

pronunciation, laboured respiration, wide dilatation of the pupils, and impossibility of keeping an erect posture. The mind in most cases remains clear until shortly before death. The earliest and most prominent symptom of a fatal or dangerous dose is the drooping of the eyelids, which indicates the immediate administration of stimulants, for when the paralysis of the tongue which ensues extends to the epiglottis, deglutition becomes impossible, and the epiglottis is apt, unless the sufferer be placed in a forward position to flap back and close the windpipe. The antidotes which have been found the most successful are carbonate of ammonia, brandy, aromatic spirits of ammonia, and morphia. It has been found that death may be averted by keeping up artificial respiration until the poison is eliminated by the kidneys.

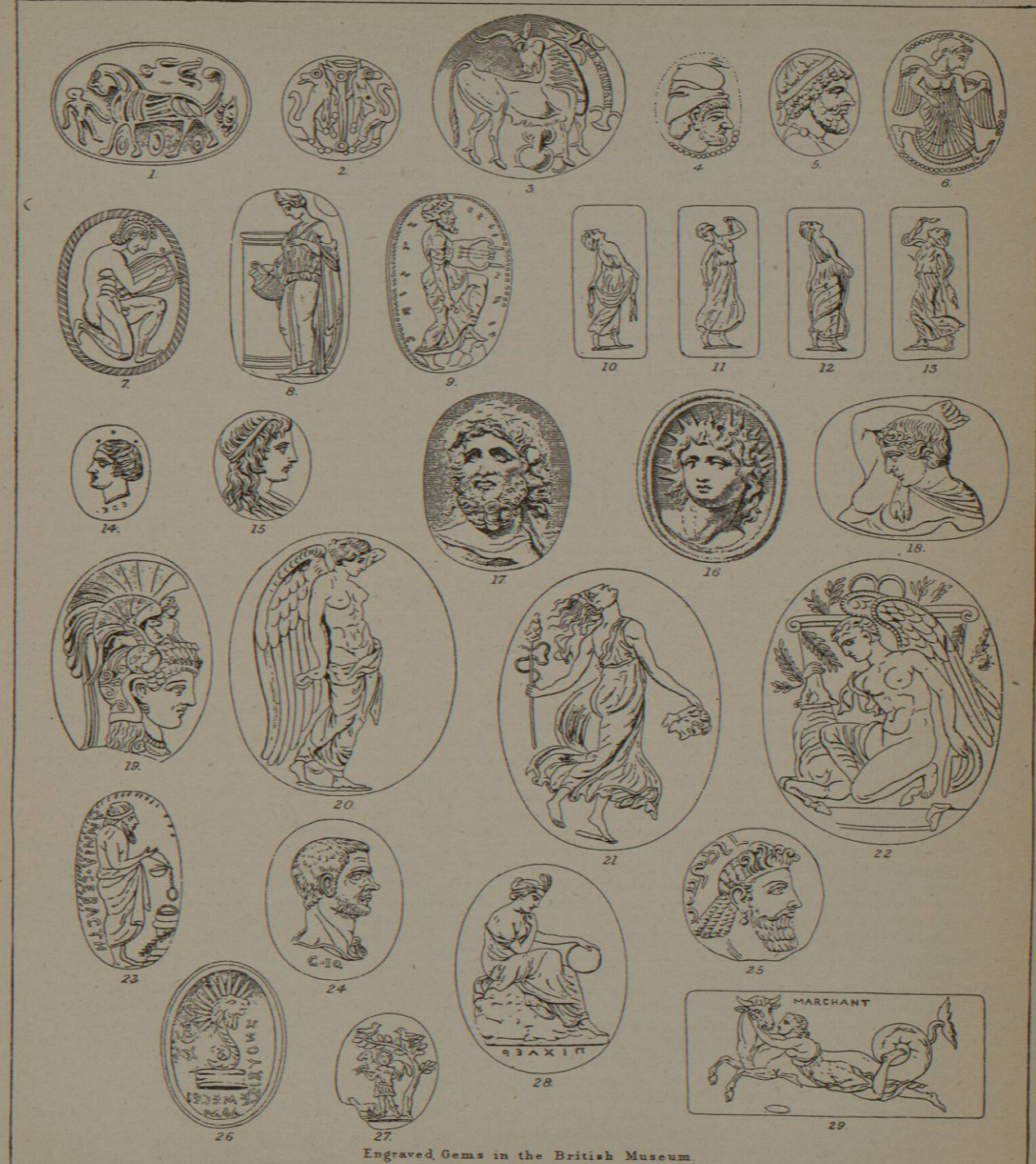
See *Eclectic Dispensatory*, p. 186; *Pharm. Journ.*, 3d ser., vol. vi.; by Ringer and Murrell, &c. in *Lancet*, 1873, 1875-78; Hales, *New Remedies*, p. 390; Bartholow, *Materia Medica*, p. 330; *American Journ. Pharm.*, 1855, 1870; *Proc. Amer. Pharm. Assoc.*, 1873, p. 652; *Practitioner*, 1870, p. 202; Grover Coe, *Positive Medical Agents*, p. 114; Hughes, *Pharmacodynamy*, vol. i. p. 372; Sonnenschein, *Berichte der deutsch. chem. Ges.*, xi. 1182; Bentley and Trimen, *Med. Plants*, pt. xix. No. 181.

GEMINIANI, FRANCESCO (c. 1680-1762), a celebrated violinist, born at Lucca about 1680. He received lessons in music from Alessandro Scarlatti, and studied the violin under Lunati, and afterwards under Corelli. In 1714 he arrived in London, where his performance and compositions attracted much attention. He was taken under the special protection of the earl of Essex. After visiting Paris and residing there for some time, he returned to England in 1755. In 1761 he went to Dublin, where a servant robbed him of a musical manuscript on which he had bestowed much time and labour. His vexation at this loss is said to have hastened his death, which took place at Dublin on 17th September 1762. He appears to have been a first-rate violinist, but most of his compositions are dry and deficient in melody. His *Art of Playing the Violin* is a good work of its kind, but his *Guida Armonica* is a miserable production. He published a number of solos for the violin, three sets of violin concertos, twelve violin trios, *The Art of Accompaniment on the Harpsichord, Organ, &c.*, *Lessons for the Harpsichord*, and some other works. His musical opinions had no foundation in truth or principle.

