

sea waves. The latter interpretation is rendered more probable by the fact that Briareus is frequently called a marine deity, and is sometimes said to have been a son of Pontus and Gaia.

BRIBERY, as a public offence, may be defined as the administration of a bribe or reward, that it may be a motive in the performance of functions for which the proper motive ought to be a conscientious sense of duty. When this is superseded by the sordid impulses created by the bribe, a person is said to be corrupted, and thus corruption is a term sometimes held equivalent to bribery. The offence may be divided into two great classes,—the one characteristic of despotisms, where a person invested with power is induced by payment to use it unjustly; the other, which is an unfortunate characteristic of constitutional governments, where power is obtained by purchasing the suffrages of those who can impart it. The former offence is in every sense the more odious and formidable, and indeed it may be said, that until a country has outgrown it, there is no room for the existence of elective bribery, since the nations among which justice is habitually sold appear to be far below the capacity of possessing constitutional rights.

When Samuel in his old age challenges a rigid scrutiny of his conduct, he says, "Whose ox have I taken, or whose ass have I taken? or whom have I defrauded? or whom have I oppressed? or of whose hands have I received any bribe to blind mine eyes therewith." And Amos, when denouncing the condition of the Israelites under Jeroboam, says, "They afflict the just, they take a bribe, and they turn aside the poor in the gate from their right." It is a natural propensity, removable only by civilization or some powerful counteracting influence, to feel that every element of power is to be employed as much as possible for the owner's own behoof, and that its benefits should be conferred not on those who best deserve them, but on those who will pay most for them. Hence judicial corruption is an inveterate vice of imperfect civilization. It is so deeply seated among Oriental races, that the attempts by controlling authority to eradicate it have been often futile.

It has been the main impediment to the employment of natives in the British Eastern empire, since no external appearance of respectability, or apparent systematic routine of business, can be relied on as securities that the whole organization is not contaminated by systematic bribery. It is difficult to get the Oriental mind to understand how it is reasonable to expect the temptation of a bribe to be resisted. In the Russian empire this Oriental characteristic has had another conflict with the demands of a higher civilization. The organization of the Government requires that the empire should be honestly served by its official men, but their morality is of the humblest Oriental standard, and force will not change it. In no country, perhaps, has the offence been visited with more dire chastisement where it has been discovered, yet by the concurring testimony of all who are acquainted with Russian society, not only the official departments, but the courts of law are still influenced by systematic bribery. There is, perhaps, no other crime on which the force of law, if unaided by public opinion and morals, can have so little influence; for in other crimes, such as violence or fraud, there is generally some person immediately injured by the act, who can give his aid in the detection of the offender, but in the perpetration of the offence of bribery all the immediate parties obtain what they desire, and are satisfied.

The purification of the bench from judicial bribery has been gradual in most of the European countries. In France it received an impulse in the 16th century from the high-minded chancellor L'Hôpital. In England judicial corruption acquired a painful, but perhaps a wholesome renown, from the fate of the illustrious Bacon. In Scotland

for some years after the Revolution the bench was not without a suspicion of interested partiality; but during the present century, at least, there has been in all parts of the empire a perfect reliance on its purity. The same may be said of the higher class of ministerial officers. There is no doubt that in the period from the Revolution to the end of Queen Anne's reign, when a speaker of the House of Commons was expelled for bribery, and the great Marlborough could not clear his character from pecuniary dishonesty, there was much corruption in the highest official quarters. The level of the offence of official bribery has gradually descended, until it has become an extremely rare thing for the humbler officers connected with the revenue to be charged with it. It has had a more lingering existence with those who, because their power is more of a constitutional than an official character, have been deemed less responsible to the public. During Walpole's administration there is no doubt that members of Parliament were paid in cash for votes; and the memorable saying, that every man has his price, has been preserved as a characteristic indication of his method of government.

One of the forms in which administrative corruption is most difficult of eradication is the appointment to office. It is sometimes maintained that the purity which characterizes the administration of justice is here unattainable, because in giving a judgment there is but one form in which it can be justly given, but when an office has to be filled many people may be equally fitted for it, and personal motives must influence a choice. It very rarely happens, however, that direct bribery is supposed to influence such appointments.

