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A MEMOIR

ON

THE DIAMOND.

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A

MEMOIR

ON

THE DIAMOND.

BY

JOHN MURRAY, F.S.A., F.L.S., F.H.S., F.G.S.

Member of the Meteorological Society of London, and of the Wernerian Society of Edinburgh; 'Honorary Member' of the Medico-Chirurgical Society of Hull, of the Medical Society of Inverness, of the Philosophical Societies of Sheffield and Hull; and of the Mechanics' Institutes of Exeter, Devonport, Portsmouth, Hull, York, Halifax, and Bristol: 'Corresponding Member' of the Northern Institution, the Horticultural Society of Edinburgh, &c. &c.

LONDON:

LONGMAN, REES, ORME, BROWN & GREEN.

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ADVERTISEMENT.

I am indebted to a great variety of sources for the materials which form this Memoir. Among the Works consulted, have been—"Jefferies on Diamonds," "Mawe on Diamonds and Precious Stones," "Mawe's Travels in the Brazils," &c.: but the greater part is obtained from notes and memoranda collected from numerous insulated channels of information, at various times. I am also much indebted to the personal communications of private friends for some of my remarks connected with the history of individual Diamonds.

The diamond is a gem altogether unique—itself alone, and separated from all other precious stones by peculiar and distinct characters, physical as well as chemical. Though thus distinguished, it has had

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few separate chroniclers, yet it surely merits a particular memoir. The private history and adventures of this imperial and princely gem have been often curious, and connected as they have occasionally been with state machinery, and the vicissitudes of private fortune, may sometimes "point a moral, or adorn a tale." I have endeavoured to be as little diffuse as possible. My information has been drawn from the best authorities I have had access to; and only regret that the materials are so limited. Its natural, commercial, and economical history are themes of interest and curiosity.

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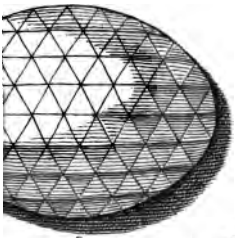

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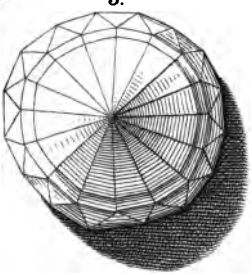

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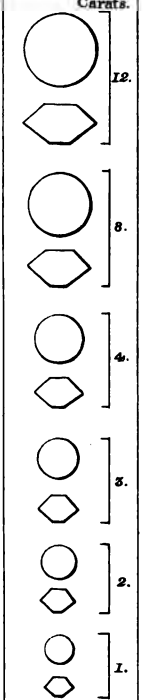

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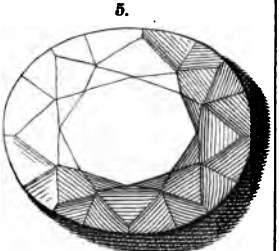

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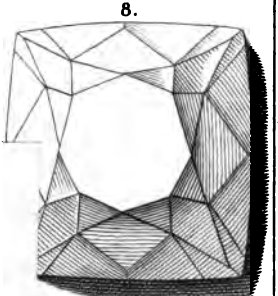

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EXPLANATION OF THE PLATE.

Fig. 1. Superficies of the Diamond of the Rajah of Mattan.

2. Ditto of the Austrian yellow Diamond.

3. Ditto of the Diamond of the Sceptre of Russia.

4. Ditto of the Nassac Diamond belonging to the East India Company.

5. Ditto of the Piggott Diamond.

6. Ditto of the largest Diamond in the British Crown.

7. Ditto of the fine blue Diamond worn at the Coronation of GEORGE the FOURTH.

8. Ditto of the "Regent Diamond," the largest and finest among the Crown Jewels of France.

9. A Scale of the comparative sizes of Brilliants, 12, 8, 4, 3, 2, and 1 carats, exhibiting the girth of each taken round the "girdle," and the *depth;* the lower figures representing the latter—taken from a Diamond guage.

Note.—The Figures represent the several Diamonds, of their *real* size, copied from a series of correct and beautiful models in the author's possession.

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A

MEMOIR,

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CHAPTER I.

INTRODUCTORY REMARKS—KNOWLEDGE OF THE ANTIENTS ON THE DIAMOND—COMBUSTIBILITY OF THIS GEM—ITS CHEMICAL NATURE—ARTIFICIAL PRODUCTION QUESTIONED—ITS PHYSICAL AND PECULIAR PROPERTIES.

THE diamond seems to have been known from the most remote period of antiquity. We find it was associated along with the emerald and the sapphire in the second row of the twelve precious stones on which the names of the children of Israel were engraved, "every one with his name according to the twelve tribes," and these were set in the breastplate of judgment worn by the High Priest. What the URIM and THUMMIM* were, which also adorned the breastplate, when he went into the "holy of holies," we have now no accurate means of ascertaining, but as the

* URIM, *Lights.* THUMMIM, *Perfections.*

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terms imply what is luminous and perfect, it is by no means unlikely that these were *diamonds* of great beauty and splendour, which reflected the glories of the symbol of the Divine Presence. Thus we know distinct names were given to the two pillars that were reared in the porch of the temple at Jerusalem; and the two chief diamonds belonging to Persia are hyperbolically termed, in the language of the east, "the Sea of Glory," and "the Mountain of Splendour."

The antients seem to have been well acquainted with the use of the diamond in etching, and it is even stated that the figure of Mars, or of Hercules surmounting the Hydra, was engraved on it. The diadem, which is more antient than the crown, was not worn until after Constantine, in the lower empire. This was a fillet, tied in a knot behind, and adorned with pearls and *diamonds*, either in a single or a double row, which empresses were also permitted to wear. The diadem thus decorated may be observed on some of the coins of Constantine and Jovian. There is in the British Museum an antient Roman gold ring, with an octohœdral diamond set in it: and in the clasp of the mantle of Charlemagne, still preserved at Paris, there are four diamonds, natural crystals. It was sometimes considered a talisman, and when under the planet Mars, esteemed favourable. In former times it

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was supposed to cure insanity, and to be an antidote to poisons; notwithstanding which, Paracelsus was said to have been poisoned by diamond powder:* we believe it to be as inert in the one case as it is harmless in the other. The Greeks called this gem αδαμας *(unconquerable)*; and ADAMANT was given to it in consequence of this supposititious virtue, in that it was esteemed victorious over fire, and to resist the hardest things. Antient Greek writers describe it as only found in Ethiopia, between the island Meroe and the temple of Mercury. The notions of the antients about it seem to be altogether confused and indistinct. According to Pliny, there existed between the diamond and the magnet a natural antipathy. "There is," says he, "such a disagreement between a diamond and a loadstone, that it will not suffer the iron to be attracted; or if the loadstone be put to it and take hold of it, it will pull it away."† It is needless to

* I was informed that diamond-powder, mixed up with oil, for polishing, being left accidentally exposed by the lapidary, some mice during the night had chuckled it up as a *bonne bouche;* and that they felt no inconvenience from the dose was evident, from repeated disappearance of a similar mixture thus inadvertently neglected. They seem to have been rather expensive inmates, as they thus devoured diamond-powder to the amount of some pounds.

† Pliny, lib. 37, chap. 4.

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observe, no such antipathy can now be discovered in the case; and if the grand test of inductive truth, "experimentum fiat," had been then applied, it would, like the witty monarch's problem propounded to the Royal Society, have been found an equally gratuitous assumption. We, at least, have found no diminution of the attractive powers of the magnet, when we interposed between a magnet and a fine needle no less than five fragments of diamond. It has been stated, that the diamond was able to resist the power of the highest temperatures, but that it must be carefully removed from the furnace, and suffered to cool gradually, otherwise it will crack and fall to pieces. We have seen a large and costly Brazilian diamond fractured accidentally in two by some such means; but if we remember right, this was occasioned by a fall, after having been subjected to heat. Many authors have permitted their fancy to rove on some attribute peculiar to the diamond, either real or supposed; thus, we are told, that a diamond is softened and broken if steeped in the blood of a goat; but not, according to others, unless it be fresh and warm, nor even then, fractured without blows; and that it will also break the best hammers and anvils of iron. Sir Thomas Brown says, that a diamond being steeped in goat's blood rather receives thereby an increase of hardness; "for," he observes "the

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best we have are comminuible without it; and are so far from breaking hammers, that they submit to pistillation, and resist not an ordinary pestle."* The truth is, as far as the goat's blood is concerned it makes no difference either way; and we know very well that it is a matter of no difficulty to crush the diamond in a steel mortar; from its lamellar texture it is also capable of being split and cleaved, and jewellers are by these means enabled to work it. The test of a diamond, in the Brazils, we believe to be this: when placed on a hard stone, and struck with a hammer, if it either resist the blow, or separate into laminæ, it is concluded to be one. The introduction of a steel point will easily separate the laminæ of the diamond. Small round diamonds cannot however be split.

