been for nearly a century and a half in the hands of the Moors, Mondoñedo was recaptured by Ordoño I. in 858; and the Christian possession was made permanent by Alphonso III. in 870. It was taken by surprise by the French in 1809.

MONDOVÌ, a city of Italy, in the province of Cuneo, 15 miles east of Cuneo and about 55 west of Genoa by rail, was formerly the chief town of the Sardinian province of Mondovì, and between 1560 and 1719 the seat of a Piedmontese university. The central quarter occupies the summit of a hill 1670 feet high, and contains the hexagonal piazza, a citadel erected in 1573 by Emanuel Philibert, the cathedral of St Donatus, a spacious episcopal palace, and the statue of Beccaria, who was a native of the town. At the foot of the hill along the banks of the Ellero (a tributary of the Po) lie the industrial and commercial suburbs of Breo, Borgatto, Pian della Valle, and Carassone, with their potteries, tanneries, marble-works, &c. The mansion of Count San Quintino in Pian della Valle was the seat of the printing-press which from 1472 issued books with the imprint Mons-Regalis; and in modern times the Ducal press founded by Emanuel Philibert has acquired a great reputation. The population of the town was 9637 in 1871, with the suburbs 11,958; that of the commune 17,726 in 1861, and 17,902 in 1881.

Breo is identified with a certain Colonia Bredolensis; but Mondovì proper—Mons Vici, Mons Regalis (Monteregale), or Vicodunum—probably did not take its rise till about 1000 A.D. The bishopric dates from 1388.

MONEY

1. *Definition and Functions of Money.*—The precise definition of Money is a question presenting no small difficulty, and it has been complicated by the attempts of some writers to define the term so as to lend support to their favourite theories. The real difficulties of the subject are, however, chiefly connected with paper-money, and as that side of the question has been dealt with in the article BANKING (*q.v.*) it will here be sufficient to adopt the clear and careful description of money given by a distinguished American economist as being "that which passes freely from hand to hand throughout the community in final discharge of debts and full payment for commodities, being accepted equally without reference to the character or credit of the person who offers it and without the intention of the person who receives it to consume it or enjoy it or apply it to any other use than in turn to tender it to others in discharge of debts or payment for commodities."[1] In this passage the essential features of money are plainly set forth, though, as is frequently the case in economics, particular cases hard to bring within the description may be found.[2]

The functions which money discharges in the social organism are—at least in the opinion of all writers worth noticing here—clearly manifest. The most important is that of facilitating exchanges. It is not necessary to dwell on the great importance of this office. The mere consideration of industrial organization shows that it is based on the division of employments; but the earliest economic writers saw clearly that division of employments was rendered possible only by the use of a medium of exchange. They saw that the result of increasing specialization of labour was to bring about a state of things in which each individual produced little or nothing directly adapted to satisfy his own wants, and that each one was to live by exchanging his products for those of others. They saw, moreover, that this was not feasible without some object which all would be willing to accept for their peculiar products, for otherwise, the difficulty of getting those together whose wants were reciprocal would be a complete hindrance to the development of exchange, which alone made division of labour possible. A second function hardly inferior in importance to the one just mentioned is that of affording a ready means of estimating the comparative value of different commodities. Without some common commodity as a standard of comparison this would be almost impossible. "If a tailor had only coats and wanted to buy bread or a horse, it would be very troublesome to ascertain how much bread he ought to obtain for a coat or how many coats he should give for a horse;"[3] and as the number of commodities to be dealt with increased the problem would become harder, "for each commodity would have to be quoted in terms of every other commodity." Indeed it may be reasonably maintained that the idea of general value could not be formed without the existence of money, and all that is known of savage races tends to bear out this view.[4] The adoption of some one commodity renders the comparison of values easy. "The chosen commodity becomes a *common denominator* or *common measure of value* in terms of which we estimate the values of all other goods,"[5] and thus money, which in its primary function renders exchanges possible by acting as an intermediate term in each exchange, also makes exchanges easier by making them definite. Another function of money comes into being with the progress of society. One of the most distinctive features of advancing civilization is the increasing tendency of people to trust each other. Thus there is a continual increase in relations of contract, as may be seen by examining the development of any legal system. Now a contract implies something to be done in the future, and for estimating the value of that future act a standard is required; and here money, which already acts as a *medium of exchange* and as a *measure of value* at a given time, performs a third function, by affording an approximate means of estimating the present value of the future act, and in this respect may be regarded as a *standard of value*, or, if the phrase be preferred, *of deferred payments*.[6] Some writers attribute a fourth function to money, inasmuch as they regard it as being a means of easily storing up value. Doubtless it does supply this need, which is a specially pressing one in early civilizations owing to the insecurity which then exists, but with the progress of settled government the need becomes less extreme. Other forms of investment grow up, and the habit of hoarding money becomes unusual. It is therefore better to regard the functions of money as being only three in number, viz., to furnish—(1) the common medium by which exchanges are rendered possible, (2) the common measure by which the comparative values of those exchanges are estimated, and (3) the standard by which future obligations are determined.