It does not appear that bribery was conspicuous in England until, in the early part of the 18th century, constituencies had thrown off the feudal dependence which lingered among them; and, indeed, it is often said, that bribery is essentially the defect of a free people, since it is the sale of that which is taken from others without payment. It is alluded to by Fielding and Smollett, and had become conspicuous in the days of Hogarth, who represents it in its double shape of demoralization; one picture shows a reckless expenditure of money among profligate expectants, whose demoralization is a systematic source of profit to them, while another presents us with the impoverished father of a family urged against his conscience to relieve the misery of his wife and children by the sale of his vote.

In England electoral bribery has been the subject of much legislation, which culminated in the Corrupt Practices Prevention Act of 1854 (17 and 18 Vict. c. 102). By this Act the following persons shall be deemed guilty of bribery, and shall be punishable accordingly:—

1. Every person who shall directly or indirectly, by himself or by any other person on his behalf, give, lend, &c., or offer, promise, or promise to procure, &c., any money or valuable consideration to or for any voter or any other person in order to induce any voter to vote or refrain from voting, or shall corruptly do any such act on account of such voter having voted or refrained from voting at any election.
2. Every person who shall similarly give or procure or promise, &c., any office, place, or employment to or for any voter or other person in order to induce him to vote, &c.
3. Every person who shall make any gift, loan, promise, &c., as aforesaid to any person to induce such person to procure the return of any person to serve in Parliament or the vote of any voter.
4. Every person who shall, in consequence or such gift, procure or engage, promise or endeavour to procure the return of any person or the vote of any voter.
5. Every person who shall pay any money with the

intent that it should be spent in bribery, or who shall pay money in repayment of any money wholly or in part expended in bribery.

Persons so offending are guilty of a misdemeanour (in Scotland, of an offence punishable by fine and imprisonment), and shall be liable to forfeit the sum of £100 to any person who will sue for the same, together with costs.

Sect. 3 extends the offence (1) to persons who before or during an election shall receive or contract for any money, &c., for voting, or refraining, or agreeing to vote or to refrain from voting; and (2) to persons who, after the election, receive money, &c., on account of any person having voted or refrained, &c. Such persons shall be guilty of a misdemeanour and forfeit £10.

Treating is defined in Sect. 4. Every candidate who gives, procures, or pays for any expenses incurred for meat, drink, or entertainment, or provision to or for any person in order to be elected, or for being elected, or for the purpose of corruptly influencing such person to give or refrain from giving his vote at an election, &c., shall be deemed guilty of treating, and forfeit £50 to any person who shall sue for the same; and every person corruptly accepting such meat, drink, &c., shall be incapable of voting at such election. Persons found guilty of bribery, &c., or from whom penalties as above mentioned have been recovered, shall be struck off the list of voters by the revising barrister. Prosecutions and actions under the Act must be begun within one year. Other sections of the Act prohibit giving cockades to voters at elections, or supplying them with refreshments on account of their having polled or being about to poll. Any candidate for a county, city, or borough found guilty by an election committee of bribery, treating, or undue influence by himself or his agents shall be incapable of being elected or sitting in Parliament for such county, city, or borough, during the Parliament then in existence. Up to 1868 disputed elections were dealt with by committees of the House of Commons, but the Parliamentary Elections Act (31 and 32 Vict. c. 125) has transferred the jurisdiction to Her Majesty's judges (see ELECTIONS). The report of the judge is to have the same effect as the report of an election committee under the old law; and if he reports that corrupt practices have extensively prevailed, a commission of inquiry may be issued under 15 and 16 Vict. c. 57. Candidates reputed by the judge to be guilty of bribery shall be incapable of being elected to the House of Commons for seven years, and during the same period may not (1) be registered as voters; or (2) hold office under 5 and 6 Will. IV. c. 76, or 3 and 4 Vict. c. 108, or any municipal office; or (3) hold any judicial office, or act as justice of the peace. Other persons found guilty of bribery after having had an opportunity of being heard suffer the same disqualifications. Similar provisions against bribery, &c., at municipal elections are contained in the Act 35 and 36 Vict. c. 60.