From the extreme brilliancy of the diamond, and its purity, it was consecrated to all that was celestial, and accordingly supposed that it would triumph over all means employed to subdue it, the solar ray, excepted. It did triumph indeed over the hot furnaces to which it was exposed in the crucible of the alchymist, but the spell which united it to the sunbeam is now dissolved, and it has yielded to the severity of the "torture and inquisition" of modern chemistry. Newton, reasoning from its great density and high refractive

* Sir Thomas Brown, b. 2, p. 92,

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property, concluded that the diamond was combustible, or, to use his own language, "an unctuous substance coagulated," though he was in some measure anticipated by Boetius de Boot, in 1609. The event has amply verified this conjecture, and the Tuscan philosophers and the Honourable Mr. Boyle ascertained the fact. The first grand experiment to prove the combustibility of the diamond took place in the presence of Cosmo the III. Grand Duke of Tuscany, wherein the diamond being exposed in the focus of the great lens (still in the Grand Duke's laboratory at Florence), it was entirely volatilized. Guyton de Morveau, and others, consumed the diamond, and it was readily dissipated in the focus of the great mirror of Tchirnhausen, as we believe it subsequently was in that of Parker's burning lens. In the year 1771, Macquer observed the diamond to inflame. Guyton de Morveau had proved that the diamond was destroyed when projected into red-hot nitre; and it was also burnt by means of melted nitre in a gold tube, by Mr. Tennant. When fragments of diamond were introduced into the brilliant arch of flame, evolved between points of charcoal in the galvanic batteries of the Royal Institution, consisting of 2,000 double plates, and exposing a surface of 128,000 square inches, they rapidly disappeared, being completely volatilized. The diamond may be easily consumed

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by being placed in a cavity of charcoal, and urging on it the flame of a spirit lamp, by means of a stream of oxygen.

So far the combustibility of the diamond was completely ascertained, but its nature remained still undetermined. Lavoisier had proved and pointed out that carbonic acid gas was evolved as a product both in the combustion of the diamond and that of charcoal, and thus their identity was inferred. The researches of Clouet, Messrs. Allen and Pepys, and others, have confirmed this conclusion. Sir George Mackenzie converted iron into steel by powdered diamonds. Mr. Children's immense battery consisted of twenty triads, each six feet long, by two feet eight inches broad, exposing a total surface of thirty-two feet; when iron, with diamond powder interposed, was exposed to its influence, the iron was converted into steel, and the diamond disappeared; and Mr. Smithson Tennant, having placed a diamond in a gold tube, supported in a state of incandescence; a stream of oxygen, by means of gentle pressure, was made to traverse it, and the result proved that the oxygen was transformed into an equal volume of carbonic acid gas, which was found in an opposite receiver resting over mercury. Sir Humphry Davy, when at Florence, made some experiments with the Grand Duke's burning lens, on the combustion of

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the diamond. He found that when the gem was introduced into a glass globe supplied with oxygen, and kindled by the lens, it continued to burn after it was removed from the focus—the oxygen was supplanted by an equal volume of carbonic acid gas, while there was no deposit of aqueous vapour. On the other hand, when plumbago and charcoal were consumed under similar circumstances, there was a sensible diminution of volume, and also a formation of watery vapour, clearly proving that the latter contained hydrogen.* Experiment has thus unequivocally demonstrated that the diamond is pure crystallized CARBON.

It was once stated that some approximation had been made to the formation of the diamond in the laboratory of the Royal Institution, with their extensive galvanic battery. By acting on charcoal in vacuo, minute hard crystals were said to be formed round the superior wire. Our informant, however, had but an indistinct idea of the mode adopted, and the general features of the experiments; and as it has never been announced or described, in all probability there is some mistake in the case. It does not seem to us at all probable that diamonds are likely to be formed by an artificial process, though we know the attempt has been made both by means of the galvanic battery and

* Phil. Trans. Part II. 1814.

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the compound-gas blowpipe; no fear need, however, be apprehended from any such rivalry, more than from the method of *forcing* by artificial means the *unio margaritifera* or *meleagrina margaritifera* to form pearls at command. These molluscæ either would not obey the commission, or they were misshapen, unsightly, and worthless. Spherules of shells, or some other substance, flattened at the bottom, are forcibly inserted between the animal and the shell, in such a way as the animal may not be able to displace them. These, in a short time, are covered with a layer of pearly matter, which is supposed to be secreted by the mantle. It has been stated in France, that a solution of phosphorus in sulphuret of carbon yields minute diamonds. We have been in the habit of using this compound for many years, and have never discovered any thing of the kind; and the diligent search we have made, since this strange announcement, has been equally unsuccessful—we believe diamonds are not so easily formed. From the result of our experiments, we are inclined to think, that in steel the charcoal assumes a crystaline form and arrangement.

The diamond is a gem characterised by its extreme hardness; notwithstanding this, it often presents, in its rough state, sufficient evidence of having undergone abrasion by friction. There is a peculiar and almost indescribable grating sound produced

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by rubbing two diamonds together in the hand, which is a tolerably good test.* The diamond is sometimes externally, and always internally, bright, and causes a single refraction of the rays of light. It is generally crystallized of various forms, of a lamellar structure, strikes fire with steel, and is the hardest of all known bodies; it cuts the hardest crystals, even rubies and sapphires, and the oriental amethyst. Nothing but diamond powder, obtained by rubbing two diamonds against each other, can polish it, and it is cut by fragments of diamond set in a maule. The diamond is stated to be consumed and volatilized at a temperature which melts silver. It requires a temperature of 5000° F. for its combustion. When exposed to the sunbeam, and carried afterwards into darkness, it exhibits phosphorescence, and it has been stated that such diamonds as do not display this peculiarity may be made to do so by dipping them into melted borax. It becomes phosphorescent also when fixed to the prime conductor of an electrical machine, and a few sparks are taken from it. The diamond becomes electric by friction, and the Honourable Mr.

* It has been stated that a test of distinguishing between real and factitious diamonds, consists in the property which the former has of adhering closely to *black mastic*, in which it is said they are sometimes set in order to give them greater lustre.

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Boyle obtained electric gleams on rubbing two diamonds together in the dark. It is said, that when fulminating silver is exploded in contact with the diamond, reduced silver is precipitated on it. By igniting fulminating mercury both on and near some diamonds, I found however only faint and equivocal evidence of reduction. The specific gravity of the diamond has been estimated at 3500, water being 1000,—though it must be admitted, that the comparative hardness and specific gravity have been variously estimated, thus:—An oriental diamond from Ormus, possessed a specific gravity of 3' 4, and a comparative hardness equal to 20—a pink diamond with a similar specific gravity, exhibited a hardness equal to 19—while a bluish diamond, and one of a yellowish tint, with a similar hardness of 19, possessed a specific gravity of 3' 3, and a cubic diamond of 18, a specific gravity of 3' 2.

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CHAPTER II.

GANGUE OF THE DIAMOND, AND ITS GEOLOGICAL ASSOCIATES—ITS CRYSTALLINE FORMS—CONJECTURES ON ITS ORIGIN—LOCALITIES, ASIA, AND THE BRAZILS—LATELY DISCOVERED IN THE URAL MOUNTAINS, AND IN IRELAND.