2. *Causes which Determine the Value of Money. Quantity of Money needed by a Nation.*—The problem of the determining causes of the value of money is a particular case of the general problem of values, but there are circumstances which render the inquiry more than usually complicated. Before considering these it will be well to deal with a use of the phrase "value of money" which has led to much con-

[1] F. A. Walker, *Money, Trade, and Industry*, p. 4.

[2] For further information as to the discussions relative to the proper definition of "Money," the reader may consult J. S. Mill, *Prin. of Pol. Econ.*, B. iii. ch. 12, § 7; Jevons, *Money*, pp. 248 *sq.*; E. de Laveleye, *Marché Monétaire*, pp. 226 *sq.*; and especially Mr H. Sidgwick's article "What is Money?" in the *Fortnightly Review* (April 1879), also his *Principles of Political Economy*, pp. 231 *sq.*

[3] Mill, *Prin.*, B. iii. ch. 7, § 1.

[4] W. Bagehot, *Economic Studies*, pp. 42-43.

[5] Jevons, *Money*, p. 5.

[6] For an ingenious argument against the use of the terms "measure" and "standard" of value, see F. A. Walker, *Money*, pp. 4 *sq.*-12, and *Money, Trade, and Industry*, pp. 27 *sq.*, 60 *sq.* The shorter title is uniformly used here for his larger treatise.

fusion. In mercantile phraseology the value of money means the interest charged for the use of loanable capital. Thus, when the market rate of interest is high money is said to be dear, when it is low money is regarded as cheap. Whatever may be the force of the reasons in favour of this use, it is only mentioned here for the purpose of excluding it. For our present subject, "the value of a thing is what it will exchange for; the value of money is what money will exchange for, or its purchasing power. If prices are low, money will buy much of other things, and is of high value; if prices are high, it will buy little of other things, and is of low value. The value of money is inversely as general prices, falling as they rise and rising as they fall."[1] Now in the general theory of value it appears that the *proximate* condition which determines it is the equation between supply and demand; and this is clearly the case with reference to money. These terms, supply and demand, need, however, some elucidation. Let us consider what is meant by the supply of, and demand for, money. The supply of a commodity means the quantity of it which is offered for sale. But in what shape does the sale of money take place? By being offered for goods. "The supply of money, then, is the quantity of it which people are wanting to lay out;" or, to put the point more concisely, it is "all the money *in circulation* at the time." Again, to take the case of demand,—the demand for a commodity is the purchasing power offered for it.[2] Demand in the special case of money consists of all the goods offered for sale. There is, however, a peculiar feature in the case of money which arises from its position as the medium of exchange, viz., that money is, so to say, in a "constant state of supply and demand," since its principal service is to act as the means of purchasing commodities.[3] From this it follows that the factors which determine the value of money within a given time are: (1) the amount of money in circulation, and (2) the amount of goods to be sold. On closer examination it will, however, appear that there are other elements to be taken into account. In the first place, the quantity of money is not by itself the sole element on the supply side. In some instances a coin will not circulate more than two or three times in a year, while another coin may make hundreds of purchases. In determining the value of money these varying rates of circulation have to be considered, and by taking an average we may establish the existence of a fresh element to be estimated, namely, the average rapidity with which money does its work, or, to use Mill's expression, "the efficiency of money." On the side of demand, again, it is not the quantity of commodities that is the determining element, but the amount of sales, and the same article may, and generally does, pass through several hands before it reaches the consumer. From this it follows that (if the consideration of credit in its various forms be omitted) the value of money is inversely as its quantity multiplied by its efficiency, the amount of transactions being assumed to be constant. This formula requires, however, some further explanations before it can be accepted as a full expression of the truth on the subject. It must be noticed that it is not commodities only that are exchanged for money. Services of all kinds constitute a large portion of the demand, while the payment of interest on the various forms of obligation requires a large amount of the circulating medium. The potent influence of credit also must be dwelt on. This latter force is the main element to be considered in dealing with variations of prices; but so far as it is based on a deposit of metallic money it may be looked on as a means of increasing the efficiency of money, and therefore as coming within the formula given above. In its other aspects it lies outside the range of this article. Some interesting conclusions may be deduced from the results we have arrived at. One of these is that the "increased development of trade," or "expansion of commerce," *of itself* tends to lower not to raise prices; for, by increasing the work which money has to do while the amount remains the same, it raises its value.[4] Another consequence is that a large addition may be made to the money in a country without any effect being produced on prices. This is evident, since money only acts on prices by being brought into circulation; therefore, if the money which is added to the national stock is not used in this way, prices will remain unaffected.