GEMISTUS, or PLETHO, GEORGIUS, held high office under the Byzantine emperors during the first half of the 15th century, and derived his name, which signifies the Replete, from the extraordinary amount of his erudition. He is, however, chiefly memorable for having been the first person who introduced Plato to the Western world. This took place upon his visit to Florence in 1438, as one of the deputies from Constantinople on occasion of the general council. Cardinal Bessarion became his disciple; he produced a great impression upon Cosmo de' Medici; and though not himself making any very important contribution to the study of Plato, he effectually shook the exclusive domination which Aristotle had exercised over European thought for eight centuries. He promoted the union of the Greek and Latin Churches as far as possible, but his efforts in this direction bore no permanent fruit. He probably died before the capture of Constantinople. The most important of his published works are a treatise on the distinction between Plato and Aristotle as philosophers, and one on the religion of Zoroaster. In addition to these he compiled several volumes of excerpts from ancient authors, and wrote a number of works on geography, music, and other subjects, many of which still exist in MS. in various European libraries.

GEMS (πέτρας, gemmæ), engraved with designs, whether adapted for sealing (σφραγίς, sigillum, intaglio), or mainly for artistic effect (imagines ectypæ, cameo), exist in a very

large number of undoubtedly genuine examples, extending from the mists of Babylonian antiquity to the decline of Roman civilization, and again starting with a new but unnatural impulse on the revival of art. Apart from workmanship they possess the charms of colour deep, rich, and varied, of material unequalled for its endurance, and of scarcity which in many instances has been enhanced by the strangeness of the lands whence they came, or the fortuity of their occurrence. These qualities united within the small compass of a gem were precisely such as were required in a seal as a thing of constant use, so inalienable in its possession as to become naturally a personal ornament and an attractive medium of artistic skill, no less than the centre of traditions or of religious and legendary associations. As regards the nations of classical antiquity all seals are classed as gems, though in many cases the material is not such as would strictly come under that heading. On the other hand, gems properly so called were not always seals. Many of the Babylonian cylinders could not have been so employed without great difficulty, and when Herodotus (i. 195) speaks of every Babylonian wearing a seal (σφραγίς), it may have been in most cases no other than a talisman having an inherent power derived from the subject of its design, consisting perhaps mostly of figures of protecting deities. He adds that every Babylonian carried also a staff on which it was unlawful for him not to have the figure of an apple, a rose, a lily, an eagle, or something else, as his badge or ἐπίσημον, from which it may perhaps be inferred that having selected some such badge for his staff he would necessarily have the same for the seal with which he attested his name. But if that had been the case, then the great mass of existing cylinders could not have been seals in the ordinary sense. In Greece and Rome within historic times, gems were worn engraved with designs to show that the bearer was an adherent of a particular worship, the follower of a certain philosopher, or the attached subject of an emperor. It cannot be said that these gems may not have been used systematically as seals, but it is clear that they primarily served a different purpose. Again, when the sense of personal ornament naturally attaching to a seal increased, and the resources both of material and skill were enlarged, the process of engraving gems in cameo, that is, with the design in relief mostly in such stones as by their differently coloured layers could be made to present a variety of surfaces, came largely into fashion (see article *CAMEO*, and figs. 18, 19 in Plate I.). As a rule these cameos are of a date subsequent to that of Alexander the Great; but there are exceptions in an Egyptian cameo in the Louvre, said to belong to the 12th dynasty, about 3000 B.C., and in some few Etruscan scarabs, which having designs in intaglio on the face have also reliefs engraved on the back, apparently in the same archaic manner of art as the intaglios. Such a scarab in carnelian was found at Orvieto in 1874 in a tomb along with vases dating from the beginning of the 5th century B.C., and it will be seen from the engraving of this gem (*Archæol. Zeit.*, 1877, pl. xi., fig. 3, compare figure of Siren on back of scarab engraved in Wieseler, *Denkmäler der alten Kunst*, No. 752) that, while the design on the face presents evidently the same subject which occurs on a scaraboid found in the treasury of Curium in Cyprus by General Cesnola (see his *Cyprus*, pl. xxxix., fig. 5, p. 381), the half-length figure of a Gorgon on the back seems to be the same in subject and treatment as a carnelian fragment, apparently cut from the back of a scaraboid, now in the British Museum. As further examples of the same rare form of cameo, the following scaraboids in the British Museum may be mentioned:—(1) a carnelian cut from back of a scaraboid, with head of Gorgon surrounded by wings; (2) carnelian scaraboid: Gorgon running to left, on face of gem an intaglio of Thetis giving armour to Achilles; (3) carnelian scaraboid:



Engraved Gems in the British Museum.

head of negro in profile, on face an intaglio of a harp; (4) steatite scaraboid: head of Achelous, full face, with intaglio of citharist (Plate L, No. 13); (5) scaraboid in burnt carnelian: head of Achelous, full face, with intaglio of Ajax carrying body of Patroclus; and four porcelain scaraboids from Camirus, each with a negro's head in relief on the back.