UNTIL lately the habitat of the diamond had been confined to localities ranging within the limits of 18° on either side of the equator, in Asia and South America. In Asia the diamond is found most abundantly in the kingdom of Golconda, and Visapour, in Bengal; chiefly in the central and southern parts of India Proper, the Peninsula of Malacca, and Island of Borneo; and in the Brazils, in the mountainous districts, called Serro Dofrio, and other places. It appears from the specimens in the various cabinets of Europe, that the true gangue of the Brazilian diamond is a brown oxyde of iron. The matrix of the diamond appears to be what the Geognost calls an amydaloid, belonging to the newest floetz trap formation of the Wernerian arrangement. In India, it appears, that the diamond is found in a species of indurated ochery gravel, in

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the form of detached crystals. Specimens of the alluvial rocks in which diamonds occur both in the East Indies and the Brazils may be seen in the British Museum. Mr. Heuland, an eminent mineralogist, possesses a diamond in its matrix.

According to Mawe, the diamond in the Brazils is found in a loose gravel-like substance, immediately incumbent on the solid rock, and covered by vegetable mould, and recent alluvial matter. This gravel consists principally of rounded quartz pebbles of various sizes, mixed with sand and oxyde of iron, and accompanied with blue, yellow, and white* topazes, together with grains of gold. The late Mr. Mawe, who visited the diamond district, and whose scientific skill may be credited in the description he gives of the spot, presented me with a specimen of this cascahlão. The diamonds of Rio Pardo are superficially, of a pale green tint, and costly. The Serro do Frio, in the Brazils, according to this author, is the best diamond ground, and it has passed its zenith.

The crystalline forms of the diamond are the primitive regular octohædron; or this with truncated solid angles, or with truncated edges, passing into the rhomboidal dodecahedron. There are also varieties of the latter which give rise to the six-sided prismatic and tetrahædral forms; also cubes with

* Known under the trivial name of *Nova Mina Diamonds.*

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truncated and bevelled edges, &c. According to the Earl Marshal of England, it would appear that, in Golconda, both the merchants and miners go generally in a state of nudity, with only a sash on their heads, and a rag round them; they dare not wear a coat, he states, lest the governor should say they have prospered and become rich, and thus find an excuse to rise in his demands on them; notwithstanding, he observes, that when perchance they find a large stone, it is engulphed in a trice, till an opportunity occurs for their retiring with their wife and children into Visapour, where they are safe and well used.* In the diamond district of the Brazils, Mr. Mawe observed a half starved cat, which may remind us of the moral of one of Æsop's fables.

Professor Jameson has very ingeniously conjectured that the diamond may be a vegetable secretion, perhaps that of some patriarch and antidiluvial boabab or banian tree. Dr. Brewster also traces the diamond, like amber, to a vegetable source: his inference being founded on its high refractive powers, conjoined with its inflammability. When we consider how abundantly *silica* is secreted in some grasses, as the *calamus rotang*, the *equisetum hiemale*, and others; and carbonate of lime, as in the *chara* tribe—we must admit its plausibility. In the

* Earl Marshal. Phil. Trans. No. 136, p. 907.

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joints of the female bamboo, the *tabasheer* or vegetable opal has been found, curiously, however, displaying properties the very reverse of the hydrophane; besides, we know that a mass of wood-stone was torn from a log of teak wood *(tectona grandis)* some years ago, in His Majesty's dockyard at Calcutta, in which it seemed evidently to be a secretion, and was interlaced by the fibres of the wood. In hard woods, as in *lignum vitæ* and *iron wood*, some approach seems to be made to the adamantine state. We have already stated that vegetable mould and recent alluvium are incumbent over the cascalhão in which diamonds are found; moreover, plants in their ashes yield metallic oxydes, as those of iron and manganese, and gold has been discovered in the ashes of the vine. The tree, scathed by the meteoric blast, might not only have thereby imparted to it such a peculiar susceptibility, but absorb the oxydes of nickel and chromium, and from such metallic sources the colours that sometimes tinge the diamond may be easily supposed to arise. We are not aware, however, that these colouring matters have ever been ascertained by direct experiment.—We possess a fine yellow diamond, but confess are unwilling to make the sacrifice. The various tints of yellow, &c., are likely produced by oxydes of iron or manganese; and green, &c., by nickel or chromium. The colouring matter of the spinelle

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ruby would appear to be chromic acid. The oriental sapphire seems to be coloured with oxyde of iron, and the emerald with oxyde of chromium. The crysoberyl or crysolite, beryl, tourmaline, and garnet, contain oxyde of iron.

The stratum of cascalhão consists of precisely similar materials to that in the gold district; on many parts of the edge of the river are large conglomerated or rolled masses of rounded pebbles, cemented by oxyde of iron, sometimes enveloping gold and diamonds. "The substances accompanying diamonds, and considered good indications of them, are bright bean-like ore, a slaty flint-like substance, approaching Lydian stone of a fine texture, black oxyde of iron in great quantity, rounded bits of blue quartz, yellow crystal, and other materials, entirely different from any thing known to be produced in the adjacent mountains."* It by no means appears that diamonds are peculiar to the beds of rivers or deep ravines, though usually found there, for diamonds have been discovered in cavities and water-courses on the summits of the loftiest mountains. Linschoten says, that in the East-Indies when they have cleared the diamond mines of all they can find, a new crop is produced in a few years; this, however, is very problematical.

The Brazilian diamond mines have some advan-

* Mawe, on precious stones.

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tages over the Eastern: the diamonds are more numerous, and proportionally there seem to be far fewer of an inferior description. It does not appear that the mines net £40,000 per annum, though the expence of labour rarely exceeds 6d. to 8d. a-day, and yet the diamond ground must be occasionally rich in this precious gem. "That piece of ground," said the intendant to Mr. Mawe, speaking of an unwashed flat by the side of the river, "will yield me 10,000 carats of diamonds"—so accurate seem to be the indications obtained from long acquaintance and practical experience, although unaccompanied by science. From 1801 to 1806 inclusive, the expenses appear to have amounted to £204,000, and the diamonds sent to the treasury at Rio de Janiero weighed 115,675 carats; the value of gold in the same period amounted to £17,300, consequently the diamonds cost government 33s. 9d. per carat; and, had such been entirely composed of small diamonds, not worth the expense of working: on the other hand, a number of diamonds of a considerable size would have afforded an ample return to the Brazilian government. The years to which we refer were considered singularly productive, and in general the Brazilian diamond mines do not average more than 20,000 carats annually.

The diamond appears to have been discovered in

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the Brazils, in Serro do Frio, about a century ago, and at this period some having been sent to Holland, were pronounced equal to those from the mines of Golconda. At one time it was generally supposed that the Brazilian diamond was *less hard* than that of Asia, and even now the idea is sometimes entertained; how true, may be open to question. It would appear that the diamond mines of the East have long been on the decline, nor do those of the Brazils, judging from present appearances, promise permanence. The European market chiefly depends, at the present time, on the Brazilian mines. In the history of the diamond, it appears, two grand influxes have occurred: the first from the Brazils, very shortly after its discovery in that region, and when they were with difficulty recognized in Europe as real diamonds; the second period appears to have been during the French revolution of 1793, when the unfortunate refugees were necessitated to sell their jewels at what they would immediately bring: of course, the very sudden influx would operate as one cause of depreciation, and on the other hand, advantage would be taken of the panic consequent on the disastrous event. At this time, I am informed, the diamond might be purchased and was purchased as low, in some cases, at £4 the carat, when the current price in the British market was as high as £8. The

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first-rate gems are always dull in sale, for these require imperial and princely fortunes for their purchase.

The diamonds which embellish the Imperial treasury of the Brazils are, beyond doubt, the most superb of any crown possession either in antient or modern times; the finest and largest are retained to swell that magnificent casket of jewellery, and government consign the rest for sale to the Brazilian ambassador, for which purpose they are deposited in the bank of England.

