolness and firmness, or who would finally have obtained even the partial success which he had. He always called on me in New York, on his way south, when going to attend his endless trials, and to meet the mischievous contrivances of men who seemed inexhaustible in their resources of evil. Even now, after thirty years, my head aches to recollect his narratives of new trials, fresh disappointments and accumulated wrongs."

In 1798, impressed with the uncertainty of all his hopes founded upon the cotton-gin, he entered upon a new enterprize—the manufacture of arms for the United States. With this object in view, he purchased a site for his works, at the foot of a celebrated precipice, called East Rock, near the city of New Haven. Here he erected a large building, and commenced operations with the greatest zeal. Most of his machinery was of his own invention, and here he greatly improved the art of manufacturing arms.

In his contracts with the general government, and with some of the States, he was successful, so that he accumulated a handsome fortune.

The death of Mr. Whitney occurred, after a protracted period of great suffering, induced by a formidable and tedious disease, under which he long labored, on the 8th of January, 1825. He left to his family a competence; but had he had his just deserts, his fortune would doubtless have compared with the few millionaires who exist in the land. Years since, it was the language of Judge Johnson, (and if then true, how much more true now!) "if we should assert that the benefits of this invention exceed 100,000,000 of dollars, we can prove the assertion by correct calculation."

We conclude this brief sketch of this eminent man by presenting to our readers the following remarks of a distinguished scholar, while on a visit to the cemetery of New Haven, where his ashes repose. After alluding to that distinguished individual, Gen. Humphreys, who first introduced fine wool sheep into the United States, he observes: "But Whitney's monument perpetuates the name of a still greater public benefactor. His simple name would have been epitaph enough, with the addition perhaps of 'the inventor of the cotton-gin.' How few of the inscriptions in Westminster Abbey could be compared with that! Who is there that, like him, has given his country a machine—the product of his own skill—which has furnished a large part of its population, 'from childhood to old age, with a lucrative employment; by which their debts have been paid off; their capitals increased; *their lands trebled in value?*' It may be said, indeed, that this belongs to the physical and material nature of man, and ought not to be compared with what has been done by the intellectual benefactors of mankind; the Miltons, the Shakspeares, and the Newtons. But is it quite certain that anything short of the highest intellectual vigor—the brightest genius—is sufficient to invent one of these extraordinary machines? Place a common mind before an oration of Cicero and a steam-engine, and it will despair of rivaling the latter as much as the former; and we can by no means be persuaded, that a peculiar aptitude for combining and applying the simple powers of mechanics, so as to produce these marvelous operations, does not imply a vivacity of the imagination, not inferior to that of the poet and the orator." And in concluding he asks,—"Has not he who has trebled the value of land, created capital, rescued the population from the necessity of emigrating, and covered a waste with plenty—has not he done a service to the country of the highest moral and intellectual character? Prosperity is the parent of civilization, and all its refinements; and every family of prosperous citizens added to the community, is an addition of so many thinking, inventing, moral, and immortal natures."

His tomb is after the model of that of Scipio at Rome. It is simple and beautiful, and promises to endure for years. It bears the following inscription:

ELI WHITNEY,
The inventor of the Cotton Gin.
Of useful science and arts, the efficient patron and improver.
In the social relations of life, a model of excellence.
While private affection weeps at his tomb, his country honors his memory.
Born Dec. 8, 1765.—Died Jan. 8, 1825.

SAMUEL SLATER, the father of the American Cotton Manufactures, was born in Belper, in Derbyshire, England, June 9th, 1768. His father was

an independent farmer, who gave to his son the advantages of an ordinary English education, and then indentured him to the cotton spinning business with Jedediah Strutt, a partner of the celebrated Arkwright.

Having served his indenture with Mr. Strutt, Slater embarked for America in the year 1789, and, after a tedious passage of sixty-six days, arrived at New York. Previous to his arrival, every attempt to spin cotton warp or twist, or any other yarn, by water power, had totally failed, and efforts for the importation of the patent machinery of England, had proved unsuccessful. Some interest had been excited in Philadelphia, New York, Providence, and other places; but it was found impossible to compete with the superior machinery of Derbyshire. Learning that a Mr. Brown, in Providence, was in want of a manager, Slater tendered him his services, and was successful in arrangements to commence cotton spinning at Pawtucket, under the firm of Almy, Brown & Slater. In 1790, Mr. Slater put in operation his first machinery in a clothier's shop, at the western end of Pawtucket bridge. Early in 1793, the firm built a small factory in Pawtucket, which is now called the "old mill," where they slowly added to their machinery, as the sales of yarn increased, but it was only in 1799 that the sales of yarn became sufficiently promising to induce another company to erect the second cotton mill establishment in Rhode Island, and to encourage the firm to which Mr. Slater belonged to make any considerable additions to their machinery in the "old mill."

From this time, greater attention was paid to the cotton manufacture, and now, in every part of New England, and various other portions of the country, large establishments have gone into operation, and thousands of bales of cotton are annually used, and millions of yards of various cotton fabrics manufactured.

Mr. Slater's death occurred in 1835. He left a character without a blemish, and will long be remembered as one of our greatest public benefactors. Let it be remembered, that when he left England, he took no drawings of any sort, but trusted solely to the powers of his memory to enable him to construct the complicated machinery. Many difficulties, indeed, did he encounter, for at that period of our history there were few men of much mechanical genius, or rather there had been no opportunity to call it forth. But the genius of Slater was adequate for all unforeseen difficulties which arose. One only can be mentioned. No good card-leather could be procured, and even the punctures for the insertion of the teeth were to be made by hand. The consequence was that the punctures were too large, and the teeth fell back from their proper place. But it occurred to Slater, by means of a piece of grindstone, to beat the teeth to a proper crook, which done, the machinery worked to perfection. Such was his practical common sense, which, united to persevering industry, has led to the manufacture of one of our raw materials, the value and importance of which can scarcely be estimated.

James Watt.—"The steam engine," says Dr. Bigelow, "may be justly considered as the greatest triumph which has been achieved by modern genius and perseverance. The following are some of the most interesting facts in its history.

"The ancient Greeks and Romans appear to have been acquainted with the power of steam to produce motion, and invented the eolipile, which was a close vessel containing water, and which gave out a forcible current of

steam whenever the water was heated. The force of this current was used by Hero to produce a revolving motion.

"The power of confined steam, acting by its pressure, was discovered by the Marquis of Worcester, and an account of its effect published by him in 1663. He produced a steam-power sufficient to burst a cannon, and constructed a machine capable of raising water to the height of forty feet. He has not, however, left any drawings or particular description of his machine.

"In 1698, a patent was granted to Thomas Savery, for a method of raising water by steam. This apparatus consisted of a boiler, a separate steam vessel, and pipes commanded by valves. The steam from the boiler was first admitted, so as to fill the steam vessel. It was then condensed, and the steam-vessel filled with water, which rose by the atmospheric pressure from the well or mine. The steam was then reädmitted, and the water in the vessel was driven upward to the top of the pipes, and discharged.

"About the year 1705, Thomas Newcomen constructed a working steam-engine, which has since been called the *atmospheric* engine. It contained a cylinder and piston, and an alternating beam, which was applied to raise water by working a pump. The steam was condensed in the cylinder itself, and the valves were moved by the hand, until an attendant contrived to make the machine move its own valves, by attaching strings to the working-beam."

For half a century from this time, no essential improvements were made in the application of steam as an agent in mechanics. The engine itself, however, was more extensively employed notwithstanding its defects; but in the beginning of the year 1769, a new spring to the energies of this machine was given by the discoveries and inventions of James Watt, which more than doubled the power which it had formerly possessed.

This eminent mechanic was born at Greenock, on the 19th of January, 1736. His father was a merchant, and also one of the magistrates of that town. He early evinced a great love for mechanical science. At the age of eighteen, he was apprenticed to a mathematical instrument maker, in London; but the state of his health forced him, within about a year, to return to Scotland. In 1757, he was appointed mathematical instrument maker to the college at Glasgow. Here he enjoyed the friendship and intimacy of the celebrated Dr. Black, the discoverer of the principle of latent heat, and Mr. (afterwards Dr.) John Robinson, so well known by his treatises on mechanical science. In the winter of 1763–4, a small model of Newcomen's engine was sent to him to be repaired. The examination of this model discovered to Watt its various defects, and excited him to the attempt of remedying them. The result of his persevering efforts was numerous and important improvements, but those of greatest value were the following: 1. He introduced the separate condenser. 2. He applied the double action of steam, by closing the top of the cylinder and admitting the steam alternately at each end. 3. He converted to use the expansive power of steam, by cutting off the current before the end of the stroke. Mr. Watt also invented the principle of parallel motion, and applied the governor, to regulate the supply of steam.

The death of this eminent man occurred on the 25th of August, 1819 in the eighty-fourth year of his age.

Oliver Evans was born in Newport, Delaware, about the year 1756. Little is preserved respecting his early history. At the age of fourteen he was apprenticed to a wagon maker. At twenty-three he engaged in card-teeth making, and about this time invented a machine which would manufacture three thousand a minute; but he was defrauded of a great share of the benefits derived from it. To Mr. Evans is accorded the merit of having constructed the first high-pressure or non-condensing steam engine. This he accomplished in 1802. And this sort of engine is the only one that can be used on railways, and is now in universal use on the Mississippi, and other rapid rivers where great power is used.

"In respect to this kind of engine it may be observed," in the language of Dr. Comstock, "the piston is pressed up and down by the force of the steam alone, and without the assistance of a vacuum. The additional power of steam required for this purpose is very considerable, being equal to the entire pressure of the atmosphere on the surface of the piston. This pressure on a piston of thirteen inches in diameter amounts to nearly two tons. In the low pressure engine, in which a vacuum is formed on one side of the piston, the force of steam required to move it is diminished by the amount of atmospheric pressure equal to the size of the piston. But in the high pressure engine, the piston works in both directions against the weight of the atmosphere, and hence requires an additional power of steam equal to the weight of the atmosphere on the piston. These engines are however much more simple and cheap than the low pressure, since the condenser, cold water pump, air pump, and cold water cistern, are dispensed with; nothing more being necessary than the boiler, cylinder, piston and valves. Hence, for railroads, and all locomotive purposes, the high pressure engines are and must be used. With respect to engines used on board of steamboats, the low pressure are universally employed by the English, and it is well known that few accidents from the bursting of machinery have ever happened in that country. In most of their boats two engines are used, each of which turns a crank, and thus the necessity of a fly-wheel is avoided. In this country high pressure engines are in common use for boats, though they are not universally employed. In some, two engines are worked, and the fly-wheel dispensed with, as in England. The great number of accidents which have happened in this country, whether on board of low or high pressure boats, must be attributed in a great measure to the eagerness of our countrymen to be transported from place to place with the greatest possible speed, all thoughts of safety being absorbed in this passion. It is, however, true, from the very nature of the case, that there is far greater danger from the bursting of the machinery in the high than in the low pressure engines, since not only the cylinder, but the boiler and steam pipes must sustain a much higher pressure in order to gain the same speed, other circumstances being equal."

It has also been claimed for Mr. Evans, that he constructed a carriage propelled by steam, named the *Oructor Amphibolis*, which was the first application in America of steam power to the propelling of land carriages; in other words, the first *American locomotive*. This was in 1804, or '5.

There is reason, however, to believe that, although the steam carriage erected by Mr. Evans was, so far as he was concerned, an original invention, he was not the first who erected such a machine, and of course the merit of priority does not belong to him. This it is believed, will be suffi

ciently evident by the following statement of a respectable clergyman, who has been a resident of Hartford, Conn., for more than fifty years—Rev. Gurdon Robbins. He says:

"About the year 1798, Mr. Apollos Kingsley, an eminent artist of this city, (Hartford,) remarked to a friend that the day was not far distant when horse power would be dispensed with for public conveyances, and steam power be substituted in its stead. The declaration of Mr. Kingsley being communicated by his friend to a circle of gentlemen, the latter enjoyed a season of merriment at the visionary scheme of their fellow citizen, whose sanity on account of it was called in question. The friend of Mr. Kingsley, however, defended the soundness of his opinion; and, in proof of it, proceeded to state that he had been admitted in the private workshop of the former, where he had actually seen the *model of a locomotive, and which in his presence was propelled by the power of steam along a plank*, one end of which rested on the floor, and the other against the wall, forming an inclined plane.

"Mr. Kingsley was suddenly removed by death in the midst of his successful experiments. After his death, the writer of this statement saw, and himself examined in his private workshop, which occupied a part of his dwelling house, a *large locomotive designed to run upon a smooth turnpike road.* The writer has no knowledge that Mr. Kingsley had then thought of railroads, but he has no doubt that had he lived to perfect his plans, he would have been another Fulton. The statement was confirmed by the late Theodore Dwight, Esq., who was a friend of Mr. Kingsley, and furnished him with pecuniary means to carry forward his experiments. By the sudden death of Mr. Kingsley, Mr. Dwight became a sufferer to a considerable amount."