In gem engraving the principal modern implement is a wheel or minute copper disc, driven in the manner of a lathe, and moistened with olive oil mixed with emery or diamond dust. There is no proof of its use among the ancients, but M. Soldi, a practical authority on the subject, believes (*Revue Arch.*, 1874, xxviii. p. 147) that it was known before the time of Pliny, whose expression *fervor terebrarum*, as applied to the cutting of very hard stones, would fittingly characterize the rapid movement of the wheel. At the same time these words, apparently the only ancient statement on the question, may equally refer to the motion of the drill, an instrument of constant use in antiquity, which in this case was employed to drive an iron tool fitted with a diamond point or splinter. In intaglios, when the larger spaces had been sunk with the drill, the design was worked out in detail by a tool with a diamond point, and finally polished, but not, it would appear, to the extent to which polishing is carried in modern work, for this reason, no doubt, that their finer tools left less of roughness to be smoothed away. Still a gem highly polished in the interior of the design need not be taken to be modern on that account, since it is known that many genuine ancient gems have been repolished in modern times, and since it is not known whether ancient engravers may not sometimes have resorted to excess of this process; while on the other hand an intaglio dim in the surface of its design is not necessarily antique, since modern engravers have observed this peculiarity, and have imitated it with a success which, were there no other suspicions, might escape detection. Except in the hardest stones, much of the ancient gem engraving seems to have been done by a simple copper tool duly moistened and supplied with emery (*σμίρις* or *σμίρις*, *naxium*). The Ethiopians in the time of Xerxes employed a flint instrument, if that is what Herodotus means (vii. 69) when he says that their arrows were tipped "not with iron but with a sharp stone, with which they also engrave their seals." With such a tool steatite could be easily engraved, and it should be remembered that among very early gems this material is of frequent occurrence, while in the later art of Greece and Rome it can scarcely be said to exist; and the inference is that, when processes had been invented to cut harder stones, the softer substances were discarded. Still it would not be correct to found more than a general argument as to the comparative ages of gems on the different degrees of resistance in the stones themselves, even when dealing with the works of one nationality, much less so in a review of ancient gems as a whole, for this reason, among others, that the decline of art is in technical matters often very like its infancy. It would be easy to show from published criticisms how certain classes of rude intaglios have been regarded now as the very earliest efforts of the art, now as debased; and at times it is difficult to choose between these judgments. In the present state of knowledge it may seem idle to inquire where the infancy of the art was passed. One thinks in Egypt, which otherwise is known for its intimate skill in working hard stones. Another says Assyria, which doubtless had a civilization as remote as that of Egypt, but has left no similar evidence of the mastery of obdurate substances. The architectural and the artistic remains of the two nations present this broad distinction, that they are of much harder material in the one case than in the other, whence it would be reasonable to expect that at least the invention of the pointed tools had proceeded

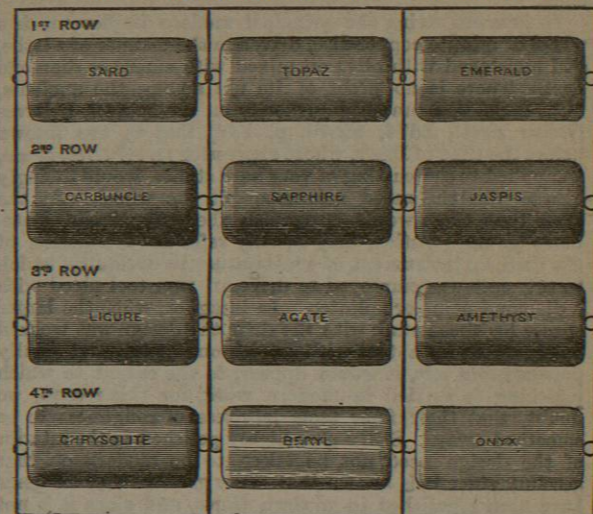
from Egypt, though of course if the idea of engraving gems originated with soft stones and simple implements such as flints, that origin may well have been in Assyria. Possibly the marked difference in the shape of the gems peculiar to these two nations bespeaks little contact between them in this matter. The favourite shapes in Assyria were the cylinder pierced lengthways, and sometimes fitted with a swivel so as to be used as a seal, and the cone also pierced but not requiring a swivel, since the design was cut on its base. When inscribed, a cylinder generally states three things,—the name of the owner, his father's name, and the name of his protecting deity. But there are exceptions, as for example, a cylinder in the Bibliothèque at Paris inscribed, "Alchaloum, servant of Jehastukur," which from the Semitic form of name "Alchaloum" has been thought to have belonged to a Jewish captive in Babylon. A cylinder supposed to be the seal of Sennacherib, in the British Museum, is not inscribed. Another, purporting to be the seal of Igli, son of Uruck, the oldest king of Assyria, is rejected by M. Oppert as not having any such antiquity. An agate seal from Khorsabad reads, "Nipishi, of King Tiglath Pileser, king of Assyria, son of Haou Liklikhus, king of Assyria." But, as has already been said, many of the cylinders could not have been employed as seals without difficulty, and it appears to result from the most recent study of the designs on them that frequently their main function was to act as talismans in the system of magic generated among the Chaldeans. In what seems to be the oldest examples the design is sunk by a pointed tool pushed backward and forward in long straight lines. In the next stage round cavities are sunk here and there in the design by means of a drill, when greater depth is required, while the shallow parts are worked out with the pointed instrument. By practice in utilizing both methods the Assyrians reached whatever skill they could boast in this branch of art. The materials are hæmatite, jasper, calcedony, sard, basalt, agate, lapis lazuli, rock crystal, alabaster, porcelain, quartz, glazed clay. Mr King classes them under four periods, beginning as early as 2234 B.C.

