

**MIRABEAU, VICTOR RIQUETI, MARQUIS DE** (1715-1789), himself a distinguished author and political economist, but more famous as the father of the great Mirabeau, was born at Pertuis near the old chateau de Mirabeau on October 4, 1715. He was brought up very sternly by his father, and in 1729 joined the army. He took keenly to campaigning, but never rose above the rank of captain, owing to his being unable to get leave at court to buy a regiment. In 1737 he came into the family property on his father's death, and spent some pleasant years till 1743 in literary companionship with his dear friends Vauvenargues and Lefranc de Pompignan, which might have continued had he not suddenly determined to marry—not for money, but for landed estates. The lady whose property he fancied was Marie Geneviève, daughter of a M. de Vassan, a brigadier in the army, and widow of the Marquis de Saulvebeuf, whom he married without previously seeing her on April 21, 1743. While in garrison at Bordeaux, Mirabeau had made the acquaintance of Montesquieu, which may have made him turn his thoughts to political speculations; anyhow it was while at leisure after retiring from the army that he wrote his first work, his *Testament Politique* (1747), which demanded for the prosperity of France a return of the French noblesse to their old position in the Middle Ages. This work, written under the influence of the feudal ideas impressed upon him by his father, was followed in 1750 by a book on the *Utilité des États Provinciaux*, full of really wise considerations for local self-government, which was published anonymously, and had the honour of being attributed to Montesquieu himself. In 1756 Mirabeau made his first appearance as a political economist by the publication of his *Ami des Hommes ou traité de la population*. This work has been often attributed to the influence, and in part even to the pen, of Quesnay, the founder of the economical school of the physiocrats, but was really written before the marquis had made the acquaintance of the physician of Madame de Pompadour. In 1760 he published his *Théorie de l'Impôt*, in which he attacked with all the vehemence of his son the farmers-general of the taxes, who got him imprisoned for eight days at Vincennes, and then exiled to his country estate at Bignon. At Bignon the school of the physiocrats was really established, and the marquis surrounded himself with devotees, and eventually in 1765 bought the *Journal de l'agriculture, du commerce, et des finances*, which became the organ of the school. He was distinctly recognized as a leader of political thinkers by Prince Leopold of Tuscany, afterwards emperor, and by Gustavus III. of Sweden, who in 1772 sent him the grand cross of the order of Vasa. But the period of his happy literary life was over; and his name was to be mixed up in a long scandalous lawsuit. Naturally his marriage had not been happy; he had separated from his wife by mutual consent in 1762, and had, he believed, secured her safely in the provinces by a lettre de cachet, when in 1772 she suddenly appeared in Paris, and soon after commenced proceedings for a separation. The poor marquis did not know what to do; his sons were a great trouble to him, and it was one of his own daughters who had encouraged his wife to take this step. Yet he was determined to keep the case quiet if possible for the sake of Madame de Pailly, a Swiss lady whom he had loved since 1756. But his wife would not let him rest; her plea was rejected in 1777, but she renewed her suit, and, though the great Mirabeau had pleaded his father's case, was successful in 1781, when a decree of separation was pronounced. This trial had quite broken the health of the marquis, as well as his fortune; he sold his estate at Bignon, and hired a house at Argenteuil, where he lived quietly till his death on July 11, 1789.

For the whole family of Mirabeau, the one book to refer to is Louis de Loménie's *Les Mirabeau*, 2 vols., 1878, and it is greatly to be regretted that the talented author did not live to treat the lives of the great Mirabeau and his brother. See also Lucas de Montigny's *Mémoires de Mirabeau*, and, for the marquis's economical views, De la Vergne's *Économistes français du 18<sup>me</sup> siècle*.

**MIRAGE.** See LIGHT, vol. xiv. p. 600.

**MIRAMON, MIGUEL**, a Mexican soldier of French extraction, was born in the city of Mexico, September 29, 1832, and shot along with the emperor Maximilian at Queretaro, June 19, 1867. While still a student he helped to defend the military academy at Chapultepec against the forces of the United States; and, entering the army in 1852, he rapidly came to the front during the civil wars that disturbed the country. It was largely due to Miramon's support of the ecclesiastical party against Alvarez and Comonfort that Zuloaga was raised to the presidency; and in 1859 he was called to succeed him in that office. Decisively beaten, however, by the Liberals, he fled the country in 1860, and spent some time in Europe earnestly advocating foreign intervention in Mexican affairs; and when he returned it was as a partisan of Maximilian. His ability as a soldier was best shown by his double defence of Puebla in 1856.

**MIRANDA, FRANCESCO** (1754-1816), was born at Santa Fé in New Granada in 1754. He entered the army, and served against the English in the American War of Independence. The success of that war inspired him with a hope of being the Washington of his own country, and a belief that the independence of Spanish America would increase its material prosperity. With these views he began to scheme a revolution, but his schemes were discovered and he had only just time to escape to the United States. Thence he went to England, where he was introduced to Pitt, but chiefly lived with the leading members of the opposition—Fox, Sheridan, and Romilly. Finding no help in his revolutionary schemes, he travelled over the greater part of Europe, notably through Austria and Turkey, till he arrived at the court of Russia, where he was warmly received, but from which he was dismissed, though with rich presents, at the demand of the Spanish ambassador, backed up by the envoy of France. The news of the dispute between England and Spain about Nootka Sound in 1790 recalled him to England, where he saw a good deal of Pitt, who had determined to make use of him to "insurge" the Spanish colonies, but the peaceful arrangement of the dispute again destroyed his hopes. In April 1792 he went to Paris, with introductions to Pétion and the leading Girondists, hoping that men who were working so hard for their own freedom might help his countrymen in South America. France had too much to do in fighting for its own freedom to help others; but Miranda's friends sent him to the front with the rank of general of brigade. He distinguished himself under Dumouriez, was intrusted in February 1793 with the conduct of the siege of Maestricht, and commanded the left wing of the French army at the disastrous battle of Neerwinden. Although he had given notice of Dumouriez's projected treachery, he was put on his trial for treason on May 12. He was unanimously acquitted, but was soon again thrown into prison, and not released till after the 9th Thermidor. He again mingled in politics, and was sentenced to be deported after the struggle of Vendémiaire. Yet he escaped, and continued in Paris till the *coup d'état* of Fructidor caused him finally to take refuge in England. He now found Pitt and Dundas once more ready to listen to him, and the latter sent a special minute to Colonel Picton, the governor of Trinidad, to assist General Miranda's schemes in every possible way; but, as neither of them would or could give him substantial help, he went to the United States, where President Adams gave him fair words but nothing more. Once more he returned to England,