We have now sufficiently considered the proximate conditions which determine the value of money; the next step is to inquire: What is the ultimate regulator of its value? The value of freely-produced commodities is—according to the ordinary theory of economists—determined by their "cost of production," or, where the article is produced at different costs, by the cost of production of the most costly portion. We have now to consider how far this theory applies to the special case of money. Gold and silver, the principal materials of money, are the products of mines, and are produced at different costs; therefore the cost of the part produced at greatest cost ought to determine their value. This theory is, however, true only under certain conditions—namely, that competition is perfectly free, and that there are accurate data for computing the cost of production, and even then it is true only "in the long run."[5] Moreover, cost only operates on value by affecting supply. "The latent influence," says Mill,[5] "by which the values of things are made to conform in the long run to the cost of production is the variation that would otherwise take place in the supply of the commodity." From these considerations it follows that cost of production does not so influentially affect the value of money as some writers have supposed. In former periods it was a common proceeding on the part of the state to either restrict or stimulate coinage and mining for the precious metals. At all times the working of gold and silver mines has been rather a hazardous speculation than a legitimate business. "When any person undertakes to work a new mine in Peru," says Adam Smith,[6] "he is universally looked upon as a man destined to bankruptcy and ruin, and is upon that account shunned and avoided by everybody. Mining, it seems, is considered there in the same light as here, as a lottery, in which the prizes do not compensate the blanks;" and all subsequent experience confirms this view. With regard to the adjustment of supply to meet an altered cost of production, the difficulties are, if possible, still greater. The supply of money is so large compared with the annual production, that any change can operate but slowly on its value. The total stoppage of fresh supplies from the mines would not be felt for some years in the increased value; and an increased amount of production, though more rapid in its operation, takes some time to produce an effect. "Hence the effects of all changes in the conditions of production of the precious metals are at first, and continue to be for many years, questions of quantity only, with little reference to cost of production." On these grounds it is apparent that cost of production is not, for short periods, the controlling force which governs the value of money, and even for long

[1] Mill, *Prin.*, B. iii. ch. 8, § 1.

[2] For a clear statement of this, see J. E. Cairnes, *Leading Principles*, part i. ch. 2.

[3] The leading exception to this is in the case of money which is hoarded for an indefinite period, and is therefore withdrawn from circulation.

[4] This view, which seems to most persons a paradox, is well put by Adam Smith, *Wealth of Nations*, p. 81 (ed. M'Culloch); also by J. E. Cairnes, *Essays on Political Economy*, p. 4.

[5] *Prin.*, B. iii. ch. 3, § 2.