In Egypt the favourite form of gem was a scarab (beetle), having a flat surface underneath, on which was engraved a hieroglyphic design. The common materials are green jasper and porcelain. From the soft nature of the porcelain, and from the strict adherence to the scarab shape, it may be inferred that they were used much less as seals than as a sort of badges or ornaments, and this is confirmed by the finding of large numbers of them in foreign countries, as at Camirus in Rhodes and in Etruria, where the hieroglyphics could not have been understood. No doubt it may be true that these specimens had been manufactured by Phœnicians for export to these countries merely as articles of ornament, but had the originals been strictly held by the Egyptians to be seals, it would have been the height of dishonesty in the Phœnicians to reproduce them in this way. In Egypt, however, the art of gem engraving was not confined altogether to scarabs, as may be seen among other interesting exceptions in the oblong intaglio of green jasper in the Louvre (*Gazette Archéol.*, 1878, p. 41) with a design on both sides, representing on the obverse, as known from the cartouche, Thothmes II. (1800 B.C.) slaying a lion, and on the reverse the same king drawing his bow against his enemies from a war chariot. In the Louvre also is an Egyptian gem, said to belong to the 12th dynasty, 3000 B.C. But uninteresting in themselves as are the scarabs of Egypt, they have this accidental importance in the history of gem engraving that they furnished the Phœnicians with a model which they first improved as regards the intaglio by a freer spirit of design, gathered partly from Egypt and partly from Assyria (see the Phœnician scarabs from Tharras in Sardinia and from Cyprus). The scarab thus improved

they communicated to the Etruscans, under whose skilful hands it received often a degree of delicacy in the workmanship which has not been equalled in the gems of any other country. The best specimens are due to the influence of Greek art in the 6th century B.C. or somewhat later. The subjects engraved are Greek in origin, and the habit of inscribing the names of the subjects is an early Greek habit, but with this difference, that the Greeks would be correct in the naming, while the Etruscan artists are perhaps as often wrong as right. The name of Tydeus, for instance (TYTE), is assigned in one case to a figure scraping himself with a strigil, and in another to a fallen warrior, who otherwise would be identified as Capaneus. Again a figure washing his hair is called Peleus, and Achilles sulking becomes Theseus, to the exercise of much ingenuity in times past. With these and other examples it should no longer be necessary to cast about for an unusual form of the legend of the Seven against Thebes, when five only of their names are found beside five figures on what is the most celebrated of existing scarabs—a carnelian in the Berlin Museum (Winckelmann, *Alte Denkmäler*, No. 105). Another scarab of first importance is a banded onyx in Florence representing the Salii carrying their shields, inscribed *Angis* and *Alce*. For Etruscan scarabs see *ETRURIA*, vol. viii. p. 640.

While the Phœnicians have left actual specimens to show with what skill they could adopt the systems of gem engraving prevailing at their time in Egypt and Assyria, the Israelites, on the other hand, have left records to prove, if not their skill, at least the estimation in which they held engraved gems. "The sin of Judah is written with a pen of iron and with the point of a diamond" (Jerem. xvii. 1). To pledge his word Judah gave Tamar his signet, bracelets, and staff (Gen. xxviii. 18); whence, if this passage be compared with the frequent use of "seal" in a metaphorical sense in the Bible, and with the usage of the Babylonians already cited from Herodotus, it may be concluded that among the Israelites also every man of mark at least wore a signet. Their acquaintance with the use of seals in Egypt and Assyria is seen in the statement that Pharaoh gave Joseph his seal as a badge of investiture (Gen. xli. 42), and that the stone which closed the den of lions was sealed by Darius with his own signet and with the signet of his lords (Daniel vi. 17). Then as to the stones which were most prized, Ezekiel (xxviii. 13), speaking of the prince of Tyre, mentions the sardius, topaz, and diamond, the beryl, onyx, and jasper, the sapphire, emerald, and carbuncle, stones which again occur in that most memorable of records, the description of the breastplate of the high priest (Exodus xxviii. 16-21, and xxxix. 8). Twelve stones grouped in four rows, each with three specimens, may be arranged on a square, measuring a palm, not a span, so as to have the rows placed either vertically or horizontally. If they are to cover the whole square, then they must be cut in an oblong form, and if the names engraved on them are to run lengthwise, as is the manner of Assyrian cylinders, then the stones, to be legible, must be grouped in four horizontal rows of three each. There is in fact no reason to suppose that the gems of the breastplate were in any other form than that of cylinders such as abounded to the knowledge of the Israelites, with this possibility, however, that they may have been cut lengthways into half-cylinders like a fragmentary one of sard in the British Museum, which has been mounted in bronze, and, as a remarkable exception, has been set with three small precious stones now missing. It could not have been a seal, because of this setting, and because the inscription is not reversed. It reads: "Nabu . . . [son of] Iddina-Nergal (?). . . son of Nabu-zira-iddin . . . Khi (1)-su-ba . . .," according to Mr Pinches. The names of the twelve tribes, not their standards, as has been thought, may have been engraved

in this fashion, just as on the two onyx stones in the preceding verses (Exodus xxviii. 9-11), where there can be no question but that actual names were incised. On these two stones the order of the names was according to primogeniture, and this, it is likely, would apply to the breastplate also. The accompanying diagram will show how the stones,



Jewish High Priest's Breastplate.

supposing them to have been cylinders or half cylinders may have been arranged consistently with the descriptions of the Septuagint. In the arrangement of Josephus the jasper is made to change places with the sapphire, and the amethyst with the agate, while our version differs partly in the order and partly in the names of the stones, but probably in all these accounts the names had in some cases had other meanings than those which they now carry. From the fact that to each tribe was assigned a stone of different colour, it may be taken that in each case the colour was one which belonged prescriptively to the tribe and was symbolic, as in Assyria, where the seven planets appropriated each a special colour (see Brandis in the Berlin *Hermes*, 1867, p. 259 sq., and De Saey, *Revue Archéologique*, 1869, and compare Revelation xxi. 13, where the twelve gates are grouped in four threes, and 19, 20, where the twelve precious stones of the walls are given). The precious stones which occur among the cylinders of the British Museum are sard, emerald, lapis lazuli (sapphire of the ancients), agate, onyx, jasper, and rock crystal. Both Ælian (*Var. Hist.*, iv. 34) and Diodorus (i. 75) speak of an object known as an image of truth worn round the neck of the judge, who of course was a priest, in ancient Egypt; but how far this may have suggested or corresponded with the Jewish breastplate is not to be made out.