where Addington might have done something for him but for the signature of the peace of Amiens in 1802. At the peace, though in no way amnestied, he returned to Paris, but was promptly expelled by the First Consul, who was then eager to be on good terms with the court of Spain. Disappointed in further efforts to get assistance from England and the United States, he decided to make an attempt on his own responsibility and at his own expense. Aided by two American citizens, Colonel Smith and Mr Ogden, he equipped a small ship, the "Leander," in 1806, and with the help of the English admiral Sir A. Cochrane made a landing near Caracas, and proclaimed the Colombian republic. He had some success, and would have had more had not a false report of peace between France and England caused the English admiral to withdraw his support. At last in 1810 came his opportunity; the events in Spain which brought about the Peninsular War had divided the authorities in Spanish America, some of whom declared for Joseph Bonaparte, others for Ferdinand VII., while others again held to Charles IV. At this moment Miranda again landed, and had no difficulty in getting a large party together who declared a republic both in Venezuela and New Granada or Colombia. But Miranda's desire that all the South American colonies should rise, and a federal republic be formed, awoke the selfishness and pride of individual provincial administrations, and thus weakened the cause, which further was believed to be hateful to heaven owing to a great earthquake on March 26, 1812. The count of Monte Verde, the Bourbon governor, had little difficulty in defeating the dispirited forces of Miranda, and on July 26 the general capitulated on condition that he should be deported to the United States. The condition was not observed; Miranda was moved from dungeon to dungeon, and died in 1816 at Cadiz.

There are allusions to Miranda's early life in nearly all memoirs of the time, but they are not generally very accurate. For his trial see Buchez et Roux, *Histoire Parlementaire*, xxvii. 26-70. For his later life see Biggs, *History of Miranda's Attempt in South America*, London, 1809; and Veggasi, *Revolucion de la Columbia*.

**MIRANDOLA.** See PICO.

**MIRKHAND** (1433-1498). Mohammed bin Khâwandshâh bin Mahmûd, commonly called Mirkhwând or Mirkhâwand, more familiar to Europeans under the name of Mirkhond, was born in 1433, the son of a very pious and learned man who, although belonging to an old Bokhara family of Sayyids or direct descendants of the Prophet, lived and died in Balkh. From his early youth he applied himself to historical studies and literature in general. In Herât, where he spent the greater part of his life, he gained the favour of that famous patron of letters, Mir 'Alishîr (born 1440), who served his old school-fellow the reigning sultan Husain (who as the last of the Timûrides in Persia ascended the throne of Herât in 1468), first as keeper of the seal, afterwards as governor of Jurjân. At the request of this distinguished statesman and writer<sup>1</sup> Mirkhond began about 1474, in the quiet convent of Khilâsiyah, which his patron had founded in Herât as a house of retreat for literary men of merit, his great work on universal history, the largest ever written in Persian, and to the present day an inexhaustible mine of information both to Eastern and Western scholars. It is named *Rauzat-ussafâ fi sirat-ulanbiâ wal-mulûk wal-khulafâ or Garden of Purity on the Biography of Prophets, Kings, and Caliphs*. That the author has made no attempt at a critical examination of historical traditions can scarcely be called a peculiar fault of his, since almost all Oriental writers are equally deficient in sound criticism; more censurable is his

<sup>1</sup> Mir 'Alishîr not only excelled as poet both in Chaghatâi, in which his epopees gained him the foremost rank among the classic writers in that language, and in Persian, but composed an excellent *tadhkirah* or biography of contemporary Persian poets.

flowery and often bombastic style, but in spite of this drawback, and although, in our own age, the discovery of older works on Asiatic history has diminished to some extent the value of Mirkhond's *Rauzat*, it still maintains its high position as one of the most marvellous achievements in literature from the pen of one man, and often elucidates, by valuable text-corrections, various readings, and important additions, those sources which have lately come to light. It comprises seven large volumes and a geographical appendix; but internal evidence proves beyond doubt that the seventh volume, the history of the sultan Husain (1438-1505), together with a short account of some later events down to 1523, cannot have been written by Mirkhond himself, who died in 1498. He may have compiled the preface, but the main portion of this volume is probably the work of his grandson, the equally renowned historian Khwândamîr (1475-1534), to whom also a part of the appendix must be ascribed.

The following is a summary of the contents of the other six volumes. Vol. i.: Preface on the usefulness of historical studies, history of the creation, the patriarchs, prophets, and rulers of Israel down to Christ, and the Persian kings from the mythical times of the Peshdâdians to the Arab conquest and the death of the last Sâsânian Yazdajird III. in 30 A.H. (651 A.D.). Vol. ii.: Mohammed, Abûbekr, 'Omar, 'Othmân, and 'Alî. Vol. iii.: The twelve imâms and the Omayyad and 'Abbâsid caliphs down to 656 A.H. (1258 A.D.). Vol. iv.: The minor dynasties contemporary with and subsequent to the 'Abbâsids, down to 778 A.H. (1376 A.D.), the date of the overthrow of the Kurds by Tîmûr. Vol. v.: The Moghuls down to Tîmûr's time. Vol. vi.: Tîmûr and his successors down to Sultan Husain's accession in 873 A.H. (1468 A.D.). The best accounts of Mirkhond's life are De Sacy's "Notice sur Mirkhond" in his *Mémoires sur diverses antiquités de la Perse*, Paris, 1783; Jourdain's "Notice de l'histoire universelle de Mirkhond" in the *Notices et Extraits*, vol. ix., Paris, 1812 (together with a translation of the preface, the history of the Ismailians, the conclusion of the sixth volume, and a portion of the appendix); Elliot, *History of India*, vol. iv. p. 127 sq.; Morley, *Descriptive Catalogue*, London, 1854, p. 30 sq.; Rien, *Cat. of Persian MSS. of the Brit. Mus.*, vol. i., London, 1870, p. 87 sq. Mirkhond's patron, Mir 'Alishîr, to whom the *Rauzat* is dedicated, died three years after him (1501).