A statement similar to the foregoing, certified by the late T. Dwight, Esq., was published by Mr. Robbins in the *Connecticut Courant*, a few years since, and which, at the request of the "Historical Society of Connecticut," was placed among their archives, where it still remains. The death of Mr. Kingsley occurred in 1802. He did not live to finish his larger locomotive. The model he did finish, and put it in actual operation. Hence, there is sufficient ground to claim that the *first locomotive ever in actual operation was the invention of a Connecticut man, and that it was first put in operation in the city of Hartford.*

We add, in respect to Mr. Evans, that his death occurred at Philadelphia, on the 21st of April, 1819, and was occasioned by an inflammation of the lungs.

JOHN FITCH.—It does not comport with the character of our work to enter into the discussion of the question, "Who invented the first steamboat?" It may be admitted that the plan of applying steam power to the propulsion of boats was conceived by several, in various countries, in the sixteenth century, but the honor of the first decidedly successful experiment of this kind belongs, it is believed, to *John Fitch, a native of Connecticut.* Of the time and place of his birth, he says:

"The 21st of January, 1743, old style, was the fatal time of bringing me into existence. The house I was born in was upon the line between Hartford and Windsor, (Connecticut.) It was said I was born in Windsor; but from the singularity of my make, shape, disposition and fortune in the world, I am inclined to the belief that it was the design of Heaven that I

should be born on the *very line*, and not in any township whatever; yet am happy also that it did not happen between two States, that I can say I was born somewhere."

The father of Fitch was a farmer, in good circumstances, but who seems to have manifested no great regard to either the education or comfort of his children. When about 17 years of age, young Fitch expressed a desire to go to sea, and having received the reluctant consent of his father, shipped on board a sloop bound to New York; whence, not liking his employer, he left, and went on board a sloop bound to Providence. These short experiments ended his sea-faring life. We next find him engaged in clock making, which business he seems to have pursued with varied success for several years. Subsequently, on the breaking out of the revolution, he espoused the popular cause; and, for a time, usefully engaged himself in repairing arms for the continental army. Sometime after, he returned from the west, where he had sojourned, and settled in one of the Atlantic States. At length, in the year 1785, he began to turn his attention to steam as applicable to the propulsion of carriages and vehicles. In 1788 he obtained a patent for the application of steam to navigating the waters of the States of New York, Pennsylvania, New Jersey, Delaware, &c. After encountering many obstacles, his steamboat was finished. The following description of it, which is from Fitch himself, taken from the Columbian (Philadelphia) Magazine, Vol. 1., for December, 1786, will convey some intelligible notice of it:

"The cylinder is to be horizontal, and the steam to work with equal force at each end. The mode by which we obtain a vacuum is, it is believed, entirely new, as is also the method of letting the water into it and throwing it off against the atmosphere without any friction. It is expected that the cylinder, which is of twelve inches diameter, will move a clear force of eleven or twelve cwt. after the frictions are deducted; this force is to be directed against a wheel eighteen inches in diameter. The piston is to move about three feet, and each vibration of it gives the axis about forty evolutions. Each evolution of the axis moves twelve oars or paddles five and a half feet; they work perpendicularly, and are represented by the strokes of a paddle of a canoe. As six of the paddles are raised from the water, six more are entered, and the two sets of paddles make their strokes of about eleven feet in each evolution. The crank of the axis acts upon the paddles, about one-third of their length from their lower ends, on which part of the oar the whole force of the axis is applied. The engine is placed in the bottom of the boat, about one-third from the stern, and both the action and the reaction turn the wheel the same way.

"When ready, a day was appointed, and the experiment made in the following manner: a mile was measured in Front (Water) street, Philadelphia, and the bounds projected at right angles, as exactly as could be to the wharf, where a flag was placed at each end, and also a stop-watch. The boat was ordered under way at dead water, or when the tide was found to be without movement. As the boat passed one flag it struck, and at the same instant the watches were set off; as the boat reached the other flag it was also struck, and the watches instantly stopped. Every precaution was taken before witnesses; the time was shown to all; the experiment declared to be fairly made, and the boat was found to go at the rate of *eight miles an hour*, or one mile in seven minutes and a half;

on which the shares were signed over with great satisfaction by the rest of the company. It afterwards went *eighty miles in a day!*

"The governor and council of Pennsylvania were so highly gratified with our labors, that without their intentions being previously known to us, Governor Mifflin, attended by the council in procession, presented to the company, and placed in the boat, a superb silk flag, prepared expressly, and containing the arms of Pennsylvania."

Such was the commencement of steam navigation. Had Fitch possessed adequate funds, or had he been properly patronized, this mode of propelling vessels would have continued. In June, 1792, the boat was laid up, the company which had been formed declining to advance more funds. But the conviction of Fitch of the importance of his invention continued. About this time he addressed a letter to Mr. Rittenhouse, one of the company, in which he says, "it would be much easier to carry a first-rate man-of-war by steam than a boat, as we would not be cramped for room, nor would the weight of the machinery be felt. *This, sir, will be the mode of crossing the Atlantic in time*, whether I bring it to perfection or not, for packets and armed vessels. I mean to make use of the wind when we have it, and in a calm to pursue the voyage at the rate of seven or eight miles an hour."

It may be added, that to his dying day, his enthusiasm continued unabated. *Steam* was the constant theme of his discourses. But, like other pioneers in great and magnificent projects, he was destined never to see his plans accomplished, or hopes realized. He became poor and friendless, and received a gratuitous home for a time with a hospitable relative in Sharon, Connecticut. In 1796, he went into Kentucky, to look after some lands which he had purchased while a surveyor there some years before, and there, being seized with a fever, he died.

"In conformity with his wishes, he was buried on the shores of the Ohio, that he might repose 'where the song of the boatman would enliven the stillness of his resting place, and the music of the steam-engine sooth his spirit!'"

Robert Fulton.—This gentleman was born in Little Britain, Lancaster county, Pennsylvania. He was of Irish descent, his father having emigrated from Ireland. His mother, though herself of an Irish family, was born in Pennsylvania. Robert early evinced a great fondness for mechanics and the fine arts. At the age of seventeen, he derived considerable emolument from portrait and landscape painting, in Philadelphia.

It is not necessary for our purpose to follow Fulton in his various changes of life, which for several years were frequent. Suffice it to say, by the advice of a friend, he repaired to England, where he took lessons in painting from the distinguished American artist, Mr. West, with whom he continued for several years.

His genius, however, was decidedly mechanical; and, for several years, he devoted himself to various projects of a mechanical nature, and returned to his native country in 1806. Here, he devoted himself, for a time, to the improvement of a *torpedo*, which he had invented while in England. In 1807, he succeded in blowing up a large hulk brig, which had been prepared for the purpose. In 1810, Congress made an appropriation of $5,000 for further experiments in sub-marine explosions, which gave Mr. Fulton another opportunity to exercise his skill. His success, however, was not equal to his anticipations.

We have now reached an important period in the life of Mr. Fulton. While in Europe, the subject of navigation by steam had received the attention of Mr. Fulton, in connection with Chancellor Livingston, at that time minister to France. This was in 1801. Prior, however, to this, "the Legislature of New York had passed an act, (March, 1798,) vesting Mr. Livingston with the exclusive right of navigating all kinds of boats, which might be propelled by the force of fire or steam, on all the waters within the territory or jurisdiction of the state of New York, for the term of twenty years from the passing of the act; upon the condition that he should, within a twelve month, build such a boat, the mean of whose progress should not be less than four miles an hour.

"Mr. Livingston, immediately afer the passage of this act, built a boat of about thirty tons burden, which was propelled by steam; but as she was incompetent to fulfill the condition of the law, she was abandoned.

"Soon after, he entered into a contract with Fulton, by which it was, among other things, agreed, that a patent should be taken out in the United States, in Mr. Fulton's name, which Mr. Livingston well knew could not be done without Mr. Fulton's taking an oath that the improvement was solely his."

Under this contract an experimental boat was built in Paris, in 1803. Her length was 66 feet, and breadth 8 feet. The experiment, however, was not entirely satisfactory, owing to the extremely defective fabrication of the machinery. The invention was slow, but the trial evinced one thing, that with better machinery and more care, steam navigation was practicable.

Soon after the arrival of Mr. Fulton in New York, already noticed, he began building his first American boat. In the spring of 1807, she was launched from the ship-yard of Charles Brown, on the East river. The engine was made in England, by Messrs. Watt and Bolton. Great incredulity prevailed among men of distinction as to her success; but on the first movement of the boat from the wharf, the triumph of Fulton was apparent. She moved easily and gracefully upon the water. Soon after she made a trip to Albany. In a letter to his friend, Mr. Barlow, Mr. Fulton gave the following account of her voyage. "My steamboat voyage to Albany and back (in the Clermont,) has turned out rather more favorable than I calculated. The distance from New York to Albany is one hundred and fifty miles; I ran it up in thirty-two hours and down in thirty. I had a light breeze against me the whole way, both going and coming, and the voyage has been performed wholly by the power of the steam engine. I overtook many sloops and schooners beating to windward, and parted with them as if they had been at anchor. The power of propelling boats by steam is now fully proved. The morning I left New York, there were not perhaps thirty persons in the city, who believed that the boat would ever move one mile an hour, or be of the least utility; and while we were putting off from the wharf, which was crowded with spectators, I heard a number of sarcastic remarks. This is the way in which ignorant men compliment what they call philosophers and projectors. Having employed much time, money, and zeal, in accomplishing this work, it gives me, as it will you, great pleasure to see it fully answer my expectations. It will give a cheap and quick conveyance, to the merchandize on the Mississippi, Missouri, and other great rivers, which are now laying open their treasures

to the enterprize of our countrymen; and although the prospect of personal emolument has been some inducement to me, yet I feel infinitely more pleasure in reflecting upon the immense advantage that my country will derive from the invention."

Thus an achievement was effected which has in subsequent years changed to a great extent the inland navigation of the whole country. Our rivers are thronged with boats of the largest capacity—fitted up with every possible convenience and elegance, and propelled by engines, beautiful in their construction, and most wonderful in their power; and not only so, but the various oceans of the world are now navigated with ease and safety. Distance is nearly annihilated. Voyages between England and America are now a weekly occurrence.

The death of Mr. Fulton occurred on the 14th of February, 1815. He did not live to see a steamboat actually crossing the Atlantic, although he had sanguine expectations that this project would ere long be accomplished. The first steam vessel which made that voyage was the American ship, Savannah, in 1819.

If Mr. Fulton was not the original inventor of steamboats, nor their perfector, still, what has been appropriately said of Arkwright, may justly be said of him: "The several inventions which his patent embraced, whether they were his or not, would, probably, but for him, have perished with their authors; none of whom except himself, had the determination and courage, to face the multiplied fatigues and dangers that lay in the way of achieving a *practical* exemplification of what they had conceived in their minds."

Samuel F. B. Morse.—This distinguished artist is still living, and has his residence in the State of New York. He is a son of the late Rev. Jedediah Morse, D. D., a clergyman of distinction, formerly of Charlestown, Massachusetts. Mr. Morse graduated at Yale College, in 1810. For many years he had occupied an enviable reputation, both in Europe and America, as a painter. Within a few years, he has produced a wonder-working and important machine—the *Electro Magnetic Telegraph*—which is now in successful operation over thousands of miles in various states of the Union; and lines are established between all the important cities of the country, from Maine to Louisiana.

M. Daguerre's distinction rests upon an invention within a few years promulgated to the world, and which must be pronounced to be one of the most wonderful and curious of the age.

The process of taking a human likeness by the method pointed out by M. Daguerre, may be divided into eight operations: 1st. Polishing the plate. 2d. Exposing it to the vapor of iodine. 3d. Exposing it to the vapor of bromine. 4th. Adjusting the plate in the camera obscura. 5th. Exposing it to the vapor of mercury. 6th. Removing the sensitive coating 7th. Gilding the picture. 8th. Coloring the picture.

The plates are made of thin sheets of silver, plated on copper. It is said that, from some unknown reason, the photographic impression takes more readily on these plates than on entire silver. The silver is only thick enough to prevent reaching the copper in the process of scouring and polishing.

The polishing is considered one of the most difficult and important manipulations in the art, and hence hundreds of pages have been written to

describe the various methods devised and employed by different artists and amateurs.

We can only state here that the plate is first scoured with emory to take off the impressions of the hammer in planishing; then pumice, finely pow dered, is used, with alcohol, to remove all oily matter, and, after several other operations, it is finally given the last finish by means of a velvet cushion covered with rouge.

After the plate is polished, it is instantly covered from the breath, the light, and the air, nor must it be touched, even on the edges, with the naked hand; but, being placed on a little frame, with the face down, it is carried to a box containing iodine, over which it is placed as a cover. Here it remains, for a moment or two, in a darkened room, being often examined by the artist, whose eye decides, by the yellowish color to which the silver changes, the instant when the metal has combined with the proper quantity of iodine. This is a very critical part of the process, and requires a good eye and much experience. The vapor of iodine forms a film of the iodide of silver on the metal, and it is this which makes it sensible to the light of the camera, by which the picture is formed. If the film of iodine is too thick, the picture will be too deep and dark; if too thin, either a light impression, or none at all, will be made.

Bromine is a peculiar substance, in the liquid form, of a deep red color, exceedingly volatile, very poisonous, and having an odor like chlorine and iodine combined. It is extracted from sea-water, and the ashes of marine vegetables.

This, the photographic artists call an *accelerating* substance, because it diminishes the time required to take the picture in the camera obscura.