The records of gem engravers in Greece begin in the island of Samos, where Mnesarchus, the father of the philosopher Pythagoras, earned by his art more of praise than of wealth. Thence also came Theodoros, who made for Polycrates the seal of emerald (Herodotus, iii. 41), which, according to the curious story, was cast in vain into the deep sea on purpose to be lost. That the design on it was a lyre, as is stated in one authority, is unlikely, now that Benndorf's ingenious reading of Pliny (*Nat. Hist.*, xxxiv. 83) has shown that the portrait statue of Theodoros made by himself was in all probability a figure holding in one hand a graving tool, and in the other, not, as previously supposed, a quadriga so diminutive that a fly could cover it with its wings, but a scarab with the engraving of a

quadriga on its face (*Zeitschrift für die Oesterreich. Gymnasien*, 1873, pp. 401-411), whence it is not unreasonable to conclude that this scarab in fact represented the famous seal of Polycrates. Shortly after 600 B.C. there was a law of Solon's forbidding engravers to retain impressions of the seals they made, and this date would fall in roundly with that of Theodoros and Mnesarchus, as if there had in fact been just about then a special activity and unusual skill. That the art had been practised perhaps for several centuries before in Greece is probable from the general usage of sealing implied in Solon's law, from the extraordinary degree to which it obtained soon after his time, and from the influence which was exercised on the Greeks in such matters by the Phœnicians, Egyptians, and Assyrians. Yet it is singular to find, as Pliny points out (xxxiii. 4), no direct mention of seals in Homer, not even in the passage (*Iliad*, vi. 168) where Bellerophon himself carries the tablets on which were written the orders against his life. Then as regards the rings or seals of Prometheus, of Midas, of Minos (which like that of Polycrates was thrown into the sea in vain), of Phocus, and of Orestes, the legends may not all have come down from a very early period, but that of Phocus can at least be traced back to the time of Polygnotus, while that of Prometheus may be taken to have inspired the seal (engraved *Rev. Arch.*, 1878, pl. xx.) on which the Titan is seen bound and submitting to the vulture. Or, conversely, such a gem may have suggested the legend of the ring which he bore as proof of his former punishment. There is no need to put it much later than 600 B.C., and it is a specimen of a class of lentoid gems which of late years have been found in small numbers chiefly in the Greek islands. Two more of them from the British Museum collection are engraved in Pl. I., figs. 2 and 3. As a rule the materials are comparatively soft, most frequently steatite and hæmatite, while the designs consist mainly of animals so turned and twisted as to cover almost the entire surface of the gem. Certain exceptional cases, where the design is taken from legend or mythology, may be seen in the *Revue Archéologique*, 1878, pl. xx., Nos. 1-3; for the ordinary subjects see *Revue Arch.*, 1874, pl. xii.; Schliemann, *Mycene*, pp. 112, 202, 362; Cesnola, *Cyprus*, pl. xxxvii. 9, and pl. xxxviii. 21, 23; and for gold signets with designs in this stage of art see Schliemann, *Mycene*, p. 223; Cesnola, *Cyprus*, pl. xxxiv. 2; and *Revue Arch.*, 1874, pl. iv., No. 44, in which volume is an interesting article on early engraved gems by Count Gobineau. In most cases the designs though heraldic rather than natural, with a prevalence of animal forms perhaps due to notions of heraldry, are yet so singularly free from Egyptian or Assyrian influence that they must be assigned as essentially Greek productions, possibly from a period when Oriental examples had lost sway. "Not to carry the image of a god on your seal" was a saying of Pythagoras; and, whatever his reason for it may have been, it is interesting to observe him founding a maxim on his father's profession of gem engraving (Diogenes Laert., viii. 1, 17).

From the time of Theodoros to that of Pyrgoteles in the 4th century B.C. is a long blank as to names, but not altogether as to gems, the production of which may be judged to have been carried on assiduously from the constant necessity of seals for every variety of purpose. The references to them in Aristophanes, for example, the lists of them in the ancient inventories of treasures in Athens, and the number of them found by General Cesnola in the treasure chambers of Curium in Cyprus confirm this frequent usage during the period in question. To it belong in particular the inscribed gems mentioned in *ARCHÆOLOGY* (vol. ii. p. 353), including the Woodhouse intaglio there figured (p. 358), which may be referred to as perhaps the

very finest example of Greek gem engraving that has come down to us. It would stand early in the 5th century B.C., a date which would also suit the head of Eos from Ithome in Messenia (Pl. I., fig. 14), the head (fig. 5), the citharist (fig. 9), while the scarabs (figs. 6, 7), though apparently of Etruscan origin, obviously reflect the character of archaic Greek art, as far as concerns the shallow cutting and the delicate execution of minute details. The touch which isolates a design and literally arrests the eye they do not possess, but by comparison they render it more distinct as it exists in the Woodhouse gem already mentioned, and in figs. 8, 10-13, and 15 in Plate I., all of which may be assigned to the end of the 5th century B.C. Singularly beautiful in this class are the two Cesnola gems (*Cyprus*, pl. xxxix. figs. 1, 2), the latter, simple and even awkward in parts, yet on the whole conceived by a Greek mind imbued with the poetry of art, while the former is rather a triumph of faultlessness, delicate as the colour of the stone on which it is engraved.