[6] *Wealth of Nations*, p. 78 (ed. M'Culloch).

periods the speculative nature of the industries connected with the production of money renders the cost of production an element very hard to ascertain. Another consideration which gives a peculiar feature to the problem of money-value is that in the case of other commodities a change in cost of production affects value without any actual change in the supply. The knowledge that a commodity can be produced at a lower cost will cause a reduction in its value. This is not true of money. Either the quantity or the efficiency of money must be altered to change its value. This is, of course, a result of its position as the circulating medium. When all these circumstances are taken into account it becomes clear that the most correct way to regard the question of money-value is that which looks on supply and demand, as interpreted above, as the regulator of its value for a limited time, while regarding cost of production as a force exercising an influence of uncertain amount on its fluctuations during long periods. Where the coinage of a state is artificially limited, the value of its money plainly depends on supply and demand as we have interpreted it.

The next question which arises is: What quantity of money does a nation require? What amount of the circulating medium is necessary for the proper working of the industrial organism? To this puzzling problem the earlier economists gave answers in the shape of definite formulæ. Thus, Sir W. Petty was of opinion that the amount of coin required by a country was one-half the rent of land, one-fourth the amount of building rent, and one fifty-second part of the annual wages of labour. Locke's view was that one-fiftieth of labourers' wages, one-fourth landowners' revenue, and one-twentieth of traders' yearly returns, was the proper amount. Modern statisticians, however, though having command of much greater resources, decline to attempt a quantitative answer, and content themselves with indicating the conditions which the problem involves. In fact we must first examine the work which money has to perform, and this depends on several conditions. The first of these is the population; *cæteris paribus*, twice as many people will want twice as much money. The second is the amount of transactions; for, if the amount of business done is doubled, the amount of money must be also doubled, unless at the same time some improvement in credit is introduced. The efficiency of money is a third element which affects the quantity needed, and this is largely dependent on the habits of the people and the facilities for communication. Other elements which can be only briefly indicated are—"the degree in which credit exists between man and man; the amount of travelling which takes place; and the commercial and banking organization which exists."[1] Another factor which requires to be estimated is the extent to which habits of hoarding exist; for all money hoarded is withdrawn from circulation, and therefore increases the total amount needed. The habits of saving in the rural districts of France remarkably exemplify this element in the question. Again, the existence of barter does away with the use of so much money as would be required to carry on the exchanges effected by barter. The custom of paying wages in kind has a similar effect. This bare statement shows how insoluble the question is. When we contemplate the matter from an international point of view, the amount needed, after allowance is made for the cost of transporting goods, is plainly that which will keep a country's prices at a level with those of the countries with which it has commercial relations.[2] For otherwise the country would have an excess either of importation or of exportation, which would necessitate a flow of money to the country whose prices were lower than the general level. This, then, is the condition which determines comparative prices between different countries; and, prices being so determined, the quantity of money needed to keep up those prices depends on the conditions above indicated. In the case of England reliable statistics tend to show that the gold in circulation was, in 1872, about £105,000,000, and the note circulation £43,000,000. In any Continental country the amount would probably be proportionally much greater, owing to the fact that there is in England a greater development of credit.

3. *Early Forms of Currency.*—Up to the present we have considered money as being fully established and properly adapted to fulfil its various functions. We have now to trace the steps by which a suitable system of currency was evolved from a state of barter. It is important for a right understanding of the question to grasp the fact that exchanges took place originally between groups, and not between individuals. This explains the slow growth of exchanges, as each group produced most of the articles necessary for itself, and such acts of barter as took place were rather reciprocal presents than mercantile exchanges. Such is actually the case at present among modern savages. "It is instructive to see trade in its lowest form among such tribes as the Australians. The tough greenstone valuable for making hatchets is carried hundreds of miles by natives, who receive from other tribes in return the prized products of their districts, such as red ochre to paint their bodies with; they have even got so far as to let peaceful traders pass unharmed through tribes at war, so that trains of youths might be met, each lad with a slab of sandstone on his head to be carried to his distant home and shaped into a seed-crusher. When strangers visit a tribe they are received at a friendly gathering or corrobboree, and presents are given on both sides. No doubt there is a general sense that the gifts are to be fair exchanges, and if either side is not satisfied there will be grumbling and quarrelling; but in this roughest kind of barter we do not yet find that clear notion of a unit of value which is the great step in trading."[3] This vivid description of what is going on at present among lower races enables us to realize the way in which money came into existence. When any commodity becomes an object of desire, not merely from its use to the persons desiring it, but from their wanting it as being readily exchangeable for other things, then that article may be regarded as rudimentary money. Thus the greenstone and ochre are on their way to being promoted to the position of currency, and the idea of a "unit of value" is all that is needed to complete the invention. "This higher stage is found among the Indians of British Columbia, whose strings of haiqua-shells worn as ornamental borders to their dresses serve them also as currency to trade with,—a string of ordinary quality being reckoned as worth one beaver's skin."[4] These shells, therefore, are in reality money, inasmuch as they discharge its functions.