The iodized plate will receive the picture without it, but the sitter has to remain without motion before the camera for several minutes, whereas, by using the bromine, the impression is given in a minute or a minute and a quarter. Now, as the least motion in the sitter spoils the likeness, it is obvious that bromine is of much importance to the art, especially to nervous people and children.

The bromine is contained in a glass vessel, closely covered, and is applied by sliding the plate over it for a few seconds.

The plate is now ready for the photographic impression by means of the camera. If a likeness of a person is to be taken, he is already placed before the instrument, in a posture which the artist thinks will give the most striking picture, and is told that the only motion he can make for half a minute to a minute, is *winking*.

The artist now takes the plate from a dark box, and, under cover of a black cloth, fixes it in the focus of the lens. This is done in a light room, with the rays of the sun diffused by means of white curtains.

The artist having left the sitter for the specified time, returns, and removes the plate for the next operation. Still, not the least visible change has taken place on the bright surface of the silver. If examined ever so nicely, no sign of a human face is to be seen, and the sitter who sees the plate, and knows nothing of the art, wonders what next is to be done.

The plate is next exposed to the fumes of mercury. This is contained in an iron box, in a darkened room, and is heated by means of an alcohol lamp, to about 180 degrees Fah. The cover of the box being removed, the plate is laid on, with the silver side down, in its stead.

After a few minutes the artist examines it, and, by a faint light, now sees that the desired picture begins to appear. It is again returned for a few minutes longer, until the likeness is fully developed.

If too long exposed to the mercury, the surface of the silver turns to a dark ashy hue, and the picture is ruined; if removed too soon, the impression is too faint to be distinct to the eye.

The next operation consists in the removal of the iodine, which not only gives the silver a yellowish tinge, but, if suffered to remain, would darken and finally ruin the picture. Formerly this was done by a solution of common salt, but experiment has shown that the peculiar chemical compound called *hyposulphite of soda*, answers the purpose far better. This is a beautiful, transparent, crystallized salt, prepared by chemists for the express purpose.

A solution of this is poured on the plate until the iodine is entirely removed, and now the picture, for the first time, may be exposed to the light of the sun without injury; but the plate has still to be washed in pure water, to remove all remains of the hyposulphite, and then heated and dried over an alcohol lamp.

Having washed the picture thoroughly, it is then placed on the fixing stand, which is to be adjusted previously to a perfect level, and as much solution of chloride of gold as the plate can retain, poured on. The alcohol lamp is then held under all parts of it successively. At first the image assumes a dark color, but in a few minutes grows light, and acquires an intense and beautiful appearance.

The lamp is now removed, and the plate is again well washed in pure water, and then dried by heat.

Before gilding, the impression may be removed by repolishing the plate, when it is perfectly restored; but, after gilding, no polishing nor scouring will so obliterate the picture as to make it answer for a second impression. Such plates are either sold for the silver they contain, or are replated by the electrotype process.

Coloring Daguerreotype pictures is an American invention, and has been considered a secret, though at the present time it is done with more or less success by most artists.

The colors consist of the oxides of several metals, ground to an impalpable powder. They are laid on in a dry state, with soft camel hair pencils, after the process of gilding. The plate is then heated, by which they are fixed. This is a very delicate part of the art, and should not be undertaken by those who have not a good eye, and a light hand.

Dr. Horace Wells was born in Hartford, Vermont, in the year 1815; after completing his education, he commenced the practice of dentistry, which he successfully prosecuted in Boston, and in Hartford, Conn., and removed in 1847 to the city of New York, where he pursued the same profession. His genius for invention was decided, and his mind was often engaged in devising new mechanical processes; he introduced improvements in dental instruments, and in the blow-pipe; he also invented a gold solder, and an improved shower-bath. We name these merely as evidence of his ingenious turn of mind; his fame rests alone upon the fact, that he discovered the means of producing insensibility during surgical operations. His first experiments were made with nitrous oxide gas, but since then sulphuric ether, and a new compound called "Chloroform," have been used for the

same purposes—the "Chloroform" being most generally adopted. But the idea of employing an agent to produce insensibility was conceived, and its practical importance first established by Dr. Wells. He commenced, and satisfactorily tested his experiments in 1844, while a citizen of Connecticut, and the Legislature of that State, in the spring of 1847, passed resolutions attesting the value of the discovery, and acknowledging him as the author. Some months afterwards, the Medical Society of Paris appointed him an honorary member, and passed a vote declaring that to him "is due all the honor of having first discovered and successfully applied the uses of vapors or gases, whereby surgical operations can be performed without pain."

It is proper to observe here, that these gases, which are powerful in their effect, should be used with care and judgment, and with reference to the constitution and state of health of the patient; their indiscriminate and injudicious employment, like that of other potent agents, would lead to disastrous results.

This discovery of Dr. Wells has relieved thousands of sufferers, and may be considered as the great improvement of the age, viewed in connection with surgical science.

His active mind and inventive talent promised for him a useful and successful career, which, however, was suddenly terminated by his death, which occurred in New York, in the year 1848.

THE WOLF.

THE essential characteristics of the common wolf may be thus described:—the tail straight; the hide of a greyish yellow, with a black oblique stripe on the forelegs of those which are full grown, and the eyes oblique. The ancients had an opinion that the neck of the wolf was all one solid bone; but we need not say that this is one of the many opinions by which their ignorance on points of very common knowledge is demonstrated. The average height of the wolf is about two feet six inches before, and two feet four inches behind; and the length of the body, from the tip of the muzzle to the beginning of the tail, three feet eight inches. The cubs of the wolf are born with the eyes shut; the female goes with young sixty-three days; in these respects exactly resembling the dog. The average duration of their life is from fifteen to twenty years.

The great resemblance between the wolf and the dog has been frequently remarked; and some naturalists consider them of the same species. The polar voyagers state, that they had often much difficulty to distinguish the dogs of the Esquimaux from the wolves; and yet, notwithstanding this external resemblance, there is a very essential difference in their characters, and the dog and the wolf are, in all circumstances, the natural foes of each other. Captain Parry, in the Journal of his Second Voyage, says, "A flock of thirteen wolves, the first yet seen, crossed the ice in the bay from the direction of the huts, and passed near the ships. They so much resemble the Esquimaux dogs, that, had it not been for some doubts among

the officers who had seen them, whether they were so or not, and the consequent fear of doing these poor people an irreparable injury, we might have killed most of them the same evening, for they came boldly to look for food within a few yards of the Fury, and remained there for some time." Again, he says in his Journal, a few days after, "These animals were so hungry and fearless as to take away some of the Esquimaux dogs in a snow house near the Hecla's stern, though the men were at the time within a few yards of them." These dogs set up a fearful howl at the approach of a wolf; and, in speaking of the resemblance between the two it should be mentioned that wolves have not the bark of a dog, but only a howl; and, as the Esquimaux dog also does not bark, this, and the other circumstances of close resemblance, have led to the conclusion that this animal is no other than a domesticated wolf.

The following passage in "Sir A. de Capel Broke's Travels," while it illustrates the enmity of the wolf to the dog, seems to show that the latter may be himself deceived by the resemblance to his own species. "I observed on setting out from Sormjole, the last post, that the peasant who drove my sledge was armed with a cutlass; and on inquiring the reason, was told that, the day preceding, while he was passing in his sledge the part of the forest we were then in, he had encountered a wolf, which was so daring that it actually sprung over the hinder part of the sledge he was driving, and attempted to carry off a small dog which was sitting behind him. During my journey from Tornea to Stockholm, I heard every where of the ravages committed by wolves, not upon the human species or the cattle, but chiefly upon the peasant's dogs, considerable numbers of which had been devoured. I was told that these were the favorite prey of this animal; and that, in order to seize upon them with the greater ease, it puts itself into a crouching posture, and begins to play several antic tricks to attract the attention of the poor dog, which, caught by these seeming demonstrations of friendship, and fancying it to be one of his own species, from the similarity, advances towards it to join in the gambols, and is carried off by its treacherous enemy. Several peasants that I conversed with mentioned having been eye witnesses of this circumstance." The animosity of the dog to the wolf does not seem inferior to that of the wolf to the dog. Associated in packs, and encouraged by men, dogs will chase the wolf with the most daring ardor, regardless of his greater physical strength. Conflicts of this nature were not uncommon in parts of Europe during the middle ages.

Wolves are cruel and cowardly animals, with a peculiar sinister expression of countenance. They fly from man except when impelled by extreme hunger, when they prowl by night in great droves through villages, and destroy any persons they meet. It is said of them, as of several other beasts of prey, that when they have once obtained the taste of human blood, they give it the preference to any other. Very fearful accounts are on record of the ravages committed by wolves, when in hard weather they associate in immense flocks. So lately as 1760 such terror is said to have been excited in France by the ravages of wolves, that public prayers were offered for their destruction. The following statement from Captain Franklin shows the extreme cunning of the wolves in the pursuit of a creature of superior speed: "We passed the remains of two red-deer, lying at the bases of perpendicular cliffs, from the summits of which they had probably

WOLF HUNT.

been forced by wolves. These voracious animals, which are inferior in speed to the moose or red-deer, are said frequently to have recourse to this expedient, in places where extensive plains are bounded by precipitous cliffs. While the deer are quietly grazing, the wolves assemble in great numbers; and, forming a crescent, creep slowly towards the herd, so as not to alarm them much at first; but when they perceive that they have fairly hemmed in the unsuspecting creatures, and cut off their retreat across the plain, they move more quickly, and with hideous yells terrify their prey, and urge them to flight by the only open way, which is towards the precipice; appearing to know that, when the herd is once at full speed, it is easily driven over the cliff —the rearmost urging on those that are before. The wolves then descend at their leisure and feast on the mangled carcasses.

The gentleness of wolves in confinement seldom continues after they are full grown; they generally appear to acquire a fear instead of a love of man, which manifests itself in a morose and vindictive impatience. The cowardly ferocity of their natures is with difficulty restrained by discipline: they are not to be trusted. And yet there are instances of wolves having been domesticated to such an extent as to exhibit the greatest attachment to man—as great as can be shown by a dog. M. F. Cuvier gives a very interesting account of a tame wolf which had all the obedience towards and affection for his master, which the most sagacious and gentle of domestic dogs could possibly evince. He was brought up in the same manner as a puppy, and continued with his original owner till he was full grown. He was then presented to the Menagerie at Paris. For many weeks he was quite disconsolate at the separation from his master, who had been obliged to travel; he would scarcely take any food, and was indifferent to his keepers. At length he became attached to those about him, and he seemed to have forgotten his old affections. His master returned after an absence of eighteen months: the wolf heard his voice amidst the crowd in the gardens of the menagerie, and, being set at liberty, displayed the most violent joy. Again was he separated from his friend; and again was his grief as extreme as on the first occasion. After three years' absence, his master once more returned. It was evening, and the wolf's den was shut up from any external observation; yet the instant the man's voice was heard, the faithful animal set up the most anxious cries; and the door of his cage being opened, he rushed towards his friend,—leaped upon his shoulders,—licked his face,—and threatened to bite his keepers when they attempted to separate them. When the man left him, he fell sick, and refused all food; and from the time of his recovery which was long very doubtful, it was always dangerous for a stranger to approach him. He appeared as if he scorned any new friendships.

The wolf still continues to infest the northern regions of Europe, and those countries where dense forests are not yet cleared. It was extirpated much earlier in England than in any other country of Europe. Ancient chronicles state that, in the tenth century, King Edgar attempted to extirpate these animals in England by commuting the punishments for certain crimes into the acceptance of a certain number of wolves' tongues from each criminal; and, in Wales, by converting the tax of gold and silver into an annual tribute of 300 wolves' heads. In after times their destruction was promoted by certain rewards, and some lands were held on condition of destroying the wolves which infested the parts of the kingdom in which they were situated.

ARTESIAN WELLS.

ARTESIAN WELLS are formed by perforating the earth by a set of instruments called "boring rods," until a subterranean body of water be reached whose sources are higher than the spot where this operation takes place. The effort which water makes to reach its own level in this instance causes it to ascend above the surface; and thus an abundant supply of this necessary element may be obtained in districts which otherwise might be without so indispensable a blessing. The Romans often went to an incredible expense in obtaining a proper supply of water; and the remains which still exist of their aqueducts are amongst the noblest monuments of their genius and enterprise. Works of this description, however, could not be constructed without an immense expenditure of labor and capital; and it is clear that an application of the principles of hydraulics and geological science would have been a much more simple and economical mode of proceeding. The Turks have availed themselves of the simple fact of the tendency of water to find its level in executing works as efficacious as the Roman aqueducts, but a thousand times less expensive. Their *Souterazi* are water-courses of brick-work, carried from a reservoir on some eminence down one hill, along the surface of a valley, and up the opposite hill.

It is easy to understand the cause which occasions the water of Artesian wells to ascend to the surface; and the following explanation may serve to show the circumstances under which this principle is usually brought into action. If the rain which falls, or the snow which is melted, on opposite ranges of mountains, filtrates through porous strata, or finds its way through apertures or fissures of stone, situated between strata either quite or almost impervious to water, and running below the surface of the valley, it makes for itself a channel, the form of which we will suppose to be an elongated curve. If any part of this valley be bored until this pipe or water-course be reached by the boring-rod, the water will spring up, under the impulsion of the law of hydraulics to which we have alluded, and a natural fountain will by this means be created. This result will not be affected by the extent of the valley, which may be a mile in width or a dozen miles. The force with which the water ascends will of course be regulated by the position chosen for the operation. It will be the greatest at that point which is situated at the lowest level, and will diminish as the source is approached from whence the supply is derived. The small springs which are met with in sinking a well are regulated by the same laws as Artesian fountains, but their sources are not sufficiently copious to enable them to reach the surface.