If the election commissioners, appointed under 15 and 16 Vict. c. 57, report the extensive prevalence of corrupt practices, bills may be brought in for the disfranchisement of the constituency. Bridgewater, Beverley, Sligo, and Cashel were so disfranchised in 1870. Four boroughs—Totnes, Reigate, Great Yarmouth, and Lancaster—were disfranchised by the Representation of the People Act, 1867, for corrupt practices. In the case of a vacancy in a constituency where corrupt practices have prevailed at last election, the House may disfranchise it indefinitely, either by a resolution to that effect or by negating the motion for a new writ.

The judges manifested great repugnance to the new jurisdiction conferred on them by the Elections Act, and vigorously remonstrated against it during the passage of the measure through Parliament. It was feared that the

purity of the bench might be sullied by being brought into close connection with political contests. Public opinion, however, had distinctly condemned the House of Commons Election Committees, which were necessarily anything but judicial in character, and were, besides, tainted with the suspicion of being frequently actuated by political motives. Many petitions have now been tried by the judges, and in a manner which has given great satisfaction to the country. One consequence of the new system which might have been anticipated is the introduction of more precise definitions into the phraseology of election law. "Agency," for example, and "valuable consideration," have been treated by the judges according to the ordinary meaning of the words in courts of law, and candidates have been unseated for the acts of persons, technically their "agents," but personally unknown to them, and for gifts, generally reputed laudable, but legally falling within the definition of bribes. Bribery flourishes most vigorously in the English borough constituencies; and the secret voting introduced by the Ballot Act seems to have had very little effect on the practice, on account of the fidelity with which the corrupt voters keep their promises. In a recent election inquiry before commissioners, witnesses declared their belief that a quarter, or even more, of the constituency was permanently corrupt, and held the balance between the two political parties. Extensive bribery under the guise of charitable distributions of coal, provisions, &c., seems to prevail in many constituencies, and a still more indirect form is the payment of large subscriptions to public purposes. Recently, it has been observed, constituencies have shown a marked preference for wealthy candidates with some local connection.

BRICK, a kind of artificial stone made of baked clay. The usual form of a brick is a parallelepipedon, about 9 inches long, 4½ inches broad, and 3 inches thick. The art of brickmaking dates from very early times. We read that burnt brick was used in building the tower of Babel. The walls and various other buildings of ancient Babylon were made of burnt brick; several varieties of brick figure in Assyrian art, and most of the Assyrian literature was in the form of minute characters in baked clay (see BABYLON, BABYLONIA). Brickmaking formed the chief occupation of the Israelites during their degrading bondage in Egypt. The bricks were made of clay mixed with chopped straw, and were probably sun-dried. We read (2 Sam. xii. 31) that David made the children of Ammon pass through the brick kiln; and

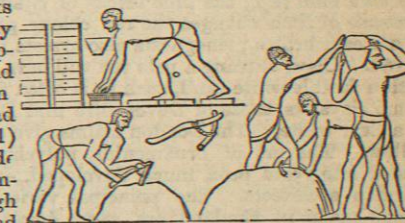


FIG. 1.—Egyptian Brickmakers.

while the meaning of the statement is doubtful, it is thought that the instruments mentioned in the context may have been used in preparation of the clay. Pliny informs us of three different kinds of bricks made by the Greeks. In Italy we have abundant evidence that the Romans used bricks largely; and it was they, probably, who introduced brickmaking into England. By the time of Henry VIII the art had reached great perfection; and many fine brick buildings (e.g., the older part of Hampton Court) are extant from that period. Previous to the great fire of 1666, many of the London houses consisted chiefly of timber framework, filled in with lath and plaster; but after the fire, brick was used almost exclusively in building. Much of the brickwork remaining from that time is finely

carved with the chisel. From the latter part of last century (1784) till 1850, bricks in this country were subject to taxation. In Holland, where stone is scarce, bricks have been in use from a very early period, both for domestic and public buildings.