Hitherto we have considered the diamond as confined to specific localities. In June, 1829, however, two of the Baron Von Humboldt's companions, when exploring the western declivity of the Ural mountains in Asiatic Russia, discovered diamonds. Seven in all, of various sizes, were found on the estates of Count Porlier, about 160 miles to the west of the town of Perm. They were stated to be of the finest water, and of a quality that approached more nearly to the Asiatic than the Brazilian diamond.* During last summer (1830) the search was

* It appears that the first Russian diamonds were found on the 22d June, 1829, on the western side of the Ural, at the Biszer Gold Wash of the Countess Porlier, by a boy, aged thirteen years. The search for diamonds seems to have been first suggested by Maurice Engelhardt, in a journey to the Ural, in 1826, from the resemblance of the platina sand to

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renewed with increased activity, and Professor Engelhardt, of Dorpat, who is now employed in a second visit to those regions, writes to a friend in Germany, that seven other diamonds have been discovered amongst the gold dust, on the same property, and on the same spot where a similar number were found the preceding year. They weigh from $\frac{3}{8}$ths and $\frac{2}{3}$rds of a carat to one carat. These are indeed but small, but the quality seems first-rate, and may be the earnest of an eventually rich and *brilliant* harvest.

A diamond has also been found in Ireland, in the bed of a brook flowing through the district of Fermanaugh. It possesses a red tint, and was brought to a lady resident there, by a little girl, who said she had picked it up in the bed of the brook: the bearer was rewarded with 6d. by the lady, who had been in the habit of collecting pebbles, &c. from the rivulet. This rough diamond was afterwards submitted by the lady to Mr. Mackay, an eminent jeweller of Dublin, who pronounced it to be a diamond; and not long after, the opinion of

that of the diamond district of the Brazils. Humboldt also recognised a similar resemblance between the Ural and Brazilian mountains. Count Porlier found a diamond in a species of gold and platinum sand: three more were soon found, and since that period several others, equal to those of the Brazils.

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the late Mr. Rundell, of Ludgate-Hill, was obtained, who valued it as a diamond worth twenty guineas, in its then rough attire. On ascertaining this, the lady issued a notice, desiring to see the girl again, but she never afterwards made her appearance; perhaps fearful to lose the 6d., for it appears that even this remuneration was only granted *conditionally*. We received our information in person from the Rev. Dr. Robinson, of the royal observatory, at Armagh, a gentleman of high scientific attainments, who had the gem in his possession, and was well qualified to judge.*

* *Accident* may sometimes reveal rich treasures. The discovery of the original gold mine in one of the districts in the Brazils, was in consequence of opening and scattering an ant-hill of considerable magnitude. Thus the vine in Hungary is found occasionally to absorb minute portions of gold, which are afterwards found in the ashes of the plant. The teeth of sheep are also sometimes plated with a film of supposed gold, but in reality that of persulphuret of iron; and the late Mr. Irton, of Irton-Hall, Cumberland, informed me that in carving a pullet at table, he found a small plate of gold in contact with the breast bone, and which he very naturally supposed the bird had picked up from the bed of a brook that flowed through a farm on his estate.

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CHAPTER III.

VARIOUS FORMS INTO WHICH DIAMONDS ARE CUT—MODE OF ESTIMATING THE VALUE OF DIAMONDS—APPLICATION OF THE DIAMOND—COLOURED DIAMONDS—THAT OF AUSTRIA—GEORGE IV.—THE BLUE DIAMOND OF FRANCE—THE BLACK DIAMOND OF HIS LATE ROYAL HIGHNESS THE DUKE OF YORK.

DIAMONDS are cut into various forms; these are called the *Brilliant*, the *Rose*, and the *Table*. The first of these displays the gem to the best advantage, ranks first in estimation, and is always set with the table upwards. The *rose* may be considered as formed by covering the entire surface with equilateral triangles, terminating in a sharp point at the summit, and it is employed when the spread of surface is too great for its depth, since being thus disproportional, a great loss would be sustained were it to receive the brilliant form. The *table* is applied to such diamonds as may be considered plates, laminæ, or slabs, such whose shallow depth is widely disproportioned to their superficial extent. The brilliant and the rose lose in the process

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of cutting and polishing somewhat less than half their weight, consequently the value of a cut stone is double that of an uncut one, independent altogether of the expense of the process. The diamond cutters in England have been considered the best in Europe, but from their number being limited, many diamonds are sent to Holland for this purpose. The art of cutting and polishing diamonds does not appear to have been known in Europe before the fifteenth century. Small diamonds are sometimes set on black or coloured foil, but a fine proportioned brilliant of extreme purity is best displayed when entirely exposed.

The *rose* diamond, as has been already observed, is flat underneath, and its upper surface, raised in the form of a dome, is cut into facets: it has commonly six facets in the centre, which are triangular in shape, and united or converge into a point at their summit; the bases of these again abut on another range of triangles, which are in a reversed order, their bases being above and conjoined with the bases of the higher facets, their points forming what are called *feuillets* or leaves; these last triangles have spaces between them, each of which are cut into two facets. The *rose* diamond is thus cut into twenty-four facets, and the surface of the stone is divided into two parts, of which the higher part is called the *crown*, and the lower portion the *teeth*.

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That part of the *brilliant* which rises in relief is always thinner than the rose diamond, and the entire thickness of the stone is divided into two unequal parts; $\frac{1}{3}$rd is reserved for the upper surface of the stone, and $\frac{2}{3}$rds form the lower portion, and is that embedded and so far concealed; this part of the brilliant is called the *culasse*. Mr. Jefferies calls the lower flat part the *culet*, and the superior one the *table;* the central line of the entire diamond he calls the *girdle*, and terms the facets *skil* and *steel* facets. In a perfectly formed and due proportioned stone the lower table should be $\frac{1}{5}$th of the upper table. The table has eight panes, and the circumference is cut into facets termed *pavillons*. It is important that the *pavillons* should be placed in the same order as the upper facets, in order that by such an arrangement of symmetry all false play of light may be avoided: the great beauty of the brilliant depends on the sparkling splendour of its light, and the grand object must be to give full scope and play to all the laws of refraction, the high powers of which so eminently characterise the diamond. The rose diamond darts a great splendour of light in proportion as it is more spread than the brilliant; the advantage obtained in the latter, which was an improvement on the *table* diamond, introduced in the 17th century, is caused by the difference in cutting it. It is formed into 32 facets of different

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figures, and inclined at different angles around the table, upon the superior surface of the stone: the *culasse* is cut into twenty-four facets round a small table, which converts the *culasse* into a truncated pyramid: these twenty-four facets below, as well as the thirty-two above, are differently inclined, and exhibit different figures. The facets above and below, as has been stated, must perfectly correspond, and the proportions be so exact as to multiply their reflections and refractions, so that the prismatic rays may be perceived to the best advantage.

We shall next proceed to some brief remarks on the value of diamonds. The small diamonds and fragments are sold in the east, by the diamond merchants, contained in small bags, sealed up, so that to the purchaser it is a complete chance-medley: in this way, too, are *pearls*, *carnelians*, &c., disposed of at the India-House. According to the rule supplied by Mr. Jefferies, the value of diamonds is in the duplicate ratio of their weights. Thus, suppose an uncut diamond, of one carat, to be worth £2, that of one cut and polished would be valued at £8 sterling in the brilliant. A carat weighs precisely four grains, *even beam*, as the balance is not allowed to decline. At this rate, a cut diamond of two carats would be $2\times8\times2$=£32; one of three, $3\times8\times3$=£72; one of four, $4\times8\times4$=£128; and one of five carats, $5\times8\times5$=£200. The rose dia-

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mond is of inferior value, but may perhaps be on the average rated at £4 the carat, when polished; a fine rose diamond, however, may have its value enhanced, but can never approach that of a well-proportioned brilliant; and on the other hand, a brilliant of the finest water, and cut with mathematical exactness and true ratio of proportion, may bear a higher corresponding value. Hence a brilliant of the finest water, with a superb refraction and a perfect form, may be valued at much more than an ordinary brilliant. When a ruby amounts to three or four carats, it is more valuable than a diamond of the same weight. Sometimes oriental sapphires when deprived of colour by exposure to intense heat, are sold for diamonds. The rose may be considered as formed from the superior section of the brilliant, having its base corresponding to the dimensions of the superior table before it is bevelled at the edges. A brilliant of three carats may have a spread on the upper table of one of five carats, and therefore may make the same appearance as one of the latter size; but as it is deficient in essential depth, the light it irradiates must have a corresponding diminution, and the rose supplied by it must be less elevated than in a right-proportioned stone. For the purpose of estimating diamonds of inconsiderable size, the jeweller employs a gauge, in the handle of which are embedded small

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crystals, of various relative sizes, from $\frac{1}{64}$ to $\frac{1}{4}$th of a carat, and a comparison is therewith made when there are numbers of various minute sizes, and the calculation proceeds accordingly. The rough diamond is called *bort*, and *points* are those minute fragments which are set in what are called glaziers' cutting diamonds. It is a singular and interesting fact, that the *natural point* only of the diamond will cut, as that obtained by polishing does not cut glass.