Besides the lithographed editions of the whole work in folio, Bombay, 1853, and Teheran, 1852-56, and a Turkish version, Constantinople, 1842, the following portions of Mirkhond's history have been published by European Orientalists: *Early Kings of Persia*, by D. Shea, London, 1832 (Oriental Translation Fund); *L'Histoire de la dynastie des Sassanides*, by S. de Sacy (in the above-mentioned *Mémoires*); *Histoire des Sassanides (des Perses)*, by Saubert, Paris, 1843; *Historia priorum regum Persarum*, Pers. and Lat., by Jenish, Vienna, 1782; *Mirkhond's Historia Taheridarum*, Pers. and Lat., by Mitscherlik, Göttingen, 1814, 2d ed., Berlin, 1819; *Historia Samanidarum*, Pers. and Lat., by Wilken, Göttingen, 1808; *Histoire des Samanides*, translated by Defrémery, Paris, 1848; *Historia Ghaznevidarum*, Pers. and Lat., by Wilken, Berlin, 1832; *Geschichte der Sultane aus dem Geschlechte Dajeh*, Pers. and German, by Wilken, Berlin, 1835; followed by Erdmann's *Erläuterung und Ergänzung*, Kazan, 1836; *Historia Seltschuckidarum*, ed. Vullers, Gissen, 1837, and a German translation by the same; *Histoire des Sultans du Khwarezm*, in Persian, by Defrémery, Paris, 1842; *History of the Atabeks of Syria and Persia*, in Persian, by W. Morley, London, 1848; *Historia Ghuridarum*, Pers. and Lat., by Mitscherlik, Frankfurt, 1818; *Histoire des Sultans Ghurides*, translated into French by Defrémery, Paris, 1844; *Vi de Djenhis-Khan*, in Persian, by Saubert, Paris, 1841 (see also extracts from the same 6th volume in French translation by Langlès in vol. vi. of *Notices et Extraits*, Paris, 1783, p. 192 sq., and by Hammer in *Sur les origines Russes*, St. Petersburg, 1825, pp. 52 sq.); "Timûr's Expedition against Tuktamish Khân," Persian and French, by Charmoy, in *Mémoires de l'Acad. Impér. de St. Pétersbourg*, 1836, pp. 270-321 and 441-471. (H. E.)

**MIROPOLIE**, a town of Russia, situated in the government of Kursk, district of Suja, 83 miles south-west of Kursk and 25 miles from the Sumy railway station. It is supposed to have been founded in the 17th century, when it was fortified against the raids of Tartars. The fertility of the soil led to the settlement of large villages close by the fort, and the 10,800 inhabitants of this town are still engaged mostly in agriculture. There is also an extensive manufacture of boots.

**MIRROR.** It is only since the early part of the 16th century that mirrors have become articles of household furniture and decoration. Previous to that time—from the 12th to the end of the 15th century—pocket mirrors or small hand mirrors carried at the girdle were indispensable adjuncts to ladies' toilets. The pocket mirrors consisted of small circular plaques of polished metal fixed in a shallow circular box, covered with a lid. Mirror cases were chiefly made of ivory, carved with relief representations of lofty

or domestic scenes, hunting, and games, and sometimes illustrations of popular poetry or romance. Gold and silver, enamels, ebony, and other costly materials were likewise used for mirror cases, on which were lavished the highest decorative efforts of art workmanship and costly jewellery. The mirrors worn at the girdle had no cover, but were furnished with a short handle. In 625 Pope Boniface IV. sent Queen Ethelberga of Northumbria a present of a silver mirror; and there is ample evidence that in early Anglo-Saxon times mirrors were well known in England. It is a remarkable fact that on many of the sculptured stones of Scotland, belonging probably to the 7th, 8th, or 9th century, representations of mirrors, mirror cases, and combs occur.

The method of backing glass with thin sheets of metal for mirrors was well known in the Middle Ages at a time when steel and silver mirrors were almost exclusively employed. Vincent de Beauvais, writing about 1250, says that the mirror of glass and lead is the best of all "quia vitrum propter transparentiam melius recipit radios." It is known that small convex mirrors were commonly made in southern Germany before the beginning of the 16th century, and these continued to be in demand under the name of bull's-eyes (*Ochsen-Augen*) till comparatively modern times. They were made by blowing small globes of glass into which while still hot was passed through the pipe a mixture of tin, antimony, and resin or tar. When the globe was entirely coated with the metallic compound and cooled it was cut into convex lenses, which of course formed small but well-defined images. It appears that attention was drawn to this method of making mirrors in Venice as early as 1317, in which year a "Magister de Alemania," who knew how to work glass for mirrors, broke an agreement he had made to instruct three Venetians, leaving in their hands a large quantity of mixed alum and soot for which they could find no use.

It was, however, in Venice that the making of glass mirrors on a commercial scale was first developed; and that enterprising republic enjoyed a rich and much-prized monopoly of the manufacture for about a century and a half. In 1507 two inhabitants of Murano, representing that they possessed the secret of making perfect mirrors of glass, a knowledge hitherto confined to one German glass-house, obtained an exclusive privilege of manufacturing mirrors for a period of twenty years. In 1564 the mirror-makers of Venice, who enjoyed peculiar privileges, formed themselves into a corporation. The products of the Murano glass-houses quickly supplanted the mirrors of polished metal, and a large and lucrative trade in Venetian glass mirrors sprang up. They were made from blown cylinders of glass which were slit, flattened on a stone, carefully polished, the edges frequently bevelled, and the backs "silvered" by an amalgam. The glass was remarkably pure and uniform, the "silvering" bright, and the sheets sometimes of considerable dimensions. In the inventory of his effects made on the death of the great French minister Colbert is enumerated a Venetian mirror 46 by 26 inches, in a silver frame, valued at 8016 livres, while a picture by Raphael is put down at 3000 livres.