By the beginning of the 4th century B.C. every element of archaism had vanished; but gems of this period are scarce, except in the collection of St Petersburg, which has obtained them exclusively from tombs in the Crimea. Foremost among them are the two by Dexamenus of Chios, the one, a calcedony with the figure of a stork flying, and inscribed in two lines, the letters carefully disposed above each other, ΔΕΞΑΜΕΝΟΣ ΕΗΘΙΕ ΧΙΟΣ (*Compte-rendu de la Commiss. Arch. St Petersburg*, 1861, pl. vi. fig. 10), and the other, an agate with a stork standing on one leg, inscribed ΔΕΞΑΜΕΝΟΣ simply (*Compte-rendu*, 1865, pl. iii. fig. 40). A third gem, apparently by the same Dexamenus, is a carnelian belonging to Admiral Soteriades in Athens, and has a portrait head, bearded and inscribed ΔΕΞΑΜΕΝΟΣ ΕΗΘΙΕ (*Compte-rendu*, 1868, pl. i. fig. 12). Apart from the splendour of their workmanship, those three gems are interesting for the variety of their inscriptions. Thus a name standing alone in the nominative case, when it does not describe the subject of the design, will indicate the artist. Again, when the nationality of the artist is added it should follow the verb as a rule, which, however, is not without exceptions. ΕΗΘΙΕ for ΕΗΘΙΕΙ is an archaism. The design of a stork flying occurs on an agate scarab in the British Museum from the old Cracherode collection, and therefore beyond all suspicion of having been copied from the more recently discovered Kertch gem. The condition of the surface and the skill of execution are both interesting. Reckoned among the best of the Crimea gems, and that is equivalent to saying among the best of all gems, are the following:—(1) a burnt scaraboid with an eagle carrying off a hare; (2) a gem with scarab border and the figure of a youth seated playing on the trigonon, very much resembling the Woodhouse intaglio (both engraved, *Compte-rendu* 1871, pl. vi. figs. 16, 17); (3) a scaraboid with border and the design of a horse running at speed, with which may be compared a carnelian scaraboid in the British Museum from the old Hamilton collection, and again on this account above suspicion, if the great beauty of the work were not alone convincing; the horse is here stung by a gadfly; (4) an ovoid calcedony, mounted on a chain to be worn as a collar, with an intaglio of a Gorgon (3 and 4 engraved, *Compte-rendu*, 1860, pl. iv. figs. 6 and 10). In these, and in almost all Greek gems belonging to this period of excellence, the material is of indifferent quality, consisting of agate, calcedony, or carnelian, just as in the older specimens. Brilliant colour and translucency are as yet not a necessary element, and accordingly the design is worked out solely with a view to its own artistic merit.

At this stage appears the name of Pyrgoteles, of whom it is said that he alone was permitted to engrave the portrait head of Alexander the Great. The portrait head of

Alexander given in Pl. I., fig. 16, is not likely to represent the art of this time, but more probably belongs to the age of Augustus who used this design as a seal. On the other hand the ancient pastes (figs. 20-22) will convey a notion of the gem engraving of the time of Alexander. Still it should be observed that one of the special difficulties of the subject is to account for the scarcity of gems from this period of wealth, luxury, and artistic activity in all directions. Possibly not a few belong to it which it is thought safer to class as Roman. This much at least is certain, that Roman art altogether was a prolongation, hardly a development, of the Macedonian art. Those Roman engravers may have been conscious of this who boldly placed on their productions the names of celebrated Greek artists, as for instance on a garnet in the British Museum, having a figure perhaps of Jason and inscribed with the name of Phidias (ΦΕΙΔΙΑΣ ΕΠΟΙΕΙ); others elsewhere profess to be the work of Polycletus or of Scopas. The same effrontery was seen in sculpture, and unfortunately has revived again in the gem engraving of comparatively recent times, as may be seen in a calcedony intaglio of the head of Alexander the Great in the British Museum, which, though clearly modern, claims to be the work of Pyrgoteles.

From literary sources are known the engravers Apollonides, Chronius, Tryphon, Satyrius, and Dioscurides, but the date of the last-mentioned only is certain. He lived in the time of Augustus, whose portrait he executed, and did not, it may be supposed, inscribe his own name on it in full. On the other hand, if, as Pliny states, it became a custom afterwards to seal with this portrait of Augustus, it would be natural enough to place on the copies of it made for that purpose the name of Dioscurides. With this view of the case may be reconciled two gems bearing his signature in the British Museum—the one a jacinth, the other a sard—and both obviously portraits which, though more resembling Julius Cæsar than Augustus, might yet be regarded as unsuccessful portraits of the latter. Of the two the jacinth, which is from the Blacas collection, is doubted by Brunn; the other is a higher class of work, and yet even it presents some difficulties that require the theory of an imitator, most probably a Roman one. The obtrusive display of the wreath and the fringe of drapery round the bust are details which, apart from the style of workmanship, are objectionable. That the name of this engraver has been often added to modern gems is true enough, and in some cases also it may have been in modern times inscribed on perfectly ancient gems. Even among those which appear to be in all respects antique there are differences in the spelling and form of the letters not to be accounted for if they had come from his hand, but intelligible if they had been made by ancient copyists. Abbreviations such as ΔΙΟΣΚ for Dioscurides, or ΕΠΙΤ for Epitynchanus, are always suspicious. ΕΠΙΤΥΧΑ, on a beautiful cameo of the young Marcellus, might seem to have been abbreviated by the accident which broke off the lower part of the gem, but the inscription does not bear examination except as the work of a modern hand. Not necessarily modern is the inscription ΔΙΟΣΚΟΥΡΙΑ, on a fragmentary amethyst, with a head which may perhaps have been meant for Alexander the Great, whose portrait, as has been said, was used as a seal by Augustus, and may have been executed for him by Dioscurides. It is possibly an ancient copy of this seal, with the addition of the name of the original artist to show that it is so. With regard to the question whether a name standing in the genitive case may indicate the engraver, the evidence is affirmative, if for no other reason than that the names are most frequently Greek, while the owners or collectors of gems in Italy were Romans. Collecting was a passion with wealthy Romans, but their names have not survived on gems. Names like

Aulus or Gnæus, written in Greek letters, cannot indicate a Roman of position, but on the contrary show that it was to the naturalized Greeks that the Romans looked for their engravers. When, for instance, one gem reads ΣΟΛΩΝΟΣ and another ΣΟΛΩΝ ΕΠΟΙΕΙ, it is fair to conclude that we have to do in both with an engraver named Solon, if the inscriptions are genuine. The former occurs on a gem found with jewellery at Pompeii (*Bullet. d'Inst. Arch.*, 1863, p. 91), so that if the other examples of it, e.g., on the Strozzi Medusa in the British Museum, and on the so-called head of Mæcenæ, be inventions of the 16th or 17th centuries, they are at least correct in reproducing a name which is now seen on one undoubtedly ancient intaglio. Obviously one or more gems so inscribed must have existed in the 16th or 17th centuries, and this fact alone of the existence of several gems with the same name would suggest if not actually prove that it was the name of an engraver. The other inscription, ΣΟΛΩΝ ΕΠΟΙΕΙ, on an intaglio of Diomedes carrying off the Palladium, though known since the year 1660, has not always passed unchallenged. The Medusa just mentioned is a gem of extraordinary pretensions, but very unsatisfactory when compared with good Greek work. In the matter of names the evidence as to the Greek usage, though very slight, is not at variance with what may be gathered from the coins where the names of the die-sinkers appear either in the nominative or genitive case.