Besides the diversified forms of ornamental jewellery into which the diamond enters as a constituent part,* it is used, as has been already re-

* This costly and beautiful gem seems now chosen to figure away as the prime ornament of dress. At the late drawing-room it was displayed in rich profusion, forming a perfect galaxy of diamonds. Diamonds are costly things:—the present Queen of Spain has just had a necklace and earrings reset in France: they are composed entirely of brilliants, and cost half a million of francs. Doubtless at *routs* and *assemblies* many figure away in factitious show,—

"Faux brillians, et morceaux de verre."*

but *real* diamonds can seldom be mistaken: there is a sparkling lustre and luminous brilliancy, which so far transcends all other gems, that those who have once seen will easily recognise them again. The *cymophane (crysoberyl* or *crysolite)*, is the only gem that may compete with it. The crysolite is valued by the carat. We possess a fine one of *five*

* Boileau.

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marked, by the glazier, where, from a point invisible even to the lens,* the glass immediately rends under it, and though of considerable thickness, is cut with a facility and dispatch altogether remarkable. This gem has also been employed, we believe, under a patent, as well as the sapphire and ruby, for wire drawing, and it is sufficiently evident that its superiority over the steel plate must be immense, since a wire of invariable diameter must be thereby obtained, while, from its unyielding hardness, permanence and uniformity must be secured. The diamond is employed in chronometers, as end pieces, to close the socket in which the pivot moves, and against which it abuts; we believe, however, the ruby cylinder has been recently abandoned. It seems, above all other gems, pre-eminently calculated to form small deep lenses for sin-

carats, cut in the form of the *brilliant*. The crysolite is found along with the sapphire and ruby in Ceylon, and with the diamond in the Brazils: it has been found of ten carats, but this is very rare. Mr. Mawe observes that "the colour, high lustre, and exquisite polish which it can receive, makes it sustain a competition with the diamond. It is a fine gem, coming into great repute, has great brilliancy by candle light, and sustains the rival presence of the diamond without injury."

* Dr. Wollaston has proved that a specific angle imparted to crystals of inferior hardness, enables them to cut glass.

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gle microscopes, possessing a vast compass of refractive power conjoined with one of inferior dispersion, and very little longitudinal aberration. Mr. A. Pritchard, of 18, Pickett-Street, Strand,* has formed a very thin double convex lens of the diamond, of equal radii, and about $\frac{1}{25}$-in. focus, from a very perfect stone of the first water. Its polish is truly beautiful, and by its powerful and matchless reflection proves the peculiar and unique material of which it is formed, while the considerable angle of aperture which it bears, attests its faint spherical and chromatic aberration. A diamond and a piece of plate glass, ground into a similar form, and possessing the same radius, will be in their comparative magnifying powers as 8 to 3: so far will the former transcend the latter. If the power of the glass lens be 24, that of the diamond would be 64. The late Mr. Lowry applied the diamond instead of the steel point in etching on copper; a considerable improvement, especially for architectural subjects, the azure of the sky, and the sea in maps, as the steel point soon gave way.

The diamond is always transparent, as already mentioned, and, for the most part, colourless: stains, flaws, cross veins, and muddiness, materially detract from the value of the gem, as well as from its

* He has also employed the colourless sapphire, but this, of course, is altogether inferior.

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beauty. The diamond is found of a light yellow, passing into wine colour, and thence through cinnamon brown into almost black; also, pale green, passing into yellowish green; blueish grey, passing into Prussian blue; and pink, passing into rose red. Sometimes ferruginous specks are found in the diamond. Occasionally, though rarely, the diamond may possess more than one tint, as partly blue, partly yellow, and partly opalescent; and I am informed there are party-coloured diamonds among the jewels in the treasury of the Brazils. The value of the diamond is much enhanced if pink, blue, or green, and eagerly sought after; on the other hand, yellow-coloured diamonds are of inferior value.

Coloured diamonds of a large size are comparatively few in number. The Maximilian, or Austrian diamond, is of a yellow colour, and rose cut, and has been an heir-loom in the family ever since the Emperor of that name. We believe it passed from the hands of the Grand Duke of Tuscany into the imperial family, and, if we mistake not, it is the same which has been rated at 139½ carats and valued at £155,682. This diamond formerly belonged to one of the Grand Dukes of Tuscany, who came possessed of it by purchase, and it was for a long time preserved in the family of the Medici, but ultimately fell into the hands of the Emperor of Germany.

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"George IV. diamond," is of a rich and splendid blue colour, and of great beauty and rarity. It was purchased by his late Majesty from Mr. Eliason, for £22,000. Its weight is stated to be 29½ carats. It formed the chief ornament in the crown on the day of the coronation.* Mr. Mawe states, in his work on "Diamonds and precious Stones," p. 16, that "there is at this time a superlatively fine blue diamond, of above 44 carats, in the possession of an individual in London, which may be considered matchless." If we mistake not, that individual's name is Mr. Eliason; and it has been mentioned to us by an eminent jeweller that this diamond was sold for £20,000 to the King of Hol-

* It has been stated, in "*The Court Journal*," &c. that, at the coronation of His late Majesty, George IV., the jewels in the British crown were *lent* by Messrs. Rundell, Bridge, & Rundell, of Ludgate-Hill, at 10 per cent. interest, forming an annual charge of £6,500, which was continued for four years afterwards. We have no means of knowing whether this *on dit* be right or wrong, nor have we been able to get any accurate information about the jewels belonging to the British Crown. When the notorious Blood attempted to steal the regalia from the Tower, on the 9th May, 1671, it appears no gem of any consequence or value was eventually lost.—"A large pearl, a fair diamond, and a number of smaller stones were bulged from the crown in this robustious struggle, but both the former, and several of the latter, were picked up and recovered. The *Ballais ruby*, which had been broken off the sceptre, was found in his accomplice (Parrot)'s pocket."

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land, and stated to be 44¼ carats. It is not improbable that these have been confounded.

Perhaps one of the largest and most beautiful coloured diamonds is a rich sky-blue brilliant, belonging to the crown jewels of France. It is stated to weigh $67\frac{2}{16}$ carats, and estimated at three millions of livres. There was a fine blue diamond in the possession of the late Mr. Greville.

I am informed that His late Royal Highness the Duke of York was once possessed of a diamond almost approaching to jet black; and my informant, who mentioned his having seen it, described it as possessed of peculiar beauty and brilliancy: it was valued, I understand, at about £8,000. I have seen *brown* diamonds of different shades of intensity.

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CHAPTER IV.

THE LARGE UNCUT DIAMOND OF PORTUGAL—THE GREAT MOGUL DIAMOND—THAT OF THE RAJAH OF MATTAN — THE SCEPTRE DIAMOND OF RUSSIA — THE PITT, OR REGENT DIAMOND — THE SANCI — PIGGOTT — NASSAU, ETC.— DIAMONDS OF THE BRAZILIAN TREASURY — EXPERIMENTS ON THE DIAMOND.

It has been stated, that the number of diamonds, of the weight of 36 carats and above, known, do not really amount to more than nineteen. The entire number of diamonds of a large size in Europe, scarcely amount, according to Mr. Mawe, to more than half a dozen. The largest uncut diamond, is that belonging to the House of Braganza, and weighs 1680 carats, or about 11 oz. Mr. Mawe says it is thought to be a white topaz. We have been favoured by a friend, who has seen it, with the following account. When the Prince Regent of Portugal, afterwards Don John VI., arrived at the Brazils in 1808, a negro, from *Minas Gerais*, contrived to send him a letter, desiring to present, in person, a large diamond which he had found.