On a review of existing savage tribes and ancient races of more or less civilization we are surprised at the great variety of objects which have been used to supply the need of a circulating medium. Skins, for instance, seem to be one of the earliest forms of money. They are to be found at present among the Indians of Alaska[5] discharging this service, while accounts of leather money seem to show that their use was formerly more general. As the hunting stage gives place to the pastoral, and animals become domesticated, the animal itself, instead of its skin, becomes the principal form of currency. There is a great mass of evidence to show that, in the most distant regions and at very different times, cattle formed a currency for pastoral and early agricultural nations. Alike among existing barbarous tribes and in the survivals discovered among classical nations, sheep and oxen both appear as units of value. Thus we find that at Rome, and through the Italian tribes generally, "oxen and sheep formed the oldest medium of exchange, ten sheep being reckoned equivalent to one ox. The recognition of these objects as universal legal representatives of value, or, in other words, as money, may be traced back to the epoch of a purely pastoral economy."[1] The Icelandic law bears witness to a similar state of things; while the various fines in the different Teutonic codes are estimated in cattle. The Latin word *pecunia* (*pecus*) is an evidence of the earliest Roman money being composed of cattle. The English *fee* and the famous term *feudal*, according to its most probable etymology, are derived from the same root. In a well-known passage of the *Iliad*[2] the value of two different sets of armour is estimated in terms of oxen. The Irish law tracts bear evidence as to the use of cattle as one of the measures of value in early Irish civilization.[3] Within the last few years it has been prominently brought before the public that oxen form the principal wealth and the circulating medium among the Zulus and Kaffres. On the testimony of an eye-witness we are assured that, "as cattle constitute the sole wealth of the people, so they are their only medium of such transactions as involve exchange, payment, or reward."[4] We find that cattle-rents are paid by the pastoral Indian tribes to the United States Government.[5] From the prominence of slavery in early societies it is natural to suppose that slaves would be adopted as a medium of exchange, and one of the measures of value in the Irish law tracts, *cumhal*, is said to have originally meant a female slave. They are at present applied to this purpose in Central Africa, and also in New Guinea. On passing to the agricultural stage a greater number of objects are found capable of being applied to currency purposes. Among these are corn—used even at present in Norway—maize, olive oil, cocoa-nuts, and tea. The most remarkable instance of an agricultural product being used as currency is to be found in the case of tobacco, which was adopted as legal tender by the English colonists in North America. Another class of articles used for money consists of ornaments, which among all uncivilized tribes serve this purpose. The haiqua-shells mentioned before are an instance, cowries in India, whales' teeth among the Fijians, red feathers among some South Sea Island tribes, and finally, any attractive kinds of stone which can be easily worked. Mineral products, so far as they do not come under the preceding head, furnish another class. Thus salt was used in Abyssinia and Mexico, while the metals—a phenomenon which will require a more careful examination—have succeeded in finally driving all their inferior competitors out of the field, and have become the sole substances for money at present.