The quality of bricks depends primarily on the choice of an earth. There are three principal classes of brick-earths:—(1.) Pure clays, consisting chiefly of alumina and silica, in various proportions, and with a small percentage of other salts, iron, lime, magnesia, &c.; (2.) Loams or sandy clays; (3.) Marls, or earths with a considerable proportion of lime. A paste of pure clay alone (made with water), while it may be easily moulded, will shrink and crack in drying and firing, in proportion to the excess of alumina over silica; but this can be remedied by mixture with a milder earth or with sand. Loams, again, are often so loose that they require the addition of lime as a flux. The London brickmakers add lime and ashes, or *breeze*, to their loams and marls, both as a flux and to prevent shrinking; such admixtures also, as will be seen, affect colour. Brick-earths are very various in composition. The proportion of ingredients in a good earth will be something like the following:—silica, three-fifths; alumina, one-fifth; iron, lime, magnesia, manganese, soda, and potash forming the other one-fifth. The clays of which fire-bricks for furnaces are made are almost entirely free from lime, magnesia, and like substances, which act as fluxes; they are found throughout the coal measures, immediately beneath the coal. The best, that of Stourbridge, will bear the most intense heat that can be produced, without fusion. The Welsh fire-bricks, and those of Windsor, Newcastle, and Glasgow, are other well-known varieties. The Dinas fire-brick consists almost entirely of silica; to this is added about one per cent. of lime, and the mixture, after moulding, is intensely heated. In Austria, a very refractory siliceous brick is manufactured by M. Khern, the chief ingredient being quartz of the highest possible degree of purity.

The colour of bricks is determined by the proportion of hydrated oxide of iron and other ingredients they contain, also by the degree of heat in burning. Where iron is present without lime or such substances, a moderate red heat makes the bricks red, the intensity varying with the proportion of iron; with more intense heat, the bricks, if slightly fusible, may be vitrified externally, and become greenish blue (e.g., the blue bricks of Staffordshire). The presence of lime changes the red colour produced by iron to a cream brown, magnesia also arrests the development of red. Clays burning a pale red will burn yellow if mixed with a fusible white sand, such as is often found on heaths. Some clays, as those of Devonshire and Dorsetshire, burn of a clear white. The London marls give a rich brimstone yellow. The art of ornamental polychrome brick-work has of late years been much developed, especially by the German architects. The principal varieties of common bricks made in England are *place bricks*, *grey and red stocks*, *marl facing bricks*, and *cutting bricks*. The first two are used in ordinary walling. The marl facing bricks, made in the neighbourhood of London, are superior to the stocks, and used in the outsides of buildings. Cutting bricks, which are the finest kind of marl and red bricks, are used in arches over windows and doors.

The process of brickmaking varies considerably in different localities. In the following account we shall, in the first instance, confine our attention to methods adopted in the vicinity of London, and thereafter note some of the peculiarities of other systems. The most common mode of preparing the clay, in the London district, is that of *malming*. Among the varieties of brick-earth found there *maln* is a substance that can be used for bricks without any addition. But it is now rare, and an artificial maln

is made by mixing chalk and clay, previously reduced to pulp, and allowing the mixture to consolidate by evaporation. Bricks of the best quality are made with this alone; but for the commoner sorts some of the maln is added to the clay or loam, sufficient to make it fit for brick-making.

The earth is dug up in autumn, and placed on a level floor, banked round in order to retain the maln in the process of malming. Exposed during the winter, it is more or less broken up and pulverized by the frost, &c. The machinery for malming consists of two washing-mills, viz., the chalk and clay mills, which are placed together, not far from the brick-earth. The chalk-mill is a circular trough in which chalk is ground in water, by two heavy wheels with spiked tires, drawn round by horses. The pulp thus made passes by a shoot into the clay-mill, another and a larger circular trough, where it gets mixed with clay that is being cut and stirred in water by knives and harrows, also put in motion by horses. The creamy liquid maln passes through a grating into shoots which convey it to the brick-earth, over which it is distributed as equally as possible. It is now left to settle for a month or more, the water being drained off at intervals, till the mass is firm enough to bear a man walking over it. A thin layer of ashes, about 3 inches for every spit of earth, is spread over the surface (this process being technically called *soiling*), and the whole is now ready for the moulding season, which commences generally in April.