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The Prince ordered the Captain-General to allow the negro to proceed to court with an escort of soldiers. In a few months the negro arrived and presented the diamond, remarking at the same time that it was the largest ever found in the Brazils. The Regent granted him his freedom, and a pension for life for himself and family.* He further described this supposed diamond as resembling a darkish yellow pebble, about the size of a pullet's egg, somewhat kidney shaped, rather oblong, and a little concave on one side. The lapidaries in the Brazils value it at 3,000 millions crusades, or nearly equal to 300 millions pounds sterling. It is represented to us as a little polished on one part, to shew its properties.

One of the largest of undoubted diamonds is that mentioned by Tavernier, in the possession of the Great Mogul. It is of a fine rose colour, somewhat resembles a half hen's egg in form and size, and being weighed by Tavernier was found to be $297\frac{9}{16}$ carats, or about 860 grains (156 carats form about an ounce troy). It has been valued at £624,962, according to Mr. Jefferies' rule, and was discovered about the year 1550, in the mine of *Colore*, in Bengal, not far to the east of Golconda. It has been stated that the handle of the sabre of

* A diamond of an *octavo*, and which weighs $17\frac{1}{2}$ carats, entitles the negro to his freedom. May many such be found!

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the Dey of Agiers is resplendent with diamonds, and his turban adorned with the most magnificent brilliants.

The Rajah of Mattan, in the island of Borneo, possesses a diamond, which was found there upwards of fifty years ago. It is shaped like an egg, with an indented hollow near the smaller end, said to be of the finest water, and weighs 367 carats; and allowing 156 carats to the ounce troy, is two ounces 169,87 grains troy. Many years ago, the Governor of Batavia tried to effect its purchase, and sent Mr. Stewart to the Rajah, offering 150,000 dollars, two large war brigs, with their guns and ammunition, and a considerable quantity of powder and shot. The Rajah however, it appears, refused to despoil his family of so rich an inheritance, to which the Malays, indeed, superstitiously attach the miraculous power of curing all kinds of diseases by means of the water in which the diamond is dipped, and with it they believe the fortune of the family is connected.

The history of the diamond which studs the sceptre of Russia, is not a little remarkable. It formed, for a long time, the solitary eye of an indian idol, and was ultimately dislodged from its socket by an Irish soldier, by whom it was sold for a trifle; and after passing through the hands of several masters, it was sent to England to be cut,

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and seems to have been finally sold to the Empress Catherine, of Russia, in 1775, at Amsterdam, for £90,000, an annuity of £4,000, and a patent of nobility.* It is of the size of a pigeon's egg, and of a flattened oval form: it is a faultless and perfect gem, and without flaw of any kind: its weight is stated at 179 carats. This is the diamond evidently referred to in a letter from the Hague, dated 2d January, 1776, quoted by Boyle, in the Museum Britannicum:*—"We learn from Amsterdam, that Prince Orlow made but one day's stay in that city, where he bought a very large brilliant for the Empress his sovereign, for which he paid to a Persian Merchant there, the sum of 1,400,000 florins (Dutch money). A florin in Holland is valued at 20d."

The Pitt, or Regent diamond, was purchased by Thos. Pitt, Esq.† (grandfather of the Right Hon. William Pitt), when governor of Fort St. George, Madras, who obtained it for £12,500, the sum of £20,000 having been first asked for it. It cost £5,000 cutting, and the chips and filings were valued at from £7,000 to £8,000. It was purchased

* London, folio, 1791, p. 75.

† Afterwards Earl of Londonderry, who, it has been stated, in virtue of its possession, obtained the privilege of a seat in the Commons House of Parliament.

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by the Regent Duke of Orleans, during the minority of Louis XV. in the year 1717, for £135,000, £5,000 being expended in the negociation. Its weight is 136¼ carats: its value, as estimated by a commission of jewellers in 1791, is twelve millions of livres. It is almost faultless, and was cut in this country in the form of the brilliant. It is the prime ornament of the crown jewels of France, and is allowed to be the finest in the world, though not the largest. The kings of France wore this diamond in their hats: Napoleon Buonaparte had it fixed in the pommel of his sword. We have been informed that Charles X. would have willingly laid claim to it, and brought it with him, but this was not permitted. The diamond may be certainly considered a portable form of property, and, in a general point of view, not liable to very variable fluctuation. The regent diamond, report says, was played with such success before the king of Prussia, by the wily Seyez, as to produce for the service of France, 40,000 horses with their equipments. This diamond, it has been stated, was found in Malacca, in the famous mine of Porteal, in the kingdom of Golconda. Its form is somewhat round, an inch broad, 1⅛th of an inch long, and ¾ths of an inch thick.

This diamond seems to have subjected the purchaser, Governor Pitt, to the imputation of having

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unfairly obtained possession of the prize. One account was, that a slave having found it in its native bed, concealed the diamond in a wound made in his leg for that purpose. Such a gash as would have imbedded or concealed it in its rough or even its polished form, must indeed have been extensive! In the *Journal des Savans*, for July, 1774, p. 553, is inserted an extract from the letter of a French missionary, to the following effect:—that one of the principal diamonds of the crown of France, and which was purchased of an Englishman, was one of the eyes of the god *Jagrenat*, a famous idol, placed in a pagoda, at *Chandernagar*, in Bengal. That the said idol, *Jagrenat*, had since continued with only one eye; and moreover, that the French had done all they could to blind him entirely, but have not succeeded, since it was better guarded. This is evidently a version of the history of the diamond of the Russian sceptre, with which it seems to be confounded. Thomas Pitt, Esq. (of the family of Blanford, in the county of Dorset,) governor of Fort St. George, in the East-Indies, in the reign of Queen Anne, felt and repelled calumnies which had not even the shadow of a basis to rest upon. Mr. Pitt, however, condescended to reply to the insinuations in a letter addressed to the editor of the "Daily Post," dated 3d November, 1743, in which, after censuring the unparal-

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leled villainy of William Fraser, Thomas Frederick, and Surapa, a black merchant, who brought a paper before Governor Addison, in council, to the intent that he had unfairly got possession of a large diamond; he proceeds, after, as we conceive, unnecessary protestations and appeals to all that is sacred, to enter on the detail of the circumstances connected with the transaction by which he became possessed of it, and thus continues:—

"About two or three years after my arrival at *Madras*, which was in July, 1698, I heard there were large diamonds in the country to be sold, which I encouraged to be brought down, promising to be their chapman, if they would be reasonable therein; upon which, Jamchund, one of the most eminent diamond merchants in those parts, came down, about December, 1701, and brought with him a large rough stone, about 305 mangelms, and some small ones which myself and others bought; but he asking a very extravagant price for the great one, I did not think of meddling with it: when he left it with me for some days, and then came, and took it away again, and did so several times, insisting upon not less than 200,000 pagodas; and, as I best remember, I did not bid him more than 30,000, and had little thoughts of buying it for that. I considered there were many and great risks to be run, not only in cutting it, but

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whether it would prove foul or clean, or the water good; besides, I thought it too great an amount to adventure home in one bottom; so that Jamchund resolved to return speedily to his own country; so that, I best remember, it was in February following he came again to me (with *Vincaty Chittee*, who was always with him, when I discoursed him about it), and pressed me to know whether I resolved to buy it, when he came down to 100,000 pagodas, and something under, before we parted, when we agreed upon a day to meet and to make a final end thereof one way or other, which I believe was the latter end of the aforesaid month, or beginning of March, when we met in the consultation-room; when, after a great deal of talk, I brought him down to 55,000 pagodas, and advanced to 45,000, resolving to give no more, and he likewise not to abate, so delivered him up the stone, and we took a friendly leave of one another. Mr. Benyon was then writing in my closet, with whom I discoursed what had passed, and told him now I was clear of it; when, about half an hour after, my servant brought me word that Jamchund and Vincaty Chittee were at the door, who, being called in, they used a great many expressions in praise of the stone, and told me he had rather I should buy it than any body; and, to give an instance thereof, offered it for 50,000. So, believing

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it must be a pennyworth if it proved good, I offered to part the 5000 pagodas that were between us; which he would not hearken to, and was going out of the room again, when he turned back, and told me I should have it for 49,000; but I still adhered to what I had before offered him, when presently he came to 48,000, and made a solemn vow he would not part with it for a pagoda under; when I went again into the closet to Mr. Benyon, and told him what had passed, saying, that if it was worth 47,500, it was worth 48,000; so I closed with him for that sum, when he delivered me the stone, for which I paid him honourably, as by my books appear." The letter concludes with renewed appeals to the Deity, in a tone entirely objectionable; it closes thus:—"Written and signed by me, in Bergen, July 29, 1710. THOMAS PITT."