4. *Metallic Forms of Money. Their Superiority over other Substances. Special Advantages of Silver and Gold.*—The use of metals as a form of money can be traced far back in the history of civilization, but, as it is not possible to ascertain the historical order of their respective adoptions for this purpose, we will take them in the order of their value, beginning with the lowest. Iron, judging from the statement of Aristotle, was extensively employed as currency. One remarkable instance of this which at once occurs to the mind is the Spartan money, which is clearly a survival of the older system that had died out among the other Greeks, though by modern writers it has been attributed to ascetic policy. In conjunction with copper, iron formed an early Chinese currency, and till recently it was a subsidiary coinage in Japan. Iron spikes are used in Central Africa, while Adam Smith notices the use of nails for money in Scotland.[6] Lead has also served as money, as it does at present in Burmah. Copper has been more widely employed than either of the previously-mentioned metals. Its use in China as a parallel standard with iron has just been mentioned. The early Hebrew coins were chiefly composed of it, while down to 269 B.C. the sole Roman coinage was an alloy of copper. Till a very recent period it formed the principal money of some poorer European states (as Sweden), and was the subsidiary coinage of the United Kingdom till the present bronze fractional currency was introduced. Tin was not so favourite a material for money as copper, but the early English coinages were composed of it, probably on account of the fertile tin mines of Cornwall, and in later times halfpence and farthings of tin have been struck. The next metal which comes into notice is silver, which up to the last few years was the principal form of money, and even still is able to dispute the field with its most formidable rival. It formed the main basis of Greek coins, and was introduced at Rome in 269 B.C. The mediæval money was principally composed of silver, and its position in recent times will have to be subsequently noticed more at length. Gold, which is the most valuable of the metals widely used for monetary purposes, has been steadily gaining ground with the growth of commerce. The earliest trace of its use in common with that of silver is to be found "in the pictures of the ancient Egyptians weighing in scales heaps of rings of gold and silver."[7] The only other metals used for money—platinum and nickel—may be easily disposed of. The former of these was coined for a short time by the Russian Government, and then given up as unsuitable. The latter is only used as an alloy.

The examination of the forms of currency, both metallic and non-metallic, in which we have been engaged leads to certain definite conclusions as to the course which the evolution of currency is pursuing. It appears (1) that the metals tend to supersede all other forms of money among progressive peoples, and (2) that certain metals tend to supersede the others. From this we are led to consider the qualities which are desirable in the material of money, and to conclude that the presence or absence of those qualities is the reason of the adoption or rejection of any given substance.

(1) In the first place, it is necessary that the material of money should be desirable, or, in other words, possess value; and to this condition all the commodities we have reviewed conform, for otherwise they would never have attained the position of being a medium of exchange. This quality, then, is not the reason for the preference of some forms over others. (2) The second requisite clearly is that the value of the article shall be high in proportion to its weight or bulk, or, to put the same truth in another way, it is requisite that it shall be portable. Want of this quality has been a fatal obstacle to many early forms of money retaining their place. Skins, corn, and tobacco were found very difficult to transfer from place to place. Iron and copper too suffered from the same defect, while sheep and oxen, though moving themselves, were expensive to transfer. (3) It is further desirable that the material of money shall be the same throughout, and that one unit shall be equal in value to another. This is a reason for rejecting the widespread currency composed of cattle, as the difference between one and another head is of course often considerable. The metals possess a particular advantage in this respect, as, after being refined, they are almost exactly homogeneous. (4) A fourth requisite is that the substance used as money can without damage be divided and, if needed, united again; here also the desired quality is peculiarly possessed by the metals, as they are easily fusible, while skins or precious stones suffer greatly in value by division, and it need hardly be added that the same is the case with regard to animals. (5) Money must also be durable. This at once removes from the articles suitable for money all animal and many vegetable substances. Eggs or oil will not keep, and consequently soon lose their value. Iron, too, is liable to rust, which, combined with its low value, is a reason for its disuse as currency. (6) Money should be easily distinguishable, and there should be no trouble in ascertaining its value. This condition is one of the reasons why precious stones have never been much used as money, their value being hard to estimate. The same objection applies to most non-metallic currencies, and is only obviated even in their case by the process of assaying. (7) The last condition which

[1] F. A. Walker, *Money*, p. 73. [2] *Ib.*, p. 57.

[3] E. B. Tylor, *Anthropology*, pp. 281-282.
[4] Tylor, *loc. cit.* [5] Whymper, *Alaska*, p. 285.