In the discussions as to what is or is not proper in the way of engravers' signatures, frequent reference is made to the inscription ΕΥΤΥΧΗΣ ΔΙΟΣΚΟΥΡΙΑΟΥ ΑΙΓΕΑΙΟΣ ΕΠΙ, which occurs twice—on a pale amethyst said last century to belong to the prince of Avella, and on an amethyst in the Marlborough collection. The design on the two is identical, consisting of a helmeted bust of Minerva in full face. Unless what was formerly the Avella gem is now the gem belonging to the Marchese Strozzi of Florence, then this again must be a third example. Professor Maskelyne in his *Catalogue* quotes Mr King as agreeing with him that the Marlborough gem (No. 81) is not a copy as Brunn supposed, but may be regarded as an original work of Eutyche till the Avella gem be proved to exist elsewhere. But Stephani insists on the inscription being a modern production, especially on account of the contraction ΕΠΙ for ΕΠΟΙΕΙ, which he says had arisen through the last letters ΟΙΕΙ being hidden from the modern copyist, either owing to the setting, or from some other cause. The gem which Cyriacus of Ancona and a contemporary of his saw and described in the early part of the 15th century had the full inscription, and possibly it was from an inexact impression of it that the Marlborough gem was made (*Compte-rendu*, 1861, p. 157). Another celebrated Marlborough gem with the head of the dog-star Sirius, inscribed ΓΑΙΟΣ ΕΠΟΙΕΙ, is condemned by Professor Maskelyne in his *Catalogue* (No. 270), as it deserves to be. Apparently meant for the same engraver, though written differently, is the ΓΝΑΙΟΣ on the beryl in the British Museum with the head of Hercules, as to which Köhler's adverse judgment appears to be entirely just. ΣΚΥΛΑΞ, which is found on an amethyst head of Pan in the British Museum executed with wonderful exactness of detail, is not disputed, except as to whether it is the name of the engraver or the owner. Among the other names which have been more or less the subject of discussion are those of Hyllus, who also claims to be a son of Dioscurides, Epitynchanus, Agathopus, Euodus, Felix, Mycon, Allion, Admon, Onesas, Protarchus, and Alexas.

The habit of gem collecting is recorded first in the instance of Ismenias, a musician of Cyprus, who appears to have lived in the 4th century B.C. But though individual collectors are not again mentioned till the time of Mithradates, whose cabinet was carried off to Rome by Pompey, still it is to be inferred that they existed, if not pretty generally, yet in such places as Cyrene, where the

passion for gems was so great that the poorest person owned one worth 10 minas, and where, according to *Alian* (*Var. Hist.*, xii. c. 30), the skill in engraving was astonishing. The first cabinet (dactylitheca) in Rome was that of Scæurus, a step-son of Sulla. Cæsar is said to have formed six cabinets for public exhibition, and from the time of Augustus all men of refinement were supposed to be judges both of the art and the quality of the stones. To this pretension is doubtless due most of the existing gems engraved on large beautiful jacinths, garnets, sards, beryls, and amethysts, leaving, as regards purely technical skill, nothing to be desired. Except in portraiture, and in grylli or conceits, in which various things are combined into one, often with much skill, the subjects were as a rule only variations or adaptations of old types handed down from the Greeks. When new and distinctly Roman subjects occur, such as the finding of the head on the Capitol, or Faustulus, or the she-wolf with the twins, both the stones and the workmanship are poor. In such cases, where the design stirs a genuine national interest, it may happen that very little of artistic rendering will be acceptable rather than otherwise, and much more is this true when the design is a symbol of some article of faith, as in the early Christian gems. There both the art and the material are at what may be called the zero of engraving; that is to say, it has reached the point beyond which barbarousness or folly sets in. The usual subjects on the early Christian gems are the fish, anchor, ship, dove, the good shepherd, and, according to Clemens, the lyre. Under the Gnostics, however, with whom there was more of speculation than of faith, symbolism was developed to an extent which no art could realize without the aid of writing. A gem was to them a talisman more or less elaborate, and the difficulty is to make out how they carried them. Many specimens exist, but none show signs of mounting. The materials are usually hematite or jasper. As regards the designs, it is clear that Egyptian sources have been most drawn upon. But the symbolism is also largely associated with Mithraic worship. The name Abraxas or Abrasax, which, from its frequency on these gems, has led to their being called also "Abraxas gems," is, when the Greek letters of which it is composed are treated as Greek numerals, equal to 365, the number of days in a year, and the same is the case with ΜΕΙΘΡΑΞ.