The mass of earth, maln, and ashes is first *tempered*, or thoroughly turned over and mixed with the spade, while water is added to give it the proper consistence. The tempered clay is then conveyed to the *pug-mill*,—a conical tub, in which revolves (driven by horses) a vertical shaft with horizontal knives so inclined that the clay is slowly forced down to the narrow end by their motion. Several of these knife-arms are furnished with cross knives, which assist in the cutting and kneading process. The clay comes out laterally at the bottom as a uniform mass, and is ready for moulding.

The moulder stands at a table or stool, on which are placed some of the tempered clay in front of him, a little dry sand to the right and left, a small tub of water with the *strike* in it, a brick-mould, and a stock-board. Backwards from the stool extends the *page*, a pair of iron rails, on wood, on which the raw bricks are pushed away by the moulder. The *brick-mould* is a rectangular case of sheet-iron, without top or bottom, having the two longer sides strengthened with wood. The *stock-board*, supported on four pins in the moulder's stool, fits easily into the mould; it has often a solid elevation in the middle, for producing a hollow in the brick. The moulder receives from the clomoulder (usually a woman), standing on his right, a piece of clay somewhat larger than a brick. Having sprinkled sand on the stock-board, and dashed the mould, after moistening it, in the left sand heap, he places the mould on the stock-board, and dashes the clay into it with force, then pressing it with his fingers so as to fill the angles. With the *strike* (a short, smooth piece of wood) he strikes off the surplus clay; then he turns the brick out of the mould on a thin board or *pallet*, rather larger than the brick, and slides it along the page to the taking-off boy, who stands ready to put the bricks on a barrow of special construction; on this, after sprinkling with sand, they are conveyed to the hack ground. The bricks are each carefully removed from the barrow between two pallets, and built up in *hacks*, about eight bricks high, and two in width (placed edgewise, and in an angular direction,—the hacks being about 11 feet apart, from centre to centre. They are covered with straw or reeds at night or in bad weather. When half dry the bricks are separated somewhat (*scintled*), to allow

free access of the air. The time taken in drying varies from three to six weeks.

In the vicinity of London bricks are commonly burnt in *clamps*; the peculiarity of which process is that, as each brick contains in itself the fuel necessary for its vitrification, the *breeze* merely serves to ignite the lower tiers, and the heat gradually spreads over the whole. The general structure of a clamp is as follows:—A number of walls, or *necks*, three bricks thick, about sixty long, and twenty-four to thirty high, are built slantingly against a central upright wall, which narrows upwards. The sides and top are cased with burnt bricks. Cinders (or *breeze*) are distributed in layers between the courses of brick, the thickest strata being at the bottom. A single clamp will contain from 200,000 to 500,000 bricks. For firing the clamps, *live holes* or *flues* (9 inches by 7) are left in the centre of the upright, and at every seventh neck or so, extending throughout the thickness of the clamp. These are filled with faggots, and fired by a coal fire at the end of each vent; and the fire ignites the adjacent breeze. Once the clamp is fairly lighted, the mouths of the live holes are stopped with bricks and plastered over with clay, and the clamp burns till all the breeze is consumed, usually from three to six weeks. After cooling, the bricks are removed, sorted, perhaps, and stacked. (For a fuller account of the most approved methods of building clamps, the reader is referred to Mr Dobson's excellent little treatise on brick-making, to which we are indebted for many of the details given in this paper.)

In the Nottingham district a very hard marl is often used in brickmaking; and as ordinary weathering and tempering would not make it sufficiently plastic, it is subjected to grinding between rollers, the hard lumps and pieces of limestone being thus crushed to powder, all pebbles and hard stones having been previously picked out by the hand. The wash-mill is only used in making arch-bricks, and the pug-mill is dispensed with, the tempering of the clay, after grinding, being done by treading and spade labour. Sometimes the clay is kept in damp cellars for a year or more to ripen. Brass moulds (technically called copper moulds) are used, and the moulder, after filling the mould, works over the clay, first on one side then on the other, with a flat implement called the *plane*. A boy takes the mould with its contents to the floor, where he turns out the brick, and then puts back the mould on the stool, the moulder meanwhile filling another mould. The bricks are sprinkled with sand on the floors, and turned twice at a few hours' interval, and are then taken by boys to the *hovel* or drying-shed, when they are built in hacks. They are burnt in kilns, which are made with four upright walls and a sunken floor. On the two sides of the kiln there are shallow pits with lean-to roofs to protect the fuel and fireman. The doorways are narrow openings at the ends, a step above the ground, and the fire-holes are arched openings opposite each other in the side of the kiln, lined with fire-bricks. Narrow openings or flues are left between the bricks, connecting the opposite fire-holes. Each brick has some free space round it for passage of heat. The fuel employed is coal.