[1] Mommsen, *Hist. of Rome* (Eng. trans.), i. p. 203.
[2] The episode between Diomede and Glaucus in the 6th book.
[3] Maine, *Early History of Institutions*, Lect. vi.; *Brehon Law Tracts* (ed. by Drs Hancock and Richey).
[4] Rev. H. Dugmore, quoted by Maine, *op. cit.*, p. 143.
[5] F. A. Walker, *Money, Trade, and Industry*, p. 22.
[6] *Wealth of Nations*, p. 11.

[7] Tylor, p. 283.

appears desirable for the money material is, that its value shall be steady. This, however, is of but slight importance in early societies, and it is only as deferred payments become a prominent feature of industrial life that this requisite is much needed. It is enough for the other purposes of money that it shall not vary within short periods, which is found to be a feature of metals, and especially of silver and gold, while corn especially varies widely in value from season to season. From the foregoing examination of the requisites desirable in the material of money it is easy to deduce the empirical laws which the history of money discloses, since metals, as compared with non-metallic substances, evidently possess those requisites in a great degree. They are all durable, homogeneous, divisible, and recognizable, and in virtue of these superior advantages they are the only substances now used for money by advanced nations. Nor is the case different when the decision has to be made between the different metals. Iron has been rejected because of its low value and its liability to rust, lead from its extreme softness, and tin from its tendency to break. Both these metals, as well as copper also, are unsuitable from their low value, which hinders their speedy transmission so as to adjust inequalities of local prices.

The elimination of these metals leaves silver and gold as the only suitable materials for forming the principal currency. Of late years there has been a movement towards the adoption of the latter as the sole monetary standard, silver being regarded as suitable only for a subsidiary coinage. Indeed this question, which is reserved for subsequent discussion, may be regarded as the principal matter of controversy in the field of metallic currency. The special features of gold and silver which render them the most suitable materials for currency may here be noted. "The value of these metals changes only by slow degrees; they are readily divisible into any number of parts which may be reunited by means of fusion without loss; they do not deteriorate by being kept; their firm and compact texture makes them difficult to wear; their cost of production, especially of gold, is so considerable that they possess great value in small bulk, and can of course be transported with comparative facility; and their identity is perfect."[1] The possession by both these metals of all the qualities needed in money is more briefly but forcibly put by Cantillon when he says that "gold and silver alone are of small volume, of equal goodness, easy of transport, divisible without loss, easily guarded, beautiful and brilliant, and durable almost to eternity."[2] This view has even been pushed to an extreme form in the proposition of Turgot, that they became universal money by the nature and force of things, independently of all convention and law, from which the deduction has been drawn that to proscribe silver by law is a violation of the nature of things.[3]