The whole transaction affords a good example of what is in common *parlance* termed, "driving a hard bargain;" but the sum was a serious one, and the risk very considerable: flaws, specks, cross-grains, &c., which could only become apparent after the stone was cut, might have made it even a serious loss. Calculating the pagoda at 8s. 6d., the rough stone thus cost £20,400 sterling, no trifle, certainly: the sum first asked was £85,000. Mr. Salmon, who was on the spot at the time the transaction took place, verifies this statement. It ap-

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pears that this celebrated diamond was consigned by Mr. Pitt to Sir Stephen Evance, of London, Knight, and from an original bill of lading, that it was sent in the ship *Bedford*, Captain John Hudson, Commander, March 8, 1701-2, and charged to the captain at 6,500 pagodas only. The Editor of the *Museum Britannicum* states that the cutting and polishing of the stone cost £5,000. Jefferies states that it was sold for £135,000, but £5,000 of this sum was given and spent in negociating the sale of it. The diamond is admitted to approach very nearly to one of the first water—Jefferies says that it has only a foul small speck in it, and that lying in such a manner as not to be discerned when the stone is set. He describes the mistakes in the cutting of the gem, and also states how it may be improved. There is a model of the "Pitt," or "Regent" diamond in the British Museum, and on the silver frame which surrounds it is engraved, "This is the model of Governor Pitt's diamond, weight 136½ carats: was sold to Louis XV. of France, A. D. 1717."

The Sanci diamond, so called from Nicholas de Harlai de Sanci, once its owner, weighs, it has been stated, 55 carats and cost £25,000. This diamond belonged to Charles the Bold, the last Duke of Burgundy, who wore it in his cap at the battle of Nancy, and was found by a Swiss soldier among

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the spoils of battle after the famous defeat of his army in 1475, near Morat, in Switzerland, and in which he himself was killed. The Swiss sold it to a Priest for a florin, or about 20d., and the latter again disposed of it for 2s. 6d. In the year 1589, it was in the possession of Antonio, King of Portugal, and by him was first pledged to a French gentleman, named de Sanci, for 40,000 livres, and subsequently sold for 100,000 livres. —The family of this gentleman preserved the diamond for nearly a century, and till the period when Henry III. of France, after having lost his throne, employed a descendant of this family, who was commander of the Swiss troops in his service, to proceed to Switzerland, for the purpose of recruiting his forces in that country; and having no pecuniary resources at command, he persuaded the same gentleman to borrow of his family the Sanci diamond, in order to deposit it with the Swiss government, as security for the payment of the troops. Accordingly the diamond was despatched for this purpose, by a confidential domestic, who disappeared, and could no where be heard of for a great length of time; at last, however, it was ascertained that he had been stopped by robbers and assassinated, and his body buried in a forest; and such confidence had his master in the prudence and probity of his servant, that he searched,

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and at last discovered the place of his burial, and had the corpse disinterred, when the diamond was found in his stomach, he having swallowed it when attacked by the robbers. The Baron de Sanci subsequently disposed of this diamond to James II. of England, then residing at St. Germain's, from whom it passed to Louis XIV. and now remains among the crown jewels of France.*

The Piggott diamond was brought to England by Earl Piggott, when Governor-General of India. It was disposed of by Lottery, in 1801, for £30,000. Its weight is 47⅛ carats. In 1818, it was in the possession of Messrs. Rundell, Bridge, and Rundell, but we are unable to say where it now is, or by whom possessed.

The Nassac diamond, now in the East-India House, was taken from the Peshwa of the Marhattas, in the Marhatta war: its weight is stated to be 89¾ carats, and was originally valued by the East-India Company at £30,000.

Russia has several large diamonds independent of that which adorns the imperial sceptre. One of these is valued at £369,800. There is also a large table diamond belonging to the imperial treasury. Holland has one of 36 carats, valued at £10,368: and we believe s of a conical shape. Persia has

* The Mornin ost made a mistake in supposing it to belong to Englai

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several diamonds, four large ones, of a rose-cut, besides brilliants; the two principal diamonds are called, as already stated, the "Sea of Glory," and the "Mountain of Splendour;" one computed to be worth £145,800, and the other valued at £34,848.

When Mr. Mawe was in the Brazils, two large slabs of diamonds were shown him, each an inch superficies, and $\frac{1}{8}$th of an inch thick: the river Abaité, from whence these pieces came, has produced a diamond of an octohædral form, which weighs $\frac{7}{8}$ths of an ounce troy. The Brazilian Treasury is extremely rich in diamonds of great magnitude and beauty, such as the Portugal round brilliant, "Slave diamond," and others. There are blue diamonds, but of an inferior size, generally impure and with flaws. In the walking-stick of King John VI., which is a Brazilian cane, and the handle of which is of wrought gold, there is a beautiful brilliant surmounting its summit, and cut in the form of a pyramid, valued at about £30,000 sterling. The tassels consist of numerous orders attached to variously coloured ribbons. The buttons on the silken stole of King Joseph I. of Portugal, worn as a court dress, are twenty in all, each a brilliant; the aggregate value of these amounts to £100,000, and we believe they are at the present moment in this country.

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We were informed by a gentleman (who saw it in Mr. E.'s possession) that a brilliant of 34 carats, set in a ring, was sold by Mr. Eliason to Napoleon Buonaparte for £8,000, to be worn on his wedding day, when married to the Empress Josephine. It was not, however, a diamond of the first class.

There do not seem to be any diamonds among the crown regalia of Hungary, which are preserved in an iron chest in the arsenal of the citadel of Ofen. Here, however, is the identical crown worn by Stephen 800 years ago; and ever since 1799, these have been watched by two keepers, night and day. The crown is of pure gold, and weighs 9 marks 6 ounces (14 lbs.), and the precious stones, &c. consist of *fifty-three sapphires, fifty rubies, one emerald,* and *three hundred and thirty-eight pearls.* The imperial sceptre resembles a mace in form, and is ornamented with a tip of crystal set in solid gold. No sovereign of Hungary is legally invested with royal power and dignity until the diadem has been seated on his brow. It is shown to the populace three days prior to, and three days after, the coronation.*

The dress of Henry VIII. and his Queen, on their procession to the Tower, previous to coronation, are described by Hall:—"His grace wared in his uppermost apparell, a robe of crimsyn

* Journal of a Nobleman.

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velvet, furred with armyns; his jacket or cote of raised gold; the placard embrodered with diamonds, rubies, emeraudes, greate pearles, and other riche stones; a great banderike about his necke of large bolasses. The Quene was apparelled in white satyn, embrodered; her haire hangying down to her backe, of a very great length, bewteful and goodly to behold; and on her hedde a coronall, set with many riche orient stones."

The coronation-robe of Napoleon Buonaparte weighed *eighty* pounds, and was lined with the skins of *six thousand* ermines. This imperial robe was afterwards converted into vestments for the priesthood of Notre Dame.

It has been stated that the Czar Peter, with his whole army, when surrounded by the Turks, owed their safety to the fascinating and dazzling splendour of the diamonds of the Empress; and even Prince Potemkin amused the tedium of the latter years of his life by sitting and contemplating the magnificent display of his costly diamonds.

Without stating our several repetitions of the experiments of others, we may now superadd a description of such as have been made independently of these:—

1. Two cages of platinum wire, containing diamonds, were connected by the same wire, and, with the two poles of a powerful galvanic battery,

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by similar metallic wire; but though the wire immediately connected with the poles were ignited, the cages were not, and the connecting wire in the centre remained unkindled.

2. When these were severally suspended from each pole and brought in contact with the surface of mercury, they were not kindled, but when one pole was plunged into the liquid metal, and the cage containing diamonds, attached to the other pole, was made to touch the surface of the mercury, the ignition of the platinum and combustion of the diamond was vivid and beautiful.