The question as to whence Artesian wells derive their supplies is one of the most interesting connected with the subject. The vapors of the atmosphere form one of their sources. A few hours after heavy rains, the miners of Cornwall observe a considerable augmentation in the water contained in some of their deepest pits. The fountain of Nîmes, in France,

throws out, when lowest, about 280 gallons per minute; but if a heavy rain falls in the north-west, although at a distance of seven or eight miles, its volume is increased to upwards of 2,000 gallons. The temperature, however, is scarcely changed by this great additional quantity; thus proving that it passes with great rapidity by channels situated very deeply below the surface.

The fountain of Vaucluse, likewise in the south of France, if it received all the rain which fell during the whole year, on an extent of thirty square leagues, would not obtain a supply adequate to the yearly issue which it pours forth. When it rises from its subterranean bed, it in reality forms a river; and the volume of its waters when at its lowest is estimated at 480 square yards per minute, which at times is swelled to 1,494 square yards. Its mean volume is 962 square yards. This fountain, it is clear, must obtain its waters from some more abundant source than the percolation of rain-water through the pores and fissures of the earth. Its reservoirs, also, must be capable of containing a great mass of fluid, and the channels by which it flows must be large enough to contain a subterranean river.

These reservoirs and these channels are created by fractures in great areas of stratified rock, occasioned by the action of a mighty power, which, at some period, has broken them in various directions. In some cases, these cavities actually withdraw from the surface considerable rivers. The Guadiana loses itself in a flat country, in the midst of a vast prairie; and when a Spaniard hears an Englishman or a Frenchman speaking of the bridges of their respective countries, he will tell them that there is one in Estremadura on which 100,000 cattle can graze. The Meuse and several other rivers in France also disappear in the same manner; some being sucked in by apertures in their bed, situated at various distances along the course of the stream. In the Austrian dominions, the river Poick pursues its course in the cavern of Adelsberg, where its waters lose themselves and reäppear several times. This cavern has been penetrated for the space of two leagues from its entrance, at which point a lake presents itself which has not yet been crossed. Humboldt mentions a cavern in South America, about 25 yards high, and 27 or 28 broad, which the traveler can penetrate for 800 yards, into whose recesses are rolled the waters of a stream above 10 yards wide. The grotto of Windborg, in Saxony, is also a remarkable instance of the extent of the earth's internal communications, being connected with the cavern of Cresfield, from which it is some leagues distant.

The Artesian fountain at Tours recently presented some phenomena proving the existence of an extensive and complete line of subterranean communication. In January, 1831, the vertical tube by which the waters of this fountain ascended was shortened a little more than four yards, on which its volume was immediately augmented a third; but this sudden increase rendered the water less clear than usual. During many hours there were brought to the surface, from a depth of above 110 yards, various substances, among which were recognized twigs of hawthorn, several inches in length, blackened by their long stay in water—stalks and roots of marshy plants—and seeds of various kinds, in a state which showed that they had been in the water since the harvest, and, consequently, that about four months had been spent in performing their hidden voyage. Shells, and other deposits which a small river, or stream of fresh water, leaves

when it overflows its banks, were also brought up during the increased action of the fountain, proving the freedom with which they circulated at depths below.

An instance is mentioned by M. Arago of one of these subterranean rivers being reached by some workmen who were boring for water close to the Barrière de Fontainebleau, at Paris. As usual, the progress of the work was slow, but, all at once, the boring rod descended nearly eight yards. When they attempted to withdraw it, it was evident that it was suspended in a body of water whose current was so strong as to occasion the instrument to oscillate in a particular direction. We have before stated that the course which water took in order to find its own level might be of any length; a fact which is clearly proved by the circumstance of the crew of an English ship becalmed in the Indian seas discovering fresh water rising from the depths of the ocean to the surface. The nearest point of land was 100 miles distant, and from hence it had come by a channel situated below the bed of the sea.

These various facts will account for the phenomena connected with Artesian fountains; but the periodical disappearance of the waters of the lake of Zirknitz, in Carniola, illustrates one of these in a manner so clear and distinct that we cannot omit noticing it. This lake is about five miles long and two and a half broad. Towards the middle of the summer, if the season be dry, its level rapidly sinks, and, in a few weeks, it becomes dry. The apertures by which the waters have retired may be then distinctly perceived; some being perpendicular, and others in a lateral direction towards the caverns of the neighboring mountains. Immediately after the waters have completely disappeared, the whole extent of the surface which they covered is put into cultivation; and, at the end of a couple of months, the peasants reap an abundant harvest of rye, millet, and grass. Towards the close of autumn, the waters return by the same natural channels by which they had disappeared. It frequently happens that a heavy shower of rain on the mountains of Zirknitz will occasion the lake to overflow its banks.

The temperature of Artesian springs is invariably higher in proportion as their depth increases. The deepest of which we have seen any statement is near Dieppe, and is about 340 yards below the surface. A well formed near Perpignan produces about 425 gallons per minute; and one at Tours ascends more than two yards above the surface, and gives 234 gallons per minute.

In France, the waters of Artesian springs are sometimes made the moving power in corn-mills. At Frontès, near Aire, the waters of ten Artesian springs put in motion the wheels of a large mill, and act besides upon the bellows and forge-hammer of a nail-manufactory. At Tours, a well of nearly 150 yards in depth pours 225 gallons per minute into the troughs of a wheel seven yards in diameter, which is the moving power of an extensive silk-manufactory. Besides their general utility in irrigations, and for the purposes of domestic comfort and salubrity, the water of Artesian springs has been specially applied with advantage for other useful objects. The workshops of M. Bruckmarm, in Würtemberg, are warmed by means of water conveyed in pipes from an Artesian spring, the temperature of whose source is considerably higher than that of the atmosphere. M. Arago also states that there are greenhouses whose temperature is kept up by means of the circulation of a constant volume of Artesian waters.

At Erfurt, they are used in the formation of artificial beds of cress, which produce £12,000 a year. In the north of France, the reservoirs in which the flax is steeped which is destined to be employed in the manufacture of lace and the finer descriptions of linen are supplied by Artesian springs, whose waters, being remarkably clear and of an equable temperature, dissolve the vegetable matter with the least injury to the most valuable properties of the plant. In fish-preserves it is often found that the fish are killed both by the severity of the winter and the excessive heats of the summer; but this effect of the inequality of the seasons has been prevented at the fish-ponds at Montmorency, near Paris, by furnishing them abundantly with Artesian waters.

THE BANKS OF THE NILE.

NO portion of the globe is more calculated to carry the mind backward into the depths of past history, than the country along the river Nile. Here, in ages so remote as to be veiled in mist, we can see, by the faint light of history, the shadows and ghosts of kings and emperors, bearing the suggestive and portentous names of Isis, Horos, Osiris, Menes, Bochos, Biphis, and Sesostris. If we open our eyes and look around, we discover the pyramids—works of unknown hands, yet such as befit races of monarchs, half gods and half men; we see the wrecks of cities so grand, even in ruins, as to recall the age of giants; we meet with obelisks, statues, monuments, of such vast proportions as to realize the mythological dreams of the Cyclops and the Titans. And over all, are those mysterious writings—pictures—hieroglyphics—which so long defied scrutiny, but which are now beginning to speak and reveal the buried secrets of centuries.

But of all the wonders of Egypt, the sepulchral chambers are the most astonishing. There are several of these, some having the walls covered with sacred paintings, and others with objects and scenes taken from the manners, customs and history of the country. Madden, in his travels, thus describes his entrance into one of these mysterious chambers:

"Considerably below the surface of the adjoining buildings, the guide pointed out to me a chink in an old wall, which he told me I should creep through on my hands and feet; the aperture was not two feet and a half high, and scarcely three feet and a half broad. My companion had the courage to enter first, thrusting in a lamp before him. I followed, and after me the son of the old man crept also. The passage was so narrow that my mouth and nose were sometimes buried in the dust, and I was nearly suffocated. After proceeding about ten yards, in utter darkness, the heat became excessive, breathing was laborious, the perspiration poured down my face, and I would have given the world to have got out; but my companion, whose person I could not distinguish, though his voice was

EGYPT — VIEW ON THE NILE.

audible, called out to me to crawl a few feet further, and that I should find plenty of space. I joined him at length, and had the inexpressible satisfaction of standing once more on my feet. We found ourselves in a splendid apartment of great magnitude, adorned with sacred paintings and hieroglyphics."

An English poet, who visited the sepulchral chambers of Egypt, thus describes the paintings.

"——————— in the range
Of these deep-caverned sepulchres are found,
The wildest images—unheard of, strange,
Striking, uncouth, odd, picturesque, profound—
That ever puzzled antiquarian's brain,
Prisoners of different nations, bound and slain,
Genii with heads of birds, hawks, ibis, drakes,
Of lions, foxes, cats, fish, frog, and snakes,
Bulls, rams, and monkeys, hippopotami,
With knife in paw, suspended from the sky—
Vast scarabei, globes by hands upheld,
From chaos springing, 'mid an endless field
Of forms grotesque, the sphynx, the crocodile,
And other reptiles, from the slime of Nile."

It would seem that similar representations of sacred objects are alluded to in the Bible, and we may infer that they were objects of idolatrous worship among the Egyptians. From these it is probable the Israelites derived the practice, rebuked in the book of Ezekiel, ch. viii. 7—12, where we read as follows—

"And he brought me to the door of the court, and when I looked, behold a hole in the wall. Then said he unto me, Son of man, dig now in the wall; and when I had digged in the wall, behold a door. And he said unto me, Go in, and behold the wicked abominations that they do here. So I went in and saw; and behold every form of creeping things, and abominable beasts, and all the idols of the house of Israel, portrayed upon the wall round about. And there stood before them seventy men of the ancients of the house of Israel, and in the midst of them stood Jaazaniah the son of Shaphan, with every man his censer in his hand; and a thick cloud of incense went up. Then said he unto me, Son of man, hast thou seen what the ancients of the house of Israel do in the dark, every man in the chambers of his imagery? for they say, The Lord seeth us not; the Lord hath forsaken the earth."

Beside these objects which we have mentioned, travelers tell us of the ruins of cities along the borders of the Nile, which strike the beholder with amazement, on account of their magnitude. The ruins of a single temple, called Karnak, in Upper Egypt, are three miles in circuit. They are described by a traveler, as follows:

"Most points of view present only the image of a general overthrow, rendering it difficult to distinguish Karnak as a series of regular edifices. Across these vast ruins, appear only fragments of architecture; trunks of broken columns; mutilated colossal statues; obelisks—some fallen and some majestically erect; immense halls, whose roofs are supported by parts of columns, portals and pillars, surpassing in magnitude all similar structures. From the west, this chaos assumes an orderly appearance; and the almost endless series of portals, gates, and halls, appear ranged in regular succession, and harmonizing with each other. When the plan is thoroughly understood, its regularity appears wonderful; and the highest admiration

is excited by the arrangement and symmetry of all the parts of this vast edifice."

These ruins are on the eastern side of the Nile, and near by are those of the temple of Luxor, which, though hardly equal to Karnak in magnitude, even surpass it in beauty of design and execution.

On the western side of the Nile, and at no great distance, are the ruins of the ancient city of Thebes, said to have had a hundred gates, in its days of prosperity—some thousands of years ago.

THE REGALIA OF THE BRITISH CROWN.

DEPOSITED in a room recently appropriated to that purpose, the regalia presents a magnificent spectacle. Here is the ancient imperial crown of Charles II., Prince of Wales' crown, the ancient queen's crown, but the most magnificent display of England's regalia is the crown of her present majesty. The cap is of purple velvet, with silver hoops covered with diamonds; on the top of these hoops is a ball covered with smaller diamonds, with a cross of brilliants, containing a remarkable central sapphire. On the front is a heart-shaped ruby, said to have been worn by Edward the black prince. This diamond weighs one and three-fourths pounds, and is valued at one million pounds. The baptismal font with stand of silver gilt, which was used at the baptism of her present majesty, and the prince of Wales, is four feet high, and cost forty thousand pounds (two hundred thousand dollars.) A large silver wine fountain is also exhibited, weighing ninety-six pounds, and which cost fifty thousand dollars. There are various other costly paraphernalia belonging to the regalia, such as St. Edward's staff, of pure gold, four feet seven inches in length; the royal sceptre, of gold, two feet nine inches long, the queen's ivory sceptre, mounted in gold, with a dove of white onyx; the orb, five inches in diameter, edged with pearls, and surmounted with roses of diamonds. The sovereign holds this orb in the left hand at the coronation, the swords of Justice, temporal and ecclesiastical, and numerous other articles which we cannot mention. The value of the whole regalia is estimated at three millions of pounds, equal to fourteen millions five hundred and twenty thousand dollars.