The manufacture of glass mirrors, with the aid of Italian workmen, was practised in England by Sir Robert Mansel early in the 17th century, and about 1670 the duke of Buckingham was concerned in a glass-work at Lambeth where flint glass was made for looking-glasses. These old English mirrors, with bevelled edges in the Venetian fashion, are still well known.

The Venetians guarded with the utmost jealousy the secrets of their varied manufactures, and gave most exceptional privileges to those engaged in such industries. By their statutes any glassmaker carrying his art into a

foreign state was ordered to return on the pain of imprisonment of his nearest relatives, and should he disobey the command emissaries were delegated to slay the contumacious subject. In face of such a statute Colbert attempted in 1664, through the French ambassador in Venice, to get Venetian artists transported to France to develop the two great industries of mirror-making and point-lace working. The ambassador, the bishop of Béziers, pointed out that to attempt to send the required artists was to court the risk of being thrown into the Adriatic, and he further showed that Venice was selling to France mirrors to the value of 100,000 crowns and lace to three or four times that value. Notwithstanding these circumstances, however, twenty Venetian glass-mirror makers were sent to France in 1665, and the manufacture was begun under the fostering care of Colbert in the Faubourg St Antoine, Paris. But previous to this the art of blowing glass for mirrors had been actually practised at Tour-la-Ville, near Cherbourg, by Richard Lucas, Sieur de Nehou, in 1653; and by the subsequent combination of skill of both establishments French mirrors soon excelled in quality those of Venice. The art received a new impulse in France on the introduction of the making of plate glass, which was discovered in 1691. The St Gobain Glass Company attribute the discovery to Louis Lucas of Nehou, and over the door of the chapel of St Gobain they have placed an inscription in memory of "Louis Lucas qui inventa in 1691 le methode de couler les glaces et installa la manufacture en 1695 dans le château de Saint Gobain."

*Manufacture.*—The term "silvering," as applied to the formation of a metallic coating on glass for giving it the properties of a mirror, was till quite recently a misnomer, seeing that till about 1840 no silver was used in the process. Now, however, a large proportion of mirrors are made by depositing on the glass a coating of pure silver, and the old amalgamation process is comparatively little used.

The process of amalgamation consists in applying a thin amalgam of tin and mercury to the surface of glass, which is done on a perfectly flat and horizontal slab of stone bedded in a heavy, iron-bound wooden frame, with a gutter running round the outer edge. On the surface of this table, which must be perfectly smooth and level, is spread a sheet of thin tin-foil, somewhat larger than the glass to be operated on, and after all folds and creases have been completely removed, by means of stroking and beating with a covered wooden rubber, the process of "quickening" the foil is commenced. A small quantity of mercury is rubbed lightly and quickly over the whole surface, and the scum of dust, impure tin, and mercury is taken off. Mercury is then poured upon the quickened foil, until there is a body of it sufficient to float the glass to be silvered (about  $\frac{1}{4}$  inch deep), and, the edge at one of the sides having been cleared of the scum peculiar to mercury, the glass (scrupulously cleaned simultaneously with the above operations) is slid from that side over the surface of the mercury. Weights are placed over the surface until the greater part of the amalgamated mercury is pressed out, the table is then tilted diagonally, by means of dumb-screws, and all superfluous mercury finds its way to the gutter. The glass is left twenty-four hours under weights; it is then turned over silvered side up, and removed to a drainer with inclining shelves, where by slow degrees, as it dries and hardens, it is brought to a vertical position, which in the case of large sheets may not be arrived at in less than a month. This process yields excellent results, producing a brilliant silver-white metallic lustre which is only subject to alteration by exposure to high temperatures, or by contact with damp surfaces; but the mercurial vapours to which the workmen are exposed give rise to the most distressing and fatal affections.

In 1835 Baron Liebig observed that, on heating aldehyde with an ammoniacal solution of nitrate of silver, in a glass vessel, a brilliant deposit of metallic silver was formed on the surface of the glass. To this observation is due the modern process of silvering glass. In practice the process was introduced about 1840; and it is now carried on, with several modifications, in two distinct ways, called the hot and the cold process respectively. In the former method there is employed a horizontal double-bottomed metallic table, which is heated with steam to from 35° to 40° C. The glass to be silvered is cleaned thoroughly with wet whiting, then washed with distilled water, and prepared for the silver with a sensitizing solution of tin, which is well rinsed off immediately before its removal to the silvering table. The table being raised to the proper temperature, the glass is laid, and the silvering solution at

once poured over it, before the heat of the table has time to dry any part of the surface of the glass. The solution used is prepared as follows:—in half a litre of distilled water 100 grammes of nitrate of silver are dissolved; to this there is added of liquid ammonia (sp. gr. 0.880) 62 grammes; the mixture is filtered, and made up to 8 litres with distilled water, and 7.5 grammes of tartaric acid dissolved in 30 grammes of water are mixed with the solution. About 2.5 litres are poured over the glass for each superficial metre to be silvered. The metal immediately begins to deposit on the glass, which is maintained at about 40° C. (104° F.), and in little more than half an hour a continuous coating of silver is formed. The silvered surface is then cleaned by very cautiously wiping with a very soft chamois rubber, and treated a second time with a solution like the first, but containing a double quantity of tartaric acid. This solution is applied in two portions, and thereafter the glass is once more carefully cleared of all unattached silver and refuse and removed to a side room for backing up.