3. A platinum cage, containing several diamonds, was suspended in a globe of oxygen, by means of two copper wires, and finally connected with a powerful galvanic battery; but the cage remained still unignited, from the multiplicity of the platinum wires that traversed each other in the tissue which formed the cage.

4. We have succeeded, by various simple methods, to effect the combustion of the gem; thus it may be easily ignited by the flame of ether, &c., and when quickly introduced into a medium of oxygen, the combustion will continue—or a small cup containing a few drops of ether, or sulphuret of carbon, &c., suspended to the cage, and kindled, will support the ignition a sufficient period for its continued combustion in oxygen afterwards; or the

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cage of platinum may be ignited by a thread of fine steel wound round the cage, its lower extremity being kindled by a bead of melted sulphur applied to it.*

5. The following is a very elegant, though less simple, method of shewing the combustion of the diamond:—On a minutely perforated cup, or shallow disc, containing spongy platinum, with the diamond partially embedded into it, is propelled a small stream of the gas, by means of a minute jet connected with a bag of hydrogen: this ignites the platinum, and with it the diamond, in the medium of oxygen into which, by a lateral orifice, it had been previously introduced; and when once kindled, it will continue to burn after the appendages of hydrogen, &c., are screwed off and removed.

6. The succeeding we have found a very elegant experiment:—Two diamonds enclosed in a cage of platinum of $\frac{1}{100}$th part of an inch diameter, after

* Apparatus have been constructed for the exhibition of the combustion of the diamond in oxygen, but such will be found to be expensive and complicated, and to succeed but rarely; our great object has invariably been to simplify chemical apparatus and thus render the science more certain and available. Nothing has injured the progress of science more than the *penchant* of some to perpetuate these costly and pictured raree shows of apparatus. We have found the combustion of the diamond a very simple affair.

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having been previously ignited by the flame of a spirit lamp, were introduced into the mixed vapour of sulphuric ether, and atmospheric air, incumbent over liquid ether, in a wide-mouthed glass cylinder; the ignition continued intense and beautiful, and the diamonds continued to burn. When lifted out of the vapour, the ignition of the platinum cage ceased, but the diamonds continued red hot, so that when re-introduced, the cage was thereby re-kindled, and the beautiful phenomenon perpetuated.*

Having placed some diamond powder in a cavity of pumice-stone, and brought the inflamed jet of the mixed gases in the oxy-hydrogene or compound gas blowpipe to play upon it, the entire powder was instantly inflamed, and dispersed into the air in the form of brilliant stars. On another occasion, we imbedded a fragment of diamond in a nidus of hydrate of magnesia, and having submitted it to the intense flame of this powerful though dangerous instrument, the diamond parted suddenly into minute fragments, displaying on their surfaces, as determined by the lens, the *conchoidal* fracture, and became as black as jet.

* When the diamond is burnt in a cage of platinum, as Mr. Herapath, of Bristol, informs us, the marks of the wires are left impressed on the diamond. The conjoined temperature of both fuses the platinum, if of fine diameter.

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In 1818, we succeeded in fusing the diamond, an experiment since successfully repeated by Professor Silliman, of New-York, who has assigned the priority to us. In this case, the diamond was fixed in a fragment of pumice-stone, and the compound-gas flame made to bear for a continued period on a specific spot; the portion in immediate contact with the apex of the flame, entered into complete fusion, assuming an appearance somewhat spherical, as if it were in relief from the walls of the cavity, evidently in a seated of liquid motion, and exhibiting a vivid halo of intense light at this particular point.

FINIS.

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POSTSCRIPT.

I am very anxious to record in this place my deep sense of gratitude to those distinguished individuals who have done me the honour to supply me with testimonials, as a candidate for the *Chemical Chair*, of KING'S COLLEGE, London, and thus rear my memorial by inserting their names. It is necessary, however, to premise, in explanation, that though these documents have been unsuccessful, it was not for want of ample praise, and the kindest complimentary expressions; of which, indeed, I have sufficient cause to be proud. It was discovered, that, being a member of the CHURCH OF SCOTLAND, I was *not eligible*, since none but *members* of the CHURCH OF ENGLAND are eligible; and by an enquiry of a Right Reverend Prelate, I found that, to constitute a *member* of the Established Church of England, it was necessary that I should take the *Eucharist* according to the prescribed ceremony of that church. I am far

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from thinking that there would have been any thing objectionable in this; and that, under *common circumstances*, I might not have been able conscientiously to conform to it. But my scruples could admit of no compromise whatever, when secular interests were to be weighed over against such a rite, as the test of eligibility to a chair of chemistry. I had already been admitted into the Church of Scotland. I did think, and do still think, that this was enough; and could not conscientiously reject my *alma mater*, or by such an act fling away my allegiance to her, and to the land of my fathers.

Mr. I. F. Daniell, well known as a skilful *Meteorologist*, has been elected Professor of Chemistry; and I sincerely wish him every success.

The Right Hon. Lord GEORGE O'BRYEN, Bath.
The Hon. and Right Rev. the Lord Bishop of Lichfield and Coventry
Sir G. S. GIBBES, M.D., F.R.S., F.R.S.L., Bath
Sir GEORGE CAYLEY, Bart.
Sir MATTHEW BLAKISTON, Bart.
Rear Admiral BULLEN, Bath
Dr. FORBES, Professor of Natural History, and Chemistry, King's College, Aberbeen
Dr. DAVIDSON, Professor of Natural History, Marischal College, ditto
Dr. HENDERSON, Professor of Chemistry, ditto

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Dr. James Millar, Professor of Chemistry, Edinburgh
Dr. Baron, F.R.S., &c. Gloucester
Dr. Dugard, F.G.S., &c. Shrewsbury
Dr. Alderson, President of the Philosophical Society of Hull
Dr. Wilkinson, Bath
Dr. Pratinton, Bewdley
Dr. Robinson, Doncaster
Dr. Nicol, Inverness, Vice-President of the Northern Institution
Rev. Joseph Eaton, M.A., F.S.A., &c. Chester
Rev. W. Vickers, Rector of Chetton and Deuxhill
Rev. G. H. Haslewood, Rector of Morvill and Aston
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G. DAY, Esq. ditto
E. G. WRIGHT, Esq. ditto
FRANCIS ELLIS, Esq. Bath
F. HUNT, Esq. ditto.

I feel an honest pride in thus recording my respectful gratitude. These honoured my prelections *in person*, and have, in their respective testimonials, borne evidence to the uniform success that attended my numerous experiments, many of which were entirely novel. It would have been very easy for me to have extended the number to a century of names. Such a list would have been, however, altogether unnecessary. Some of these eminent individuals had attended the lectures of that distinguished teacher, Dr. Black, others those of Professor Afzelius, of Upsal, &c., and there are many names that will be easily recognised as distinguished in the republics of Science and Literature. My aptitude otherwise must be judged of from what the public are already possessed of, and what may yet appear.

In recording my grateful sense of the high esteem in which I hold the flattering testimonials of those who were good enough thus to honour me, I but acquit myself in justice and in duty. Some explanation seemed due to them; and as it was well known I stood a candidate for the Che-

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mical Chair of King's College, was anxious that the public should know the precise reason of my want of success, that there might be no misappre-apprehension or mistake, and the event stated as it really was. At the same time, I find no fault with the Council for exclusion on the basis of my being a member of the Church of Scotland. They had a right to act as they thought proper, and to proscribe me. I do not question the propriety or impropriety of the proscription. I have stated the fact as it stands, and leave the question with the public. If the enjoyment of secular fortune is, at any future period, to be purchased by the sacrifice of conscientious principles, I hope I shall always be accounted worthy to endure the privation which such an adherence may entail upon me.

In my little Work entitled "Invention of an unfailing and effective Method of forming a Line of Communication with the Shore in Shipwreck," I find that I have inadvertantly assigned the priority of the observation that *oil stills the waves of the sea*, to Dr. Franklin, when it was clearly so stated by PLINY: thus, in Book II, chap. 103,—"The divers diffuse oil with their mouths, because it sweetens and allays the unpleasant nature thereof, and carries a light with it; moreover, *all seas are rendered calm and still with oil.*"

Somerton, Printer, Bristol.

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ERRATA.

Page 46, lines 20 and 21, *lege* £20,400 and £85,000.

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