The regalia represented in the group in our engraving, exhibits not only the regalia, properly so called, but also those which are used when a queen consort is crowned. The reader will please bear in recollection the difference between a queen regnant, and a queen consort. A queen regnant occupies the kingly office, as of right. She is *the* king, and is called queen as being a female. But a queen consort is called queen, as being the wife of the king, and her only right (if right it can be called) to be crowned, lies in the will and pleasure of her husband.

The regalia, properly so called, are represented grouped on the left side

REGALIA OF BRITISH CROWN.

of the engraving. The two crowns are the crown of state and the imperial crown. The imperial crown is also called St. Edward's crown, as having been made for the coronation of Charles II. to supply the place of the old crown (which bore the name of Edward the confessor), destroyed, along with the other ancient regalia, by order of parliament. The imperial crown is "the crown royal, which is set upon the king's head;" the crown of state is for the accommodation of the king, to be worn in procession. The crown of state was made for the coronation of George IV., the old one having been broken up. A new crown of state has been made for the present queen, which contains all the jewels of the former crown, with many additional ones.

Four swords are used at a coronation. The sword of state, sheathed in its ornamented scabbard, and the three swords of mercy and of justice. The sword of mercy is Curtana, or the pointless sword; the sword of spiritual justice is obtusely pointed; but the sword of justice of the temporality is acutely pointed. St. Edward's staff is represented as crossing the imperial crown; it is a large golden rod, with a mound and cross at the top, and is carried before the king in the procession to the coronation. The sceptre and the virge, or rod, are represented crossed in the foreground of the engraving. The sceptre, surmounted by a mound and cross, is placed in the king's right hand; and the virge, or rod, surmounted by a cross and dove, is placed in the left hand. The globe or orb, surmounted by a cross, is supposed to have been used originally as a type or emblem of sovereignty. The other portions of the regalia are the spurs, of fine gold, curiously wrought, the ring and the armil, or armilla, which is used in the ceremony of investiture.

That portion of the regalia which is used when a queen consort is crowned, consists of a crown of state, a circlet of gold, an orb, similar to the king's sceptres, and a ring. They are grouped on the right side of the engraving, the sword of state crossing them.

CUBA.

PREVIOUS to the eighteenth century, the history of Cuba is principally occupied with accounts of the settlements commenced by the first governor, Diego Velasquez. Its advance was extremely slow, and having exhausted the native Indian population—who were a docile and gentle race—the island was only held by Spain as a convenient military and naval station on the way to the mines of Mexico. Notwithstanding this, we notice in the laws and municipal rights of Cuba the same independent and liberal spirit which prevailed in all the settlements of that nation, among the Moors or elsewhere, so far as the Spanish settlers or their descendants were concerned. Even in the sixteenth and seventeenth centuries public assemblies of citizens were held to elect the members of the corporations; free and bold charges were made and sustained against governors; and no taxation was permitted which was not sustained by these bodies.

In 1812 the constitution was proclaimed in Spain; the whole people of the colonies were assimilated to the inhabitants of the mother country with respect to representation; and Cuba sent her representatives to the Spanish Chamber of Deputies. In 1818 Señor Arango, the deputy from Havana, obtained a royal ordinance for the abolition of restrictions on Cuban commerce. From this period we may date the prosperity of the island. Before, she had been a burden to the home treasury. Now she began to remit large sums annually to the government; an army of 25,000 men, sent from Spain in a miserable plight, was maintained by her, and in a few years was entirely equipped, clothed and disciplined in the best manner, without expense to the mother country. Indeed, since 1830, in every embarrassment of her government, Spain has been supplied with means from the treasury of Cuba, and it has been a reserved fund for her every pressing emergency. When the civil list failed Queen Christina, Cuba furnished resources for defraying the profuse expenditure of the palace. The contributions wrung from the island, formed no small portion of the riches bequeathed by Ferdinand VII. to his rapacious widow and to his reputed daughters. From Cuba also were derived the means of setting on foot the luckless expedition of Barrados for the reconquest of Mexico; and from 1832 to 1841, it had exchanged thirty-six millions of dollars against an equal amount of government paper. At length, so much importance was attached to the revenues of this island, that they served as ample guarantees for loans, foreign and domestic. The wealth, the beauty, the fertility of Cuba proved her ruin. By degrees, she came to be regarded only as a machine for raising money; and to carry out the purposes of the home administration to the fullest extent, it was necessary to destroy the privileges and the liberties which the Cubans had heretofore enjoyed.

Although the standard of Independence was raised across the Gulf of Mexico, and Cuba was invited to join in its defence, and although Mexico and Columbia prepared an expedition which should give liberty to the island, the inhabitants shut their eyes to the alluring prospects, and maintained an unwavering loyalty. They were repaid for their fidelity, as tyrants are apt to reward such conduct. On the plea that disturbances in South America might require the exercise of arbitrary power, by the governor of Cuba, in 1825, a royal order was issued, and it is still in full force, addressed to the Captain General, which after the usual preamble, proceeds as follows: "The king, our master, in order to keep in quietude his faithful inhabitants, confine within the proper limits such as would deviate from the path of honor, and punish such as, forgetting their duties, would dare commit excesses in opposition to our wise laws; and being desirous of preventing the embarrassments which, under extraordinary circumstances, might arise from a division in the command, and from the complicated authority and powers of the different officers of government, for the important end of maintaining in that island his sovereign authority, and the public quiet; it has pleased his majesty, in conformity with the advice of his council of ministers, to authorize your excellency, fully investing you with the whole extent of powers which, by the royal ordinances, are granted to the Governors of besieged towns. In consequence thereof, his majesty most amply and unrestrictedly authorizes your excellency not only to remove from that island such persons, holding offices from the government or not, whatever their occupation, rank, class, or situation in life may be, whose

residence there you may believe prejudicial, or whose public or private conduct may appear suspicious to you, but also to suspend the execution of whatever royal orders or general decrees in all the different branches of the administration, or in any part of them, as your excellency may think conducive to the royal service."

The sad effects of this royal order were not immediately felt. The island was at that time governed by General Vives, whose policy, during the whole of a long administration, was mild and conciliating; and he was so far from putting into execution the terrible authority with which he was endowed, as to act on his wise conviction, that it would be equally disadvantageous to Cuba and to Spain. This was, however, merely the good fortune of the inhabitants; the fearful decree stood, in all its terrors, only waiting the presence of a despot, to carry it out in its fullest force. Such an one was found in the person of Don Miguel Tacon, who, two years after the the retirement of Vives, was appointed Captain General. This was in 1834. It should meanwhile be borne in mind, that during the several crises in Spain, from 1808 to 1837,—and they were seven in number,—we find the "always faithful island of Cuba" receiving and promptly obeying the decrees of the crown. Throughout all the disturbances, in every revolution or change of ministry, Cuba remained the same, always loyal, obedient, uncomplaining.

From the accession of Tacon may be dated a series of injuries, cruelties, and oppressions, against the unfortunate island, unparalleled in the history of civilized communities. This man's administration has been frequently lauded by strangers, who regarded him in the light of a reformer of the social disorders which prevailed, at that time, to a frightful extent. Indeed, his coming was hailed with joy by the mass of the proprietors, while every well-disposed person beheld with gratification his energies directed to prevent and punish robbery and assassination; to the destruction of dogs in the streets; the cleansing and macadamizing of the principal thoroughfares; the erection of markets, a prison, a theatre, &c. But if Tacon exercised a strong and arbitrary will in carrying out these projects, he soon displayed the same qualities in oppressing persons of every class. The fact is, he was a tyrant. He possessed a jealous nature, was short-sighted and narrow-minded, and had an uncommon stubbornness of character. Never satiated with power, he found in the royal order of 1825, ample authority for every species of despotism. He knew that all they required of him at home was to extort as much money as possible from the inhabitants of the island; for the rest, no questions would be asked. It was through his influence that the wealthy portion of the community was divested of the privileges conferred on them by the *estatuto*. He even deprived the old municipalities of Havana of the power of naming the under-commissaries of police. To sustain his absolute government by trampling on every institution, was a necessary consequence of his first violent and unjustifiable act. In order to obtain credit in the management of the police, he displayed a despotic and even brutal activity in the mode of exacting, from the inferior officers, distributed in the several wards of the city, under personal responsibility, the apprehension and summary prosecution of criminals. They soon found that there would be no complaint, provided they acted vigorously in bringing up prisoners. So far from presuming their innocence, or requiring proof of their crimes, those who were once arrested were put to the negative and difficult task of

proving their innocence. The more unwarrantable the acts of his subalterns the more acceptable to him, since they, in his opinion, but displayed the energy of his authority. They trembled in his presence, and left it to persecute, to invent accusations, to imprison, and to spread terror and desolation among the families of the island. It is but just to add, that banditti, and thieves, and professed gamblers were terrified by his sweeping scythe, and became much more modest than they had been during the brief administration of the weak and infirm General Ricafort, his predecessor. The timid and short-sighted merchant or planter, who perceived this reform, did not comprehend or appreciate the illegality of the system, nor its pernicious effects on the future destinies of the country, and was the first to justify the man who interposed himself between the subject and the crown, not permitting any petitions contrary to his pleasure.

The consequence of all this was a regular system of espionage. The prisoners were distributed in the castles, because the jails were insufficient to contain them. In the dungeons were lodged nearly six hundred persons, the causes of whose detention nobody knew—a fact authentically proved by a casual circumstance. In about eighteen months of his administration Tacon caused one hundred and ninety persons to be deported. Besides these, seven hundred and twenty were sent away under sentence of banishment for life, while in the *Gallera*, vast multitudes of prisoners, of all grades, the innocent and the guilty, were huddled together in one long narrow hall. The misery of this awful place cannot be exaggerated. Señor Tanco styles it, "un infierno de immoralidad." Tacon's only object in building it was to rid the government house of the *fumes* of pestilence, which were engendered in the dungeons of the palace in which he lived. Not content with these acts of horrible cruelty, he destroyed at a single blow all freedom of discussion in the municipal body, usurped its powers, and frightened away such members as he thought would not bow to his will. During the government of Tacon the act of exclusion was passed at Madrid, which shut out the unfortunate island from all representation in the Cortes. This was in February, 1837, and the act, it should be borne in mind, was in direct violation of the new constitution, which had just been adopted, the 28th article of which stated that the basis was the same for national representation in both hemispheres, while by the 29th article, the basis in Cuba was the population of the island, composed of persons who, in both lines, were of Spanish origin. The rejection of the Cuban deputies at Madrid completed this rapid enslavement. The Cubans were henceforth cut off from even the possibility of relief. From the same period also may be dated a new series of wrongs, injuries and oppressions against her unfortunate inhabitants. The Spanish Cortes, jealous of the extensive trade of Cuba with the United States, had already imposed a duty of nearly ten dollars a barrel on flour imported from them into Cuba. This was now raised to about ten dollars and three-quarters, thus placing the enormous tax of 150 per cent. on the first necessary of life. When it is considered that all articles of primary necessity come from abroad, and that they are all enormously taxed, this one item of her tariff will be readily appreciated, both in itself and in its relations. At the same time the tonnage dues of Cuban vessels were placed nearly on the same footing with those of foreign vessels. This was of course ruinous to her merchant marine, and was especially aggravating, since the island

offered vast advantages in her fine forests for shipping, and up to 1798 had furnished timber for the construction, in the Arsenal at Havana, of one hundred and twenty-five vessels—fifty-three of which were frigates and six three-deckers. This line of policy once adopted, it was carried out with relentless vigor. The home government now considered, not how large a revenue the island yielded, but how it was possible to get more from it. Ingenuity was racked to devise new objects and measures of taxation. The list of the different Cuban taxes is a curiosity of itself. The prime ministers of other monarchies might learn a lesson from it, were it not that there is no government which would dare avail itself of such an enormous system of oppression.

The pursuit of robbery and plunder—it can be called by no milder name—has been reduced to a complete system. Each official reserves to himself a large sum from the amount wrung from the inhabitants, so that while the revenue of the island, from the various sources of taxation, must be at least twenty-five millions of dollars, (it is ordinarily incorrectly stated at about twelve millions), only about three millions find their way to the Spanish treasury. In the mean time the slave trade is carried on as extensively as ever, and with greater cruelty. Spain *will not* abolish it. She is determined, in spite of treaties, to pour annually into Cuba, a fierce black population which shall intimidate the Creoles from any attempt at freedom. This, and this only, is the secret of the unflinching prosecution of the slave-trade in the face of treaties, and contrary to the wishes of the Creole population. It has been said that the continuance of the traffic is owing to the enormous bribes, to the Captain General, of thirty-two dollars for each slave, and that this is the only reason it is not abolished. It is ridiculous even to suppose that Spain, if she had no other object but to enrich an unscrupulous official, would run the risk of continually breaking her treaty with so powerful a nation as England, always on the alert, if possible to enforce it.

But that no one may have a doubt of the ultimate object of Spain in constantly flooding Cuba with Africans, we translate the following from the *Heraldo* of Madrid: "It is well for all to know, whether native or foreign, that the island of Cuba, can only be Spanish or African. When the day comes when the Spaniards should be found to abandon her, they will do so by bequeathing their sway to the blacks, just as a commander abandons a battery to the enemy, after defending it as long as possible, but taking care, above everything, to spike the cannon, that the adversary shall not make use of them." While the Spanish organ in New York, the *Cronica*, holds the following language:—"If in consequence of the war, signs should be manifested that the hostile elements, now subdued by the interests of our common race, were to be let loose, Spain would arm her Africans, and would guide them as auxiliaries as long as it were in her power to do so, and would grant them full liberty as a reward for their aid, when she should perceive that these means were not sufficiently powerful to enable her longer to resist!"