In the Staffordshire Potteries it is a common practice to pass the marl through several pairs of rollers, and then mix some three or four marls together, with water, by spade labour. For ordinary bricks the ground marl is mixed with marl that has been tempered but not ground. The pug-mill is employed for tiles and dust bricks,—the latter so called from coal dust being used when they are moulded. The bricks are moulded by the *stop-moulding* process, the mould being dipped in water only before using; the brick is emptied from the mould on the floor. (The other process is distinguished as that of *sand-stock moulding*.) The oven

used in burning is of circular form, with spherical top, and will contain about 8000 bricks. Red, blue, and drab bricks are produced in the district, besides the dust brick just referred to, which is used for the paving of footways.

In Holland, the chief material used for bricks is the slime deposited in rivers and arms of the sea. It is collected in boats by men with long poles, having a cutting circle of iron at the end, and a bag net with which they lug up the slime. Hard bricks are made of a mixture of this slime with sand from the banks of the River Maas. The ingredients are well kneaded together, and the mixture is deposited in heaps. The mode of moulding and drying is similar to that used elsewhere. The kilns are square and will sometimes hold as many as 1,200,000 bricks. Peat turf is used in firing.

For an account of brickmaking in India the reader is referred to a paper by Major Falconnet, R.E., in the *Professional Papers on Indian Engineering*, May 1874.

Thus far only brickmaking by hand has been spoken of, but of recent years there has been no little activity in the invention of brickmaking machines, with a view to economy, certainty, and rapidity of production, and improvement in the quality and appearance of the bricks. It is only in brickmaking on a considerable scale, of course, that moulding by machinery can present much advantage over hand moulding, since the cost of moulding bears so small a proportion to the total cost. The various machinery that have been offered to the public may be arranged in two classes,—those which operate on the clay (with moderate pressure) in a moist and plastic state, and those in which the material used is pulverized and dry, or nearly so. A denser brick, and one less liable to shrinking, is produced in the latter case; but much care is needed in preparation of the clay, and a much stronger compression is required, to ensure the proper tenacity. The different arrangements of rollers and pug-mills for *preparation* of the clay, whether plastic or dry, we need not here describe at any length. Rollers and pug-mill are sometimes combined, forming a composite machine. Two or more pairs of rollers are sometimes arranged one set under another, the closest at the bottom; and opposing rollers are driven at different speeds so as to produce a rub as well as a squeeze, thus promoting disintegration. As to that class of brickmaking machines proper in which plastic clay is used, we find, in some examples, a continuous length of clay forced out from a vertical or horizontal pug-mill through a suitable mouth-piece, and the column divided into bricks by wires or otherwise. Of mouthpieces, some are simple dies, or dies fitted with cores to make hollow bricks; in others the mould is lubricated by a constant stream of water; in others, again, the mouthpiece is made with two or four rollers covered with thick cloth, which are perforated with small holes, and filled with oil to lubricate the faces of the bricks. In cutting, a frame of parallel wires may be moved across, either while the clay is at rest, or while it is in motion, by the wires being moved obliquely at an angle to compensate for the speed at which the clay travels. Or the clay may be cut by radial wires of a wheel, or again by metallic discs. Another variety of treatment of plastic clay is that in which the clay is pressed from the pug-mill into moulds of the form of brick required. In one such machine, a mould-block, with two moulds, moves backwards and forwards under the pug-mill, one mould receiving a charge while the other is having the brick pressed out of it by a piston. In another, the moulds are arranged radially round the border of a circular table, which revolves under the pug-mill. There are piston rods in the mould which ascend an inclined spiral plane, and thus gradually lift the bricks out of the moulds, whence they are taken by a boy and placed on an endless band, which conveys them