5. Coinage: its Advantages, and the Principal Questions connected therewith.—The development of monetary systems has now been traced down to the establishment of metallic currencies. These, in the early stages of their existence, passed by weight. The Hebrew records bear witness to this fact, as also do the Greek writers. Aristotle, for example, after indicating the circumstances which led to the invention of currency, proceeds to point out that it was "afterwards determined in value by men putting a stamp upon it, in order that it may save them from the trouble of weighing it."[4] There are two distinct stages in the introduction of coining. In the first, only the quality or fineness of the metal is denoted by the stamp, no attempt being made to fix the weight. In other words, the stamp acts as a kind of *hall-mark*. The Chinese cubes of gold may have been the earliest money. Herodotus attributes the first use of coined gold and silver to the Lydians,[5] while in another passage he mentions that the first Greek coinage was at Ægina, by Pheidon of Argos.[6] The second step was to certify the weight as well as the fineness of the metal, thus completing the invention. The necessity of preventing any interference with the coin after it had been stamped led to the adoption of a regular form, and, though hexagonal or octagonal coins are to be found, the received shape of a coin is that of a flat circle, each side of which is stamped, as well as in many cases the edge. By this contrivance all persons into whose hands the coin came had a guarantee as to its quality and quantity, and we may reasonably infer that the great improvement in coinage among the Grecian colonies was the effect, and also in some degree the cause, of the expansion of their commerce in the 6th century B.C. From Greece the art of coining spread to Italy, being introduced by the Greek colonists in Lower Italy. Since then coinage as an art has always existed in the more advanced societies. The progress of invention, however, does not end with the introduction of the art of coining, since a number of practical questions arise with reference to the best system to be adopted, which for a protracted period present great difficulties to those who are called upon to solve them. One of these, before touched on, is: What is the best shape for coins? The answer has finally been in favour of the circular, but square and oblong pieces are also to be found.[7] Closely allied with this is the question of the most suitable limits of size. The inferior limit is plainly fixed by the convenience of those using the coins. They ought not to be so small "that they can be easily lost, or can with difficulty be picked up."[8] Instances of violations of this principle occur in the case of the English threepenny piece and the American one-dollar gold piece. The superior limit is a more difficult point. Its determination turns partly on the difficulty of coining large pieces, and partly on the facilities which such large coins as the American gold double-eagle give for improper treatment. It is an easy process to drill holes, which can be concealed by hammering, while in some cases the coin has been sawn in two, and the interior gold removed, the outside surfaces being soldered together, while platinum is put in the midst to maintain the weight. As a general rule it may be laid down that no gold coin much larger than the English sovereign, or silver one at all larger than the half-crown, should be issued. Another consideration to be borne in mind when determining the proper size of coins is the relative amount of wear which takes place. Experience proves that large coins are less worn than small ones. "According to experiments made at the mint in 1833, the loss per cent. per annum on half-crowns is about 2s. 6d., on shillings, 4s., and on sixpences, 7s. 6d." This result has been confirmed by other inquiries. From this it follows that the larger coins are less expensive, but their size is limited by the fear of their being tampered with. Again, the character of the stamp to be impressed

[1] *Ency. Brit.* (8th ed.), art. "Money," vol. xv. p. 417.

[2] W. S. Jevons in the *Contemporary Review*, January 1881. See also Lord Liverpool, *Coins of the Realm* (Bank of England reprint), p. 10.

[3] See Cairnes, *Logical Method of Pol. Econ.*, p. 131, note; and for an application of the argument to Bimetallism, see É. de Laveleye, *Fort. Rev.*, July 1881.

[4] *Pol.*, i. 9, 8. The whole passage is worthy of quotation, as showing how clearly Aristotle conceived the primary function of money: διὸ πρὸς τὰς ἀλλαγὰς τοιοῦτόν τι συνέθεντο πρὸς σφᾶς αὐτοὺς διδόναι καὶ λαμβάνειν, ὃ τῶν χρησίμων αὐτὸ ὂν εἶχε τὴν χρείαν εὐμεταχείριστον πρὸς τὸ ζῆν, οἷον σίδηρος καὶ ἄργυρος, καὶ εἴ τι τοιοῦτον ἕτερον, τὸ μὲν πρῶτον ἁπλῶς ὁρισθὲν μεγέθει καὶ σταθμῷ, τὸ δὲ τελευταῖον καὶ χαρακτῆρα ἐπιβαλλόντων, ἵνα ἀπολύσῃ τῆς μετρήσεως αὐτούς.

[5] Herodotus, i. 94.

[6] *Ib.*, vi. 127. See also for a discussion of Pheidon's coinage, Grote, *Hist. of Greece*, ii. pp. 319 *sq.* (Cabinet ed.).

[7] An instance of the latter is the ιτζίβου of the Japanese coinage, which is an oblong flat piece of silver.

[8] Jevons, *Money*, p. 155.

is a matter requiring much care. The objects aimed at in imposing the stamp are (1) to prevent the coin being counterfeited, and (2) to prevent any of the metal being abstracted. The former of these objects can be best attained by making the device such as can be obtained only by powerful and expensive machinery. The most improved methods must be adopted, and the greatest pains taken to have the device perfectly executed. The latest improvement in the process of coining is the introduction of the knee-joint press. The latter difficulty is best obviated by using special care in marking the edges of the coins. Ancient coins were issued with unstamped edges which presented no impediment to clipping, but modern coins, at least those of any size, are protected by the edge being milled or by a legend being inscribed round it. The combination of milled edges with a