It will be seen that Spain has not only deprived Cuba of all means of redress, but also that she openly avows a determination to hold her in chains by the most terrible of all menaces, that of encouraging a servile insurrection.

But to proceed: The press, under the most infamous and servile censor-

ship, is a weapon wielded only against her rights. A petition, signed by more than two, is condemned as a seditious act. The corporations, as we have stated, have no longer a representative character, and they are under the immediate control of the Captain General, who appoints their members, and dictates at will their resolutions. The Board of Improvement has become a mere arm of the government, to sanction despotic acts, to support additional taxes, and to introduce mixed races into the population. All who have dared to oppose these measures are forced into obscurity, or persecuted, or expatriated.

The Creoles are excluded from the army, the judiciary, the treasury, and the customs, and from all influential or lucrative positions; private speculations and monopolies are favored and established with a view of taking from them their means of wealth; the poor in the country are compelled to serve in the precarious police, which is thus sustained; and fines are imposed, and forced aid for the repairing of the roads, according to the will of the officer in command, or the pliancy of the individual.

The twenty-five millions of taxes, after deducting what is embezzled by the officials, are employed in supporting an army of twenty thousand men, and likewise the entire navy of Spain, in the paying of a vast number of officers residing either on the island or at home; and in remittances for general purposes. In spite of the enormous tithe collected, it is only by subscriptions that the inhabitants can secure to themselves temples for their worship, or cemeteries for their dead; and for a baptism, or a burial, or to obtain any of the consolations of religion, the care of which is indirectly under the all-absorbing military authority, a large additional sum must be paid. The military government has taken from the other political and administrative branches the control of education, in order to restrict, to limit, and to embarrass it. The tributary system has drained many sources of wealth. The flour monopoly has put down the cultivation of coffee; and the grazing of cattle has become a ruinous business from the tax on slaughtered animals.

Every inhabitant is compelled to ask for a license, and pay for the same, when he wants to go from the place of his residence. No citizen, however peaceful and respectable he may be, is allowed to walk through the city after ten o'clock in the evening, unless he carries with him a lantern, and obtains leave successively of all the watchmen on his way, the infraction of which law is punished with immediate arrest, and a fine of eight dollars. He is not permitted to lodge any person in his house for a single night, be the same either native or foreigner, his friend or a member of his family, without giving information of the fact, under the penalty of a like punishment. He cannot remove his residence from one house to another, without giving notice, previously, of his intention, to the authorities, under the penalty of a heavy fine. An order has been made which in effect prohibits parents from sending their children to the United States for purposes of education, and such as wish to do so are driven to the expedient of proving or feigning ill health in their children, in order to obtain pass ports for them.

THE PLANET-WATCHERS OF GREENWICH.

THERE is a morsel of Greenwich Park, which has, for nearly two centuries, been held sacred from intrusion. It is the portion inclosed by the walls of the Observatory. Certainly a hundred thousand visitors must ramble over the surrounding lawns, and look with curious eye upon the towers and outer boundaries of that little citadel of science, for one who finds admission to the interior of the building. Its brick towers, with flanking turrets and picturesque roofs, perched on the side of the gravelly hill, and sheltered round about by groups of fine old trees, are as well known as Greenwich Hospital itself. But what work goes on inside its carefully preserved boundary, and under those movable, black-domed roofs, is a popular mystery. Many a holiday-maker's wonder has been excited by the fall, at one o'clock, of the huge black ball, high up there, by the weather vane on the topmost point of the eastern turret. He knows, or is told if he asks a loitering pensioner, that the descent of the ball tells the time as truly as the sun; and that all the ships in the river watch it to set their chronometers by, before they sail; and that all the railway clocks, and all the railway trains over the kingdom are arranged punctually by its indications. But how the heavens are watched to secure this punctual definition of the flight of time, and what other curious labors are going on inside of the observatory, is a sealed book. The public have always been, of necessity, excluded from the Observatory walls, for the place is devoted to the prosecution of a science whose operations are inconsistent with the bustle, the interruptions, the talk, and the anxieties of popular curiosity and examination.

But when public information and instruction are the objects, the doors are widely opened, and the press and its *attachés* find a way into this, as into many other sacred and forbidden spots. Only last week one of "our own contributors" was seen in a carriage on the Greenwich railway, poring over the paper in the last Edinburgh Review that describes this national astronomical establishment, and was known afterward to have climbed the Observatory hill, and to have rung and gained admission at the little, black, mysterious gate in the Observatory wall. Let us see what is told in his report of what he saw within that sacred portal.

In the park on a fine day all seems life and gayety—once within the Observatory boundary, the first feeling is that of isolation. There is a curious stillness about the place, and the footstep of the old pensioner, who closes the gate upon a visitor, echoes again on the pavement as he goes away to wake up from his astronomical or meteorological trance one of the officers of this sanctum. Soon, under the guidance of the good genius so invoked, the secrets of the place begin to reveal themselves.

The part of the Observatory so conspicuous from without is the portion least used within. When it was designed by Christopher Wren, the general belief was that such buildings should be lofty, that the observer might be raised toward the heavenly bodies whose motions he was to watch.

More modern science has taught its disciples better; and in Greenwich, which is an eminently practical Observatory, the working part of the building is found crouching behind the loftier towers. These are now occupied as subsidiary to the modern practical building. The ground floor is used as a residence by the chief astronomer; above is the large hall originally built to contain huge movable telescopes and quadrants—such as are not now employed. Nowadays, this hall occasionally becomes a sort of scientific counting-house—irreverent but descriptive term—in which, from time to time, a band of scientific clerks are congregated to post up the books in which the daily business of the planets has been jotted down by the astronomers who watch those marvelous bodies. Another portion is a kind of museum of astronomical curiosities. Flamstead and Halley, and their immediate successors, worked in these towers, and here still rest some of the old, rude tools with which their discoveries were completed, and their reputation, and the reputation of Greenwich, were established. As time has gone on, astronomers and opticians have invented new, and more perfect, and more luxurious instruments. Greater accuracy is thus obtainable at a less expenditure of human patience and labor; and so the old tools are cast aside. One of them belonged to Halley, and was put up by him a hundred and thirty years ago; another is an old brazen quadrant, with which many valuable observations were made in by-gone times; and another, an old iron quadrant, still fixed in the stone pier to which it was first attached. Some of the huge telescopes that once found place in this old Observatory, have been sent away. One went to the Cape of Good Hope, and has been useful there. Another of the unsatisfactory, and now unused instruments, had a tube twenty-five feet long, whose cool and dark interior was so pleasant to the spiders that, do what they would, the astronomers could not altogether banish the persevering insects from it. Spin they would; and, spite of dusting and cleaning, and spider-killing, spin they did; and, at length, the savans got more instruments and less patience, and the spiders were left in quiet possession. This has been pleasantly spoken of as an instance of poetical justice. It is but fair that spiders should, at times, have the best of astronomers, for astronomers rob spiders for the completion of their choicest instruments. No fabric of human construction is fine enough to strain across the eye-piece of an important telescope, and opticians preserve a particular race of spiders, that their webs may be taken for that purpose. The spider lines are strained across the best instruments at Greenwich and elsewhere; and when the spinners of these beautifully fine threads disturbed the accuracy of the tube in the western wing of the old Observatory, it was said to be but fair retaliation for the robberies the industrious insects had endured.

A narrow stair leads from the unused rooms of the old Observatory to its leaded roof, whence a magnificent view is obtained; the park, the hospital, the town of Greenwich, and the windings of the Thames, and, gazing further, London itself comes grandly into the prospect. The most inveterate astronomer could scarcely fail to turn for a moment from the wonders of the heavens to admire these glories of the earth. From the leads, two turrets are reached, where the first constantly active operations in this portion of the building are in progress.

At the present time, indeed, these turrets are the most useful portions

of the old building. In one is placed the well-known contrivance for registering, hour after hour, and day after day, the force and direction of the wind. To keep such a watch by human vigilance, and to make such a register by human labor, would be a tedious, expensive, and irksome task; and human ingenuity taxed itself to make a machine for perfecting such work. The wind turns a weathercock, and, by aid of cog-wheels, the motion is transferred to a lead pencil fixed over a sheet of paper, and thus the wind is made to write down the direction which itself is blowing. Not far distant is a piece of metal, the flat side of which is ever turned by the weathercock to meet the full force of the wind, which, blowing upon it, drives it back against a spring. To this spring is affixed a chain passing over pullies toward another pencil, fixed above a sheet of paper, and moving faithfully, more or less, as the wind blows harder or softer. And thus the "gentle zephyr," and the fresh breeze, and the heavy gale, and, when it comes, the furious hurricane, are made to note down their character and force. The sheet of paper on which the uncertain element, the wind, is bearing witness against itself, is fixed upon a frame moved by clock-work. Steady as the progress of time, this ingenious mechanism draws the paper under the suspended pencils. Thus each minute and each hour has its written record, without human help or inspection. Once a day only, an assistant comes to put a new blank sheet in the place of that which has been covered by the moving pencils, and the latter is taken away to be bound up in a volume. This book might with truth be lettered, "The History of the Wind; written by Itself"—an Æolian autobiography.

Close by is another contrivance for registering in decimals of an inch the quantity of rain that falls. The drops are caught, and passing down a tube, a permanent mark is made by which the quantity is determined.

The eastern turret is devoted to the Time Ball and its mechanism. Far out at sea—away from all sources of information but those to be asked of the planets, his compass, his quadrant, his chronometer and his almanac, the mariner feels the value of *time* in a way which the landsman can scarcely conceive. If his chronometer is right, he may feel safe; let him have reason to doubt its accuracy, and he knows how the perils surrounding him are increased. An error of a few seconds in his time may place him in danger—an error of a few minutes may lead him to steer blindly to his certain wreck. Hence his desire when he is leaving port to have his time-pieces right to a second; and hence the expenditure of thought, and labor, and money, at the Greenwich Observatory, to afford the shipping of the great port of London, and the English navy, the exact time—true to the tenth of a second, or six hundredth of a minute—and to afford them also a book, the Nautical Almanac, containing a mass of astronomical facts, on which they may base their calculations, with full reliance as to their accuracy. Every day for the last seventeen years, at five minutes before one o'clock, the black ball five feet across and stuffed with cork, is raised halfway up its shaft above the eastern turret of the Observatory—at two-and-a-half minutes before that hour it rises to the top. Telescopes from many a point, both up and down the river, are now pointed to this dark spot above the Greenwich trees, and many an anxious mariner has his time-pieces beside him, that their indications may be made true. Watch the ball as you stand in the park. It is now just raised. You must wait two minutes and a half, and as you do so, you feel what a

minute may be. It seems a long, palpable, appreciable time, indeed. In the turret below, stands a clock telling the true time, gained by a laborious watching of the *clock-stars;* and beside the clock is a man with a practised hand upon a trigger, and a practised eye upon the face of the dial. One minute—two minutes pass. Thirty seconds more and the trigger has released the ball. As it leaves the top of the shaft, it is one o'clock to the tenth of a second. By the time it has reached the bottom it is some five seconds later.

Leaving the Ball Turret, and the old building which it surmounts, the new Observatory, where the chief work of the establishment is done, claims our notice. This attention would scarcely be given to its outward appearance, for it is a long, low building, scarcely seen beyond its own boundaries. The Greenwich Observatory is not a *show* place, but an eminently practical establishment. St. Petersburg and other cities have much more gorgeous buildings devoted to astronomical purposes, and Russia and other countries spend much more money on astronomy than England does, yet the Greenwich Tables have a world-wide reputation, and some of them are used as the groundwork for calculations in all Observatories, at home and abroad. The astronomer does not want marble halls or grand saloons for his work. Galileo used a bell-tower at Venice, and Kepler stood on the bridge at Prague to watch the stars. The men, not the buildings, do the work. No disappointment need be felt, then, to find the modern Observatory a range of unadorned buildings running east and west, with slits in the roof, and in some of the walls. Within these simple buildings are the instruments now used, displaying almost the perfection of mechanical skill in their construction and finish—beautifully adapted to the object they have to fulfill, and in perfect order. They are fixed on solid piers of masonry, deeply imbedded in the earth, to secure freedom from vibration—a quality better obtained when the foundations are on sand or gravel than when on rock.

To describe the instruments by their technical names, and to go into any particulars of the instruments they have superseded, would take space, only to do the work of a scientific treatise. Enough, therefore, to say, that there are the telescopes best adapted to the chief duty of the place, which is, watching the moon whenever she is visible; watching the *clock stars*, by which the true time is calculated more exactly than it could be from observations of the sun alone; and watching other planetary bodies as they pass the meridian. Eclipses, occultations, and other phenomena, of course, have their share of attention, and add to the burden of the observer's duties.