In silvering by the cold process advantage is taken of the power of inverted sugar to reduce the nitrate of silver. This process has been adopted for the silvering of mirrors for astronomical telescopes, notably for Leverrier's great telescope in the Paris Observatory. For ordinary mirror silvering the following is the process recommended by H. E. Benrath. Two solutions are prepared, the first of which contains the silver salt, and the second the sugar preparation. For the silver solution 800 grammes of nitrate of silver and 1200 grammes of nitrate of ammonium are dissolved in 10 litres of water, and 1.3 kilos of pure caustic soda in 10 litres of water, and of each of these solutions 1 litre is added to 8 litres of water, which is allowed to rest till the sediment forms and then decanted. The second solution—inverted sugar—is prepared by dissolving 150 grammes of loaf sugar with 15 grammes of vinegar in 0.5 litre of water, and boiling the solution for half an hour. After cooling it is made up with water to 4200 cubic centimetres. The silvering is done on horizontal tables in a well-lighted and moderately heated apartment, and the glass is cleaned with scrupulous care. For each square centimetre of glass operated on 15 cubic centimetres of the silver solution above described are measured out, and from 7 to 10 per cent. of the solution of inverted sugar is added, both being quickly stirred together and poured rapidly and evenly over the glass. The reduction immediately begins, and the solution exhibits tints passing through rose, violet, and black, till in about seven minutes it again becomes transparent and the deposit of metal is complete. This first deposit is extremely thin, and allows the transmission of bluish rays. The exhausted solution with floating and unattached dust-like granules of silver is carefully wiped off, the silvered surface washed with distilled water and again treated with the mixed solutions to the extent of half the quantity used in the first application. The finished surface is wiped and washed in the most thorough manner,—for the least trace of caustic soda left would destroy the mirror. The further processes are the same in both methods of silvering.

The deposit of silver on glass is not so adherent and unalterable under the influence of sunlight and sulphurous fumes as the tin-mercury amalgam, and moreover real silvered glass has a slightly yellowish tinge. These defects have been overcome by a process introduced by M. Lenoir, which consists of brushing over the silvered surface with a dilute solution of cyanide of mercury, which instantaneously forming a kind of amalgam renders the deposit at once much whiter and more firmly adherent than before. To protect the thin metallic film from mechanical injury and the chemical action of gases and vapours, it is coated with shellac or copal varnish, over which when dry are applied two coatings of red-lead paint.

*Platinum Mirrors.*—A cheap process of preparing mirror glass is to some extent prosecuted in France, whereby a thin but very adherent deposit of platinum is formed on the glass. A solution of chloride of platinum with a proportion of litharge and borate of lead dissolved in essential oil of spike is applied with a brush to well-cleaned glass, which is then placed on edge in a muffle furnace, and the platinum is thus burned in, forming an exceedingly thin but brilliant metallic backing having a somewhat grey lustre. It is used only for the lids of cheap boxes, toys, ornamental letters, &c.

*Magic Mirrors.*—Hand mirrors of metal are still in common use in Oriental countries, and especially in Japan and China they continue to be the prevalent form of looking-glass. In the former country indeed bronze mirrors are articles of the greatest importance in the generally meagre furnishing of houses, and besides possess a religious significance. They have been known and used from the most remote period, mention of them being found in Chinese literature of the 9th century. The (reputed) first made Japanese mirror, preserved at Isé, is an object of the highest veneration in Japan, and an ancient mirror, connected with which is a tradition to the effect that it was given by the sun-goddess at the foundation of the empire, is a principal article of the Japanese regalia. The mirrors of Japan vary in form and size, but in general they consist of thin disks, from 3 to 12 inches in diameter, of speculum metal with handles cast in one piece. The polished face of the mirror is slightly convex in form, so that a reflected image is seen

proportionately reduced in size; the back of the disk is occupied with characteristic Japanese ornamentation and inscriptions in bold relief, and its rim is also raised to the back. Much attention has been attracted to these mirrors by a singular physical peculiarity which in a few cases they are found to possess. These are known as magic mirrors from the fact that when a strong beam of light is reflected from their smooth and polished surface, and thrown on a white screen, an image of the raised ornaments and characters on the back of the mirror is formed with more or less distinctness in the disk of light on the screen. This peculiarity has at no time been specially observed by the Japanese, but in China it attracted attention as early as the 11th century, and mirrors possessed of this property sell among the Chinese at ten or even twenty times the price sought for the ordinary non-sensitive examples. The true explanation of the magic mirror was first suggested by the French physicist Person, who observed that the reflecting surface of the mirrors was not uniformly convex, the portions opposite relief surfaces being plane. Therefore, as he says, "the rays reflected from the convex portion diverge and give but a feebly illuminated image, while, on the contrary, the rays reflected from the plane portions of the mirror preserve their parallelism, and appear on the screen as an image by reason of their contrast with the feebler illumination of the rest of the disk." That such differences of plane in the mirror surface arise is an accidental circumstance due to the manner in which it is prepared, a process explained by Professors Ayrton and Perry, by whom ample details of the history, process of manufacture, and composition of Oriental mirrors have been published. A preliminary operation in polishing the surface consists of scoring the cast disk in every direction with a sharp tool. The thicker portions with relief ornament offer more resistance to the pressure of the tool than the thin flat portions, which tend to yield and form at first a concave surface, but this by the reaction of its elasticity, rises afterwards and forms a slightly convex surface while the more rigid thick portions are comparatively little affected. This irregularity of surface is inconspicuous in ordinary light, and does not visibly distort images; but when the mirror reflects a bright light on a screen the unequal radiation renders the minute differences of surface obvious. The ingenious theory of Person has been established by experiments communicated by M. Govi to the academy of Turin in 1864-65, and more recently by investigations of MM. Bertin and Dubosq. See *Annales de Chimie et de Physique* (5th ser., vol. xx.). (J. P.A.)

#### Ancient Mirrors.

The mirror of classical antiquity (*κατόπτρον*, *speculum*) was a thin disk of bronze slightly convex on one side and polished, usually provided with a handle, sometimes mounted on a stand in the form of a female figure (see *COSTUME*, vol. vi. p. 453, fig. 1), sometimes fixed inside a circular bronze case. The common size is that of an ordinary hand mirror. Examples large enough to take in the whole figure appear to have been rare. Mirrors of glass are mentioned, and though none of them have been found their existence need not be questioned altogether, since the process of silvering occasionally employed on bronze mirrors suggests that an analogous process may have been applied to glass. But the very large number of mirrors still existing from antiquity shows that bronze was the regular material employed. The alloy known as speculum, producing a very hard metal with great reflecting power, is comparatively seldom met with. Silver mirrors are mentioned, but none have as yet been found.

The principal feature of ancient mirrors, especially those of Etruria, is the design incised on the back (see *ETRURIA*, vol. viii. p. 643). While twelve incised specimens are all that are as yet known from Greece, the number found in Etruria must be nearly a thousand. As a rule the subjects incised are taken from Greek mythology and legend, the names of the persons represented being frequently added in Etruscan letters and orthography. In most cases the style of drawing, the types of the figures, and the manner of composing the groups are true to the characteristics of Greek art. Some may have been imported from Greece; but the greater number appear to have been more or less faithfully imitated from such designs as occurred on the almost innumerable printed Greek vases which the Etruscans obtained from Greece. Even where distinctly Etruscan figures are introduced, such as the heroes *Elius* and *Celivus* *Vibenna* on a mirror in the British Museum, Greek models are followed. The characteristics of Greek art here referred to date from a little before 400 B.C., and last for some time after. In this period would fall the majority of the Etruscan mirrors, and to this period also belong the Greek incised mirrors, among which may be mentioned for their beauty one representing *Leucas* and *Corinthus*, inscribed with their names (engraved, *Monuments Grecs*, 1873, pl. 3, published by the Association pour l'encouragement des Etudes Grecques), and another in the British Museum (*Gazette Arch.*, ii. pl. 27), on the back of which is a figure of *Eros* which has been silvered over. With this last-mentioned mirror was found the bronze case used to contain it

on the back of which is a group of Aphrodite and Eros in repoussé. It was found in Crete. But most of the Greek mirrors and mirror-cases having artistic designs are from Corinth. One bears the name of the artist; 'Απολλῆς ἐποίησεν (engraved, *Arch. Zeitung*, 1862, pl. 166, fig. 1).

Archaic art (about 500 B.C.) is represented by a mirror in the British Museum from Sunium in Attica. The mirror itself is quite plain, but the stand is composed of a draped female figure, above whose head float two cupids. From Etruria there is a comparatively small number with archaic incised designs. It may be concluded that the luxury of mirrors enriched with incised designs was not freely indulged before 400 B.C. in Etruria and never to any extent in Greece. A special centre of incised mirrors was the Latian town of Praeneste (Palestrina), and it is of interest in regard to some of the mirrors found there that they have inscriptions in early Latin. Artistically they have a purely Greek character. Plain mirrors are found wherever Greek and Roman civilization spread, and it may be seen from a specimen found in Cornwall, now in the British Museum, that the Celtic population of England had adopted the form and substance of the mirror from their conquerors. This specimen is enriched with a Celtic pattern incised. The shape of the handle testifies to native originality. Mirrors were used in Greece, perhaps rarely, for divination, as appears, for example, from Pausanias (vii. 21, 5), the method being to let the mirror down into a well by means of a string till it reached close to the surface of the water. When it was pulled up after a little it was expected to show the face of the sick person on whose behalf the ceremony was performed. This was at Patras.

The principal publications on ancient mirrors are Gerhard, *Etruskische Spiegel*, Berlin, 1843-67, 4 vols., containing 420 plates; for the Greek mirrors, Mylonas, 'Ελληνικά κάτοπτρα, Athens, 1876, and Dumont, *Bullet. de Corresp. Hellén.*, 1877, p. 108; see also Friederichs, *Kleinere Kunst und Industrie im Alterthum*, Düsseldorf, 1874, p. 18; and Marquardt and Mommsen, *Handbuch der römischen Alterthümer*, vii. pt. 2, p. 670. (A. S. M.)

MIRZÁPUR, a district in the North-Western Provinces of India, lying between 23° 51' 30" and 25° 31' N. lat., and between 82° 9' 15" and 83° 0' 36" E. long., is bounded on the N. by Jaunpur and Benares, on the E. by Shahábád and Lohárdág, on the S. by Sargújá state, and on the W. by Allahábád and Rewah state, and has an area of 5217 square miles. It is crossed from east to west by the Vindhya and Káimur ranges. A central jungly plateau connects these, and separates the valley of the Ganges from that of the Son.

The population in 1872 was 1,015,203 (males, 520,496; females, 494,707), of whom 949,644 were Hindus, 64,809 Mohammedans, and 750 Christians. The non-Asiatic population numbered 623. Only three towns had a population exceeding 5000:—Mirzápúr, 67,274; Chanár, 10,154; and Ahraura, 9091. Out of a Government-assessed area of 3048 square miles, 1813 are cultivated, 497 cultivable waste, and 1238 uncultivable. The part of Mirzápúr which lies north of the Vindhya is very highly cultivated and thickly peopled, but the rest of the district consists largely of ravines and forests, with a very sparse population. Local manufactures comprise carpets of a superior description, brass ware, and shellac. The East Indian Railway traverses the district, along the right bank of the Ganges, for a distance of 32 miles. The climate is slightly warmer and damper than that of districts farther north and east. The mean annual rainfall is 42.7 inches.

MIRZÁPÚR, chief town and administrative headquarters of the above district, is situated on the south bank of the Ganges, 56 miles below Allahábád (25° 9' 43" N. lat., 82° 38' 10" E. long.). The population in 1872 was 67,274, of whom 55,917 were Hindus and 11,053 Mohammedans. Up to quite recent years Mirzápúr was the largest mart in upper India for grain and cotton; but of late its commercial importance has rapidly decreased, owing to the establishment of through railway communication with Bombay via Jabalpur, and the rise of Cawnpore to the position of a mercantile centre. The river front, lined with stone gháts or flights of stairs, and exhibiting numerous mosques, Hindu temples, and dwelling-houses of the wealthier merchants, with highly decorated facades and richly carved balconies and door-frames, is handsome; but the interior of the town is mainly composed of mud huts. The manufacture of shellac gives employment to about four thousand persons; brass ware and carpets are also made. The imports consist of grain, sugar, cloth, metals, fruit, spices, tobacco, lac, salt, and cotton; the same articles, with manufactured lac-dye, shellac, and ghá, are exported.

MISDEMEANOUR. "The word misdemeanour," says Russell (*On Crimes*, vol. i. chap. iv.), "is applied to all those crimes and offences for which the law has not provided a particular name." Stephen, in his *Digest of the Criminal Law*, adopts the following mode of distinguishing between misdemeanour and other crimes. "Every crime is either treason, felony, or misdemeanour. Every crime which amounts to treason or felony is so denominated in the definitions of crimes hereinafter contained. All crimes not so denominated are misdemeanours." It is customary to speak of misdemeanour as implying a less degree of crime than felony (see FELONY). "Misdemeanours," observes Russell in the passage already cited, "have been sometimes termed *misprisions*; indeed the word *misprision*, in its larger sense, is used to signify every considerable misdemeanour which has not a certain name given to it in the law, and it is said that a *misprision* is contained in every felony whatsoever, so that the offender may be prosecuted for *misprision* at the option of the crown." *Misprision*, in a more restricted sense (or negative *misprision*), is the concealment of an offence. Positive *misprisions* are contempts or misdemeanours of a public character, e.g., mal-administration of high officials, contempt of the sovereign or magistrates, &c. The rule as to punishment, when no express provision has been made by law, is that "every person convicted of a misdemeanour is liable to fine and imprisonment without hard labour (both or either), and to be put under recognizances to keep the peace and be of good behaviour at the discretion of the court" (Stephen's *Digest*, art. 22). By 28 & 29 Vict. c. 67 prisoners convicted of misdemeanour and sentenced to hard labour shall be divided into two divisions, one of which shall be called the first division, and when a person convicted of misdemeanour is sentenced to imprisonment without hard labour the court may order him to be treated as a first-class misdemeanant, who shall not be deemed a "criminal prisoner" within the meaning of that Act. The Prison Act, 1877 (§§ 40, 41), requires prisoners convicted of sedition or seditious libel, or attached for contempt of court, to be treated as misdemeanants of the first class.

In New York and some other States of the American Union the legislature has defined felony as any crime which is or may be punishable with death or imprisonment in a State prison, all other crimes being misdemeanours.

MISHNAH. The *Mishnah*, in the most familiar application of the name, is the great collection of legal decisions by the ancient rabbis which forms in each Talmud the text on which the *Gemara* rests, and so is the fundamental document of the oral law of the Jews. The question What is *Mishnah*? was asked, however, as early as the latter part of the 1st or the early part of the 2d century, though in a somewhat different sense and for a somewhat different purpose.<sup>1</sup> It will be answered in the course of this article in all its bearings.

1. *Name*.—Rabbinic tradition has fixed the pointing *Mishnah* (משנה) by giving its *status constructus* as *Mishnah*. Although the word *Mishnah* is not found in the Bible, it is no doubt a classical Hebrew term, signifying something closely akin to *Mishneh* (which term occurs more than once there), as may be seen on comparing *Mikvah* with *Mikveh*, *Miknah* with *Mikneh*, *Ma'aláh* with *Ma'alah*, and *Mar'ah* with *Mar'eh*, each two of which are, however they may vary in practical application, unquestionably synonymous terms. The practical significations of *Mishnah* are seven in number:—(1) repetition, i.e., tradition;<sup>2</sup> as such it is the equivalent of the

<sup>1</sup> See T. B., *Kiddushin*, 49a.

<sup>2</sup> The root *Shanah* (שנה), from which *Mishnah* is immediately derived, is not merely, as is often thought, to learn, to teach, but to repeat; and it is in reality this last meaning which underlies the two former.

δευτερόβουλος of Epiphanius,<sup>1</sup> the *traditiones et δευτερόβουλος* of Jerome,<sup>2</sup> the *δευτερόβουλος* of Justinian,<sup>3</sup> and the שנייה ליהודה ("the second to the law") of the *Arukh*<sup>4</sup>; (2) recitation from memory, in contradistinction to reading from a book;<sup>5</sup> (3) study: as such it is the equivalent of *Midrash* in the former part of its third signification;<sup>6</sup> (4) instruction: as such it is the equivalent of *Midrash* in the latter part of its third signification;<sup>7</sup> (5) system, style, view, line of study and instruction: as such it is identical with the Talmudical *Shittah*;<sup>8</sup> (6) a paragraph of the *Mishnah*: it is invariably employed in this sense in the Babylonian Talmud, and is identical with the word *Halakhah*, used for the same purpose, in the Palestinian Talmud; and (7) the collection of the decisions of the whole "oral law," i.e., the *Mishnah* in the concrete sense. The word *Mishnah* has three different plurals:—(1) the traditional *Mishnayoth* for signification (7), formed on the analogy of *Mikvoth* (not, as some think, on that of *Mikraoth* or *Midrashoth*); (2) the correct, though questioned, *Mishniyyoth* for signification (6), formed on the analogy of *Parshiyoth* from *Parashah* (or *Parshah*), not to speak of that of *Ma'asiyyoth* from *Ma'aseh*; (3), the somewhat inelegant, but correct, *Mishnoth*,<sup>9</sup> which also serves for signification (6). Significations (1), (2), (3), (4), and (5) have, however inconsistent it may appear when one takes into consideration their respective equivalents, no plural whatever. So much for the Hebrew *Mishnah*. The Aramaic *Mahnitho* will be spoken of later.

2. *Contents and Nature*.—The *Mishnah* consists chiefly of *Halakhah*;<sup>10</sup> there is, comparatively speaking, little *Agadah*<sup>11</sup> to be found in it. It is not, however, as many think, either a commentary on the Halakhic portions of the Pentateuch, or on the ordinances of the *Sopherim*, or on both together. It rather presupposes the knowledge of, and respect for, both the Mosaic and the Sopheric laws, and it only discusses, and finally decides on, the best mode and manner of executing these. The discussions and eventual decisions to be found in the *Mishnah* owe their existence principally to deep meditation on these two kinds of laws, notably on the former, by the rabbis of various ages, but chiefly by those who lived fifty years before and one hundred and fifty years after the rise of Christianity, the names of whom it faithfully gives, along with their respective discussions and decisions. There are but few cases to be found in the *Mishnah* which would critically come under the denomination of an *Halakhah le-Mosheh mis-Sinai*, i.e., an explanation (of a law) as directly

<sup>1</sup> *Heres.*, xv. (κατὰ ἑρμηνείαν), in fine. Epiphanius was a native of Palestine, even if he was not, as some think, of Jewish parentage. As a Palestinian writer on Jewish and semi-Jewish matters he must have had a more than superficial knowledge of the Jewish traditions (the *Mishnah*, &c.). And indeed, to judge from the account he gives of the various Jewish traditions (although the text of this account is extremely corrupt in every way), he was pretty well informed. For he tells us that the Jews have four kinds of traditions:—such as are ascribed to Moses (by which he no doubt means the *Halakhah le-Mosheh mis-Sinai*); such as are ascribed to the sons of Asmonaus (by which he means the *Teknoth*, &c., of the *Beth Dino shel Hashmonai*; see T. B., *Abodah Zarah*, 36b); such as are ascribed to R. Akibah (the great teacher and martyr); and such as are ascribed to R. Andan, &c. (Rabbi Yehudah Hannasi).

<sup>2</sup> *In Isaiam*, cap. viii. 11-15.

<sup>3</sup> *Nem. xlvii.* (Περὶ Ἐβραίων) κεφ. δ, in medio.

<sup>4</sup> Article מִשְׁנָה (first definition).

<sup>5</sup> Contrast *Shanoh* (שנה) with *Sharo* (שאר).

<sup>6</sup> See article MIDRASH, p. 285.

<sup>7</sup> See Schiller-Szinessy, *Catalogue of Hebrew MSS. in the Cambridge University Library*, ii. p. 94.

<sup>8</sup> See MS. Add. 464 (University Library, Cambridge), leaf 283b.

<sup>9</sup> This word, derived from the root *Halakh* (הלך), to go, is synonymous with *Mishag* (custom, practice) and *Mishpat* (rule), &c.

<sup>10</sup> For the meaning of this term and the Agadic parts which are to be found in the *Mishnah*, see MIDRASH.

given by God to Moses, and in uninterrupted succession received from him by the rabbis. Several cases given under this name in the *Mishnah* are not *bona fide* cases;<sup>11</sup> for the test of such an *Halakhah* is that it must never have been contested by any one.<sup>12</sup>

3. *Method*.—A *Mishnah*, if genuine, never begins with a passage of the Pentateuch, and even comparatively seldom brings direct proof from or gives reference to it. When there is any exception to this rule it will be found, on close examination, either that such a paragraph belongs to a very early age (that of the *Sopherim*), or that it is to be found in another work of the "oral law," and is simply copied in the *Mishnah*, or, what is more likely, that, if independent, it belongs to a very late age, or, finally, that the proof or the reference thus given is only a later addition. One example of the true method of the *Mishnah* will, perhaps, better illustrate the foregoing statement than a sheet full of theorizing on the subject; and this one example will the more surely suffice because of its mixed (Mosaic and Sopheric) character. It is the very first paragraph of the whole *Mishnah*, and runs thus: "From what time (of the day) does (may, should) one read the *Shema* ('the taking upon oneself the yoke of the heavenly kingdom') in the evening?" The *Mishnah* does not begin: One is in duty bound to read the *Shema* in the evening, because it is written (Deut. vi. 7), "And when thou liest down." For, in the first place, the law to read the *Shema* evening and morning is not unquestionably Mosaic, as the words, "And thou shalt talk of them, &c.," do not refer to this passage of the law particularly, but rather to the words of the Pentateuch in general;<sup>13</sup> and, secondly, it is needless to say that one is in duty bound to recite the *Shema* twice a day, since every Jew readily acknowledges this duty and executes it, although it is not Mosaic. This duty of reading the *Shema*, the grounds on which this duty rests, and how it is best fulfilled, are fully and ably discussed, developed, and finally settled in that part of the Talmud called *Gemara*,<sup>14</sup>—the business of which it is to discuss the words of the *Mishnah* and to show the sources of the tradition, and eventually the passage in the Pentateuch (if on such the case rest) from which the respective disputants had derived their views, &c.

4. *Purpose*.—Although it is a book containing Halakhic decisions, the *Mishnah* was never intended, as many think, to enable the reader thereof to decide from it immediately. This mistake is old<sup>15</sup> and widely spread,—but a mistake nevertheless. The purpose of the *Mishnah* was and is simply to exhibit the development of the "oral law" and the view taken of this development by the rabbis of various times. For this reason one finds side by side with the opinions of the majority those also of the minority, which latter are very carefully given. But why, since these opinions of the minority can have no decisional effect? The *Mishnah* itself (*Eduyyoth*,<sup>16</sup> i. 5)

<sup>11</sup> See R. Asher b. Yehiel (Harosh), *Hilekoth Mikvaoth* (coming close after this Rabbi's commentary on *Niddah*, in the printed editions of the Bab. Talmud), i. 1.

<sup>12</sup> There are, however, at least sixteen such *bona fide* cases to be found in the works of the "oral law."

<sup>13</sup> See T. B., *Berakhoth*, on Deut. xi. 19.

<sup>14</sup> *Gemara*, or *Gemoro*, signifies concretely discussion on and final settlement of the contents of the *Mishnah*, from *gemar* (גמר), to study deeply, to come to a final result; which last signification is, to some extent, to be found also in the Hebrew root *gamor* (גמר). Compare T. B., *Bobo Metsi'o*, 33a, and Rashi, *in loco*.

<sup>15</sup> See T. B., *Sotah*, 22a.

<sup>16</sup> The word מִשְׁנָה is variously pointed:—*Aduyoth*, *Ediyoth*, and, as in the text, *Eduyyoth*; which last, if the name come from מִשְׁנָה because of the testimony of the witnesses on which this *Masseketh* chiefly rests, would be the only correct one. But it ought to be remarked that the Babylonian teachers must have spelled it *Idiyyoth* (best things), since its equivalent is given by them as *Behirto* (or *Behirotho*). See T. B., *Berakhoth*, 27a and elsewhere.