More interesting, from the occasionally forcible portraiture and the splendour of some of the jacinths employed, are the Sassanian gems, which as a class may be said to represent the last stage of true gem engraving in ancient times. In the middle ages and onwards metal stamps were found more serviceable for the purpose of sealing, and though engraved gems still continued to be a luxury of the great, the old traditions were broken through, as may be seen, for example, in the large crystal in the British Museum representing Susanna and the Elders, made by order of the French king Lothair, 954-986. With the revival of classical tastes under the patronage of popes and princes in the Cinquecento period, it was natural that this branch of art should have a new career of activity, which, after a lapse during the 17th century, again during the last century revived under an even greater amount of encouragement from men of wealth and rank. In this last period the names of engravers who succeeded best in imitating classical designs were Pichler (Pl. I., fig. 28), Natter, and the Englishmen Marchant (fig. 29) and Burch. Compared with the Greek gems on the same plate, it will be seen that what at first sight is attractive as refined and delicate is after all mere pretence of refinement, and entirely devoid of the ancient spirit. The success with which modern engravers imposed on collectors is recorded in many instances, of which one may be taken as an instructive type. In the Bibliothèque in Paris (Chabouillet's catalogue, No. 2337) is a gem familiarly known as the signet of Michelangelo, the subject being a Bacchanalian scene. So much did he admire it, the story says, that he copied from it one of the groups in his paintings in the Sistine chapel. The gem, however, is evidently in this part of it a mere copy from Michelangelo's group, and altogether is a later production.

The gems engraved in Plate I. show a progressive development of the art from the earliest times down to last century. They are all in the British Museum, and are enlarged to about a half more than their real size. No. 1, Porcelain scarab, from Camirus in Rhodes; No. 2, Carnelian, lentoid gem, from Ialysus, in Rhodes; No. 3, Crystal, lentoid, also from Ialysus; No. 4, Paste scaraboid, from Tharras, in Sardinia; No. 5, Carnelian, head of a king; No. 6, Crystal scarab, Gorgon; No. 7, Carnelian scarab, Citharist; No. 8, Sard, female figure with water jar; No. 9, Steatite scaraboid, Citharist; Nos. 10-13, Four sides of an amethyst, Menads; No. 14, Agate, Eos; No. 15, Carnelian, unknown; No. 16, Carnelian, head of Alexander the Great, as Helios; No. 17, Sard, head of Zeus; No. 18, Sardonyx cameo, Actæon; No. 19, Sardonyx cameo, head of Athena; No. 20, Paste, Victory; No. 21, Paste, Menad; No. 22, Paste, Victory sacrificing bull; No. 23, Agate scaraboid, Priest; No. 24, Amethyst, head of Brutus (?), from Rhodes, inscribed C. I. Q.; No. 25, Jacinth, Sassanian portrait; No. 26, Gnostic gem; No. 27, Christian gem, the Good Shepherd; No. 28, Modern gem, by Pichler; No. 29, Modern gem, by Marchant.

*Literature.*—See M. A. Levy, *Siegel und Gemmen*, with three plates of gems having Phœnician, Aramaic, and old Hebrew inscriptions, Breslau, 1869; and, on the same subject, De Vogüé, in the *Revue Archéologique*, 1868 (xvii.), p. 482, pl. 14-16; De Saulcy, in the *Rev. Arch.*, 1869 (xx.), p. 101, "Recherches sur le costume chez les Juifs;" Victor Ancessi, *L'Égypte et Moïse*, Paris, 1875, giving on plate 7 a fanciful restoration of an Egyptian breastplate; Soldi, in the *Rev. Arch.*, 1874 (xxviii.), p. 147, on Babylonian cylinders; Count Gobineau, in the *Rev. Arch.*, 1874 (xxvii.), p. 111 and p. 179, on early Oriental gem engraving. Fr. Lenormant, in the *Rev. Arch.*, 1874 (xxviii.), pl. 12, gives five examples of early lentoid gems, and seven more gems of the same class are given by A. S. Murray in the *Rev. Arch.*, 1878, pl. 20. On Greek and Roman gems the principal authorities are Köhler, *Gesammelte Schriften*, iii. and v., and Stephani, in his notes to these volumes, and in the *Compte-rendu de la Commission Imperiale de St. Petersbourg*, 1870-1, p. 215 and pp. 221-224. Opposed to them is Brunn, in his *Geschichte der Griechischen Künstler* (1859), ii. p. 443, where a full discussion of Greek and Roman gems will be found. See also Krause, *Pyrgoteles*, Halle, 1856, and *Bollettino dell' Inst. Rom.*, 1831, p. 105; 1834, p. 116; and 1839, p. 99. In England the authority is C. W. King, *Antique Gems*, 2d edit., London, 1866; *Handbook of Engraved Gems*, 1866; *Precious Stones*, 1865; *Gnostic Gems*, 1864; and appendix on ancient gems in Cesnola's *Cyprus*, which gives 11 plates of gems. Of special interest as regards the stones used by ancients, and valuable as a criticism of a single collection, is Prof. Maskelyne's *Catalogue of the Marlborough Collection*, privately printed in 1870. This collection is now the property of Mr Bromfielw. On Abraxas gems see Barzilai, *Gli Abraxas*, Trieste, 1873, and Matter, *Histoire du Gnosticisme*. An indispensable book of reference is Raspe's *Catalogue of Tassie's large series of Sulphur Casts*. Among catalogues of public collections are Tolken's *Verzeichniss d. preuss. Gemmen*, 1835; Chabouillet's *Catalogue des Camées et Pierres Gravées de la Bibliothèque Imperiale*, Paris, 1856; and Jansson's *Nederlandsch-Rom. Daktyliothek*, Leyden, 1844. Older works are generally of small critical value, but the following may be mentioned:—Winckelmann, *Description des Pierres Gravées du Feu Baron de Stosch*, Florence, 1760; Visconti, *Opere Varie*, ii. p. 115-386; Mariette, *Traité des Pierres Gravées*; Millin, *Pierres Gravées*, and *Introduction à l'Étude des Pierres Gravées*, Paris, 1796. (A. S. M.)

GEMSBOK (*Oryx gazella*, Gray), a species of antelope, abounding on the dry yet fertile plains of South Africa, where it feeds on the bulbs of water-root and other kinds of succulent vegetation, by means of which the antelopes of those regions are able to subsist without water for



Gemsbok.

months together. It is a large and powerful animal, measuring about 5 feet in length and over 3 feet in height at the shoulders. Its horns, situated on the same plane with its forehead, exceed 2 feet in length, are almost straight, and are obscurely ringed throughout their lower