The staff of the Observatory includes a chief astronomer, Mr. Airy, with a salary of £800 a year; and six assistants, who are paid, £470, £290, £240, £150, £130, and £130, respectively. This does not include the Meteorological branch of the establishment, to be spoken of hereafter; and which consists of Mr. Glaisher, with £240 a year, one assistant at £120, and two additional computers. At times, when these scientific laborers have collected more observations than they are able to work out, additional help is summoned, in shape of the body of scientific clerks before spoken of; who, seated at desks, cast up the accounts of the planetary bodies, including such regular old friends as the moon and fixed stars, but not forgetting those wandering celestial existences that rush,

from time to time, over the meridian, and may be fairly called the chance customers of the astronomer.

Though the interior of the Observatory seems so still, the life of those employed there has its excitements. Looking through telescopes forms a small part only of their duty—and that duty cannot be done when the weather is unfavorable. On cloudy days the observer is idle; in bright weather he is busy; and a long continuance of clear days and nights gives him more employment than he can well complete. Summer, therefore, is his time of labor; winter his time of rest. It appears that in our climate the nights, on the whole, are clearer than the days, and evenings less cloudy than mornings. Every assistant takes his turn as an observer, and a chain of duty is kept up night and day; at other periods, the busiest portion of the twenty-four hours at the Observatory is between nine in the morning and two in the afternoon. During this time they work in silence, the task being to complete the records of the observations made, by filling in the requisite columns of figures upon printed forms, and then adding and subtracting them as the case requires. While thus engaged, the assistant who has charge of an instrument looks, from time to time, at his star-regulated clock, and when it warns him that his expected planet is nearly due, he leaves his companions, and quietly repairs to the room where the telescope is ready. The adjustment of this has previously been arranged with the greatest nicety. The shutter is moved from the slit in the roof, the astronomer sits upon an easy chair with a movable back. If the object he seeks is high in the heavens, this chair-back is lowered till its occupant almost lies down; if the star is lower, the chair-back is raised in proportion. He has his note book and metallic pencil in hand. Across the eye-piece of the telescope are stretched seven lines of spider web, dividing the field of view. If his seat requires change, the least motion arranges it to his satisfaction, for it rests upon a railway of its own. Beside him is one of the star-clocks, and as the moment approaches for the appearance of the planet, the excitement of the moment increases. "The tremble of impatience for the entrance of the star on the field of view," says an Edinburgh Reviewer, "is like that of a sportsman whose dog has just made a full point, and who awaits the rising of the game. When a star appears, the observer, in technical language, *takes a second from the clock face;* that is, he reads the second with his eye, and counts on by the ear the succeeding beats of the clock, naming the seconds mentally. As the star passes each wire of the transit, he marks down in his jotting-book with a metallic pencil the second, *and the second only*, of his observation, with such a fraction of a second as corresponds, in his judgment, to the interval of time between the passage of the star and the beat of the clock which preceded such passage."

An experienced observer will never commit an error in this mental calculation, exceeding the tenth of a second, or six hundredth of a minute. When the star has been thus watched over the seven cobweb lines (or wires,) the observer jots down the hour and minute, in addition to the second, and the task is done. Stars, not very near the sun, may be seen in broad daylight; but, at night, it is requisite to direct a ray of light from a lamp, so far to enlighten the field of the telescope as to permit the spider lines to be seen running across the brighter ground on which the expected star is to be visible.

The adjustment of the instruments is a task of great nicety. If they are out of trim only the shadow of a shade of a hair's breadth, the desired accuracy is interfered with, and they have to be reädjusted. Temperature is of course an important element in their condition, and a slight sensibility may do mischief. The warmth of the observer's body, when approaching the instruments, has been known to affect their accuracy; and to avoid such sources of error, instruments have at times been cased in flannel, that the non-conducting powers of that homely fabric might screen the too sensitive metal.

Sunday is a comparative holiday at the Observatory; for then, except when any extraordinary phenomena are expected, the only duty done is to drop the Time Ball, and observe the moon's place. The moon is never neglected, and her motions have been here watched, during the last hundred and seventy years, with the most pertinacious care—to the great service of astronomy, and the great benefit of navigation.

The library should not pass unnoticed. It is small; but being devoted to works upon astronomy, and the kindred sciences, there is ample room for all that has hitherto been written on the subject, or that can, for many generations, be produced. The observations of a lifetime spent in watching the stars may be printed in marvelously few pages. A glance through the Greenwich Astronomical Library gives a rough general idea of what the world has done and is doing for the promotion of this science. Russia contributes large, imperial-looking tomes, that tell of extended observations made under the munificent patronage of a despot; Germany sends from different points a variety of smaller, cheaper-looking, yet valuable contributions; France gives proofs of her genius and her discoveries; but *her* forte is not in observation. The French are bad observers. They have no such proofs of unremitting, patient toil in search of facts, as those afforded in the records of the Greenwich Tables of the Moon. Indeed, Greenwich, as we have already said, is a working Observatory; and those who go into its library, and its fire-proof manuscript room, and see how its volumes of observations have been growing from the small beginnings of the days of Flamstead and Halley, to those of our later and more liberal times, will have good reason to acknowledge that the money devoted to this establishment has been well employed.

One other spot must be noticed as among the notable things in this astronomical sanctum. It is the Chronometer room, to which, during the first three Mondays in the year, the chief watchmakers of London send in their choicest instruments for examination and trial. The watches remain for a good portion of the year; their rates being noted, day by day, by two persons; and then the makers of the best receive prizes, and their instruments are purchased for the navy. Other competitors obtain certificates of excellence, which bring customers from the merchant service; while others pass unrewarded. To enter the room where these admirable instruments are kept, suggests the idea of going into a Brobdignag watch factory. Round the place are ranged shelves, on which the large watches are placed, all ticking in the most distinct and formidable way one against another. When they first arrive, in January, they are left to the ordinary atmospheric temperature for some months. Their rates being taken under these circumstances, a large stove in the center of the apartment is lighted, and heat got up to a sort of artificial East India or Gold Coast point.

Tried under these influences, they are placed in an iron tray over the stove, like so many watch-pies in a baker's dish, and the fire being encouraged, they are literally kept baking, to see how their metal will stand that style of treatment. While thus hot their rates are once more taken; and then, after this fiery ordeal, such of them as their owners like to trust to an opposite test, are put into freezing mixtures! Yet, so beautifully made are these triumphs of human ingenuity—so well is their mechanism "corrected" for compensating the expansion caused by the heat, and the contraction induced by the cold—that an even rate of going is established, so nearly, that its variation under opposite circumstances becomes a matter of close and certain estimate.

The rates of chronometers on trial for purchase by the Board of Admiralty, at the Observatory, are posted up and printed in an official form. Upon looking to the document for last year, we find a statement of their performances during six months of 1849, with memoranda of the exact weeks during which the chronometers were exposed to the open air at a north window; the weeks the chronometer room was heated by a stove, the chronometers being dispersed on the surrounding shelves; and the weeks during which they were placed in the tray above the stove. The rate given during the first week of trial is in every case omitted; like newly entered schoolboys, their early vagaries are not taken into account; but after that, every merit and every fault is watched with jealous care, and when the day of judgment comes, the order of the arrangement of the chronometers in the list is determined solely by consideration of their irregularities of rate as expressed in the columns, "Difference between greatest and least," and "Greatest difference between one week and the next."

The Royal Observatory, according to a superstition not wholly extinct, is the head-quarters, not only of Astronomy, but of Astrology. The structure is awfully regarded, by a small section of the community which ignorance has still left among us, as a manufactory of horoscopes, and a repository for magic mirrors and divining rods. Not long ago a well dressed woman called at the Observatory gate to request a hint as to the means of recovering a lost sum of money; and recently somebody at Brighton dispatched the liberal sum of five shillings in a post office order to the same place, with a request to have his nativity cast in return! Another, only last year, wrote as follows: "I have been informed that there are persons at the Observatory who will, by my inclosing a remittance and the hour of my birth, give me to understand *who is to be my wife!* An early answer, stating all particulars, will oblige," &c.

This sketch, descriptive of its real duties and uses, is not necessary to relieve the Greenwich Observatory from the charge of being an abode of sorcerers and astrologers. A few only of the most ignorant can yet entertain such notions of its character; but they are not wholly unfounded. Magicians, whose symbols are the Arabic numerals, and whose *arcana* are mathematical computations, daily foretell events in that building with unerring certainty. They pre-discover the future of the stars down to their minutest evolution and eccentricity. From data furnished from the Royal Observatory, is compiled an extraordinary prophetic Almanac from which all other almanacs are copied. It foretells to a second when and where each of the planets may be seen in the heavens at any minute for

the next three years. The current number of the Nautical Almanac is for the Year of Grace 1856.

In this quiet sanctuary, then, the winds are made to register their own course and force, and the rain to gauge its own quantity as it falls; the planets are watched to help the mariner to steer more safely over the seas; and the heavens themselves are investigated for materials from which their future as well as their past history may be written.

CHIVALRY AND THE CRUSADES.

THE institution and spirit of chivalry form a prominent and important feature of history, and have been regarded by writers and men of erudition in various points of view; while some have condemned it as altogether injurious and absurd, others have dignified it with the title of sublime! There have been found men of modern days, and those the fortunate possessors of more than common abilities, who would sigh over the degeneracy of the times, and lament that the age of chivalry is gone. But if the material and least worthy part of it has passed away, its spirit still remains, still invites men to high and honorable deeds, and is indeed imperishable and immortal. The vows of knighthood, the ceremonials of installations, the pomp and ceremony of knightly feats, have gone; but the devotion of the patriot, the ardor of the warrior, the warmth of the lover, the fidelity of the friend, the loyalty and truth of the man of honor, do not sleep in the graves of Charlemagne, Roland, and Bayard.

In seeking for the origin of chivalry, we are led back to the feudal ages, and the consideration of the condition of the Germanic tribes, when its peculiar spirit first began to display itself. The tribes were composed, not of superiors and inferiors, but of masters and slaves; of men whose birthright was ease and honor, and of others who inherited the bond of ceaseless toil. By the noble-born, labor of any kind was considered degrading, and the profession of arms alone worthy of being followed; so that the lords of the soil were a race of independent warriors, whose thirst for fame was a continual excitement. The different feudal sovereigns were nominally subject to a legitimate prince, and were bound to follow his banner into battle, at the head of their vassals, and to respond to his call, by bringing, at a moment's warning, an armed force to his support. Still, when removed from the presence of his sovereign, the feudal lord was a petty despot, whose vassals felt that he possessed absolute power of life and death over them.

Unlimited authority gave rise to various abuses, and it was well that chivalry, with its high tone of honor and morality, sprang up in ages of general darkness, fraud, and oppression. Great enterprises contributed to bind numbers of knights together, and led to the formation of various societies and orders; and when these military adventurers were not leagued together in any of the Holy Wars, a reciprocity of principle, and an iden-

tity of religion, held them in a common chain. Animated by a love of justice, a veneration for the fair sex, a high-minded regard for truth, a thirst for military glory, and a contempt for danger, the knights went forth, to brave peril, to rescue the unfortunate, and to crush the oppressor. Numerous individuals set forth with no fixed purpose but that of discovering some wrong and righting it, and these wandering champions were called *Knights Errant*, and their exploits sang in camp and court by the minstrels, whose lays immortalized the sons of chivalry. Chivalry degenerated, but not rapidly. After the lapse of many years from its foundation, the number of its ceremonials increased, its pageantry was disgraced by frippery and folly, its vows were unobserved; a devotion to the sex was succeeded by boundless licentiousness, and the wandering spirit of knight-errantry was displaced by an affectation of eccentricity.

In the fourteenth century, the honors of knighthood were restricted to the nobility, and then arose the various forms and ceremonies, which at length concealed the original design of chivalry, and brought on a premature decline. The knightly education of a youth generally commenced with his twelfth year, when he was sent to the court of some noble pattern of chivalry, to learn dancing, riding, the use of his weapon, &c., and where his chief duty was assiduous attention to the ladies in the quality of page. According to his progress in years and accomplishments, he became squire to some knight, and when he fairly merited the distinction, he was himself knighted. This honor was not conferred upon a youth before his twenty-first year, unless high birth, or extraordinary valor and address, seemed to warrant the setting aside of the usual regulation. Sometimes the honor was won by many a field of bloody toil, with many drops of sweat and gore, and not unfrequently, one daring achievement, artfully planned, and gallantly carried into execution, procured the wished-for spurs, and the anticipated *accolade*.

The ceremony of conferring knighthood was often performed on the field of battle, where the honor had been earned; often it required and received the most imposing preparations and ceremonies. The young candidate guarded his arms for a night, and this was called the *vigil of arms*. In the morning, he bathed in water, which was the emblem of the truth and purity which he swore to preserve sacred. Clad in spotless garments, he kneeled before the altar of the nearest church, and, having presented his sword to the officiating priest, received it again with the benediction of the reverend man. After taking the oaths of allegiance, he knelt before his sovereign, who gave him the *accolade*, or blow upon the neck with the flat of his sword, saluted the young warrior, and said: "In the name of God and St. Michael, (or, in the name of the Father, Son, and Holy Ghost,) I dub thee a knight. Be loyal, brave, and fortunate."

It was customary for two knights of the same age and congenial tempers to form a friendship, and this brotherhood in arms lasted generally until one of the two was laid in the grave. The courtesy of chivalry softened the asperity of war, gave charms to victory, and assuaged to the vanquished the pain of a defeat. All that ingenuity could plan, and wealth produce, to give splendor to knighthood, was displayed in the age of chivalry. Magnificent tournaments were held, where even kings entered the lists, and contended for the prize of valor, before the eyes of thousands of spectators, among whom beautiful ladies appeared the most deeply interested.

In fact, the knights often contended about the charms of their lady-loves, and wore their favors in their helmets. If the ladies of Rome attended gladiatorial shows in throngs, we cannot wonder that the beauties of the age of chivalry looked forward to a tournament with great impatience, and eagerly strove for the honor of filling the post of temporary queen and distributer of the prizes.

Chivalry exerted a powerful influence on poetry, and formed the subjects of the poems of the *troubadours*, of the south of France, as well as supplied themes for the poetical controversies of the knights, which were decided at the *cours d'amour* (courts of love,) first established in Provence. Even after chivalry had died away, its influence was not unfelt by poetry, which retained the tone it had imparted for many centuries.

Crusades, or Croisades, was the name given to the expeditions fitted out by the Christian warriors of Europe, for the recovery of the Holy Land, from the end of the eleventh to the end of the thirteenth century. The Crusades derived their name from the badge of the cross, which was wrought upon their mantles, and appeared in various parts of their equipments.

The age was one in which the people were peculiarly adapted to the reception of enthusiastic religious impulses. The Christians could not bear to think that the places which they held so dear, and which the history of their religion hallowed, should be desecrated by the presence of infidels, and rendered dangerous to those pilgrims whom a sincere feeling of reverence called to Palestine. The church called upon the chivalry of Europe, and the knights responded to the summons.

The rise of the Crusades is immediately attributable to the enthusiasm of a wandering pilgrim, called Peter the Hermit, who, having experienced the tyrannical exactions imposed on the visitors of the holy sepulchre, represented them to Pope Urban II. in such lively colors, that the prelate selected him as the instrument of a grand design which he had formed to overthrow the Mohammedan power; and Peter, armed with the holy commission, went from province to province, to kindle up that enthusiasm by which he was himself consuming.

When the feelings of the people and the potentates appeared ripe for some wild project, Urban held a council in the open fields at Piacenza, and proposed his scheme, which was warmly applauded, but not as warmly embraced. Another council was therefore held at Clermont, France, graced by the presence of ambassadors from all nations, and the result was as favorable as he could have anticipated. The pope held out to the crusaders the promise of spiritual pardon, and imposed on them only the penance of plunder for their sins. Thus excited, the enthusiasm became general; noblemen sold their estates for outfits; the meanest lords of the manors set forth at their own expense; the poor gentlemen followed them as esquires; and above eighty thousand collected under the banners of the cross. Godfrey, of Boulogne, was at the head of seventy thousand foot; and ten thousand horse, splendidly armed, were under the command of many lords, who were joined by Hugh, brother to Philip I., of France, Raymond of Toulouse, Bohemond, King of Sicily, and others of equal and less note. A proposal was made to the pope to put himself at their head, but he refused. This refusal, however, did not damp their ardor.

Confiding in their cause, their numbers, and their equipments, they traversed Germany and Hungary, took Nice, Antioch, and Edessa, and arrived

at Jerusalem in 1099. The city was taken after five weeks' siege. All but the Christians were massacred, and the army of crusaders, after the perpetration of unparalleled atrocities, went to shed their tears at the sepulchre of Christ! Godfrey of Boulogne, (not without opposition from the priests,) was elected King of Jerusalem, but died in 1100. In 1102, an immense army, which departed for the Holy Land, was defeated, and no fewer than two hundred thousand men lost to Europe by the enterprise. The capture of Baldwin, and the loss of Edessa, occasioned a new crusade.

France again gave the impulse to their religious excitement. Pope Eugenius III. induced St. Bernard, of Clairvaux, to act the part of Peter the Hermit, and the consequence was that Louis the Young, accompanied by his wife, Eleanor of Guienne, departed for the Holy Land, and Conrad III., in whose hands the red cross was placed, led a large army into Asia. Both of them, however, were unsuccessful.

The unfortunate issue of the second crusade was precipitated by the dissensions of the Christians, and the uncommon abilities of the Sultan Saladin, who, advancing at the head of an army that placed implicit confidence in the courage and skill of their leader, animated by a religious fury no less absorbing than that which filled the breasts of the crusaders, threw himself upon Jerusalem, which, unable to hold out against him, once more echoed to the shouts of Saracen conquerors, as they again erected their crescent on the ramparts of the city. The Christians lost all their possessions but Antioch, Tripoli, Joppa, and Tyre.

The leaders of the third crusade, (1189,) were Frederick I. of Germany, surnamed Barbarossa, the chivalric Philip Augustus of France, and the lion-hearted Richard I. of England. Barbarossa was ultimately unsuccessful, but the monarchs of France and England took possession of Ptolemais or Acre. Philip Augustus, from motives of jealousy, left the field to Richard, who proved himself a worthy rival of Saladin, and the two commanders performed wonderful feats of arms, which were the admiration of both armies. The fourth crusade was conducted by Andrew II. King of Hungary, and the fifth by Frederick II. of Germany. The results of these ought to have shown that the Christians could not hope to gain permanent possession of the country. It was this time that St. Louis, King of France, undertook the sixth and last crusade, which, though well conceived, and vigorously carried on, was unsuccessful. In the last crusade no fewer than one hundred and fifty thousand persons perished; add to this the number that died in former expeditions, and it will be seen that the East was the tomb of above two millions of Europeans; and several countries were depopulated and impoverished by the crusades. Yet the Holy Wars were not without good. They created an intimate connection and a constant intercourse between the nations of Europe, which, as it was favorable to commercial enterprise, increased the wealth, improved the arts, and contributed to establish the civilization, of the Christian world.

MARIE ANTOINETTE.

MARIE ANTOINETTE, the unfortunate wife of Louis XVI. of France, was the daughter of Francis I. Emperor of Germany, and Maria Theresa of Austria, and was born at Vienna, in 1755. Her accomplishments, talents, grace, virtue, and uncommon loveliness, fitted her for the queen of a gallant nation, and as such she should been honored in France, had she lived before oppression had roused the people to madness. Her mother, in a letter to her future husband, after alluding to the care with which she had formed her mind, says, "Above all things, I have recommended to her humility before God, because I am convinced that it is impossible for us to secure the happiness of the subjects confided to us, without love to Him, who destroys the sceptres and the thrones of kings according to his will."

The marriage took place at Versailles, May 16, 1770, and was celebrated with uncommon splendor; but immediately after the ceremony, a thunder-storm of unparalleled violence broke over the palace of Versailles, darkened the surrounding scenery, and struck terror into the hearts of the people for miles around. On the thirtieth of May, the festivities of Paris were saddened by a most terrible accident; a number of citizens being crushed to death in the Rue Royale, by some mismanagement on the part of the proper authorities. Fifty-three persons were found dead, and three hundred more were dangerously injured.

The magnanimity of Marie Antoinette displayed itself soon after her elevation to the throne, upon the death of Louis XV. An officer of the *gardes du corps* (body-guard) who had given her offense on some former occasion, expressed his intention of resigning his commission, but the queen forbade him. "Remain," said she; "forget the past. Far be it from the Queen of France to avenge the injuries of the dauphiness." She devoted herself to the interests of her people with an assiduity unparalleled in a sovereign of her age, yet, becoming obnoxious to the court party, her character was assailed in every shape and quarter. She was accused of setting on foot conspiracies which never existed, and of entertaining views which never entered her mind. She was termed the *Austrian*, and it was openly asserted, as well as privately insinuated, that her heart was estranged from the country of her husband, and her mind solely occupied with the interests of her native land.

In her conduct there was matter for gentle reproof, but none for malevolent accusation. A gayety which sometimes degenerated into levity, a passion for fashionable novelties, and an unwary contempt for court formalities, instead of being regarded as the foibles and imprudences of a young and innocent mind, were construed into evidences of the existence of loose principles, unbridled extravagance, and hatred for the nation. She was likewise charged with pettishness under reproof, and we can readily conceive how a female of so high a rank, conscious of the purity of her intentions, and perpetually assailed by reckless cavillers, assumed, in reply to the unworthy insinuations of her enemies, the tone which her virtue and

her birth appeared to warrant. The affair of the diamond necklace created an extraordinary sensation. A jeweler, at Paris, demanded payment for a necklace so costly that the finances of a queen would hardly warrant its purchase. The result of an examination was the proof of the queen's integrity. A lady, of the stature and complexion of the queen, had succeeded in disguising herself, and passing herself off as Antoinette, upon a cardinal, in a midnight meeting in the park of Versailles.

On the sixth of October, 1789, the mob broke into the palace of Versailles, murdered some of the body-guards, and threatened the queen in the most frightful language. At midnight she received a letter from a friendly clergyman, advising her to seek safety in flight, as her life would be sacrificed early the next morning. She resolved to remain, and destroyed the letter. She heard the footsteps of the ruffian rabble—she thought her time had come—but her life was saved. The progress of the ruffians was arrested at the very door of her bed-chamber, where her faithful guardsmen laid down their lives to secure for their queen a retreat to the chamber of the king. The king and queen showed themselves with their children in the balcony. The mass of heads beneath, for a moment, ceased to be agitated—but it was only for a moment. Silence was broken by a thousand tongues: "No children! no children!—the queen, the queen, alone!" This was a trying moment; but Antoinette had firmness for the crisis. Putting her son and daughter into her husband's arms, she advanced alone into the balcony. A spectacle like this filled the fierce people with admiration, and thundering shouts of *Vive la Reine!* (long live the queen!) succeeded to the imprecations of the preceding moment. Such is the fickleness of a mob. The march to Paris was a succession of terrors. The heads of two faithful guardsmen, elevated on pikes, met the eyes of the poor queen as she looked from her carriage windows!

The fate of Antoinette darkened rapidly. With the king she fled to Varennes—with him was brought back to Paris. Her courage did not fail in the scene of the Legislative Assembly, before which body she was present with her husband, heard his deposition pronounced, and then went into the Temple, where he was imprisoned. Here, where the light of heaven faintly fell through grated windows, surrounded by her family, she appeared to feel entire resignation to the will of Him, on whom the happiness of the humblest individual depends. When she heard the condemnation of the king, from the lips of the royal victim, she had the firmness to congratulate him on the speedy delivery from trouble which awaited him. The eternal separation from her son did not shake her firmness, and, with a heart apparently unbroken, she was consigned to the loathsome depths of a dungeon, August 5, 1793. The accusations brought against the unhappy queen, on her trial, were all unfounded, and merely advanced because her enemies had still respect enough for justice to mimic its forms in their guilty court. She was charged with having squandered the public money, and with leaguing in secret with the foreign enemies of France. The clearness of her innocence, the falsehood and frivolity of witnesses, the eloquence of defenders, were of no avail—Marie Antoinette was doomed to die upon the scaffold!

The expression of her countenance, as she passed to the place of execution, awed the bloodthirsty populace; but the once matchless beauty of that noble countenance was gone for ever. One unacquainted with the

ravages of grief could not have believed that the haggard and forsaken being whom they led to sacrifice was the same young queen who, a short time before, held in thrall the chivalry of France, by her exquisite loveliness, her winning grace, and sportive gayety. Antoinette cast back a long last look at the Tuilleries—a look which told of sorrowful remembrance and of agonizing emotion—then, with an air of dignified resignation, she ascended the scaffold. "My God!" cried she, as she kneeled on that fatal platform, "enlighten and affect my executioner! Adieu, my children—my beloved ones—for ever! I am going to your father!"

This noble woman perished in her thirty-eighth year, October 16, 1793.

MAGNA CHARTA.

MAGNA CHARTA, the *Great Charter of England*, and deemed the foundation of English liberty, was extorted from King John I. by the barons, or nobles, who had become dissatisfied with his tyranny. He met them on Friday, 15th of June, 1215, in a large meadow, between Windsor and Staines, called *Runimede*, which means the *meadow of council*, and which was so called because it had been used by the Saxons as a place for public meetings. John signed the document with great reluctance, but he dared not refuse. By it the nobles were relieved from much of the oppressive tyranny of the feudal system. This had been constantly increasing, till no subject could act in the commonest affairs of life without the king's consent, which could be obtained only for money.

We can understand the sort of interference the king had in every person's concerns, when we learn that no one could marry without his consent, and that he could oblige heiresses to marry whom he pleased. Enormous sums were paid by females, either for leave to marry, or, more commonly, that they might not be forced to wed against their will. Thus we read of a Countess of Chester, who paid King Stephen five hundred marks that she might not be obliged to marry for five years; and of a Countess of Warwick, who paid King John five hundred marks, that she might not be compelled to marry till she pleased. This sum would be equal to forty or perhaps fifty thousand dollars at the present day.

The Great Charter contains sixty-three articles, and yet only one of these is for the protection of the laboring people. It provides that "*even* a farmer shall not by any fine be deprived of his carts, ploughs, and implements of husbandry." The invidious word "even," shows plainly how little they were considered or thought of at this period. The truth is that the boasted *Magna Charta* of England was a charter of greater liberty to the nobles, but the mass had little interest in it. English liberty, at the present day, is modeled after this ancient document, which leaves power and privilege in the hands of the few, and denies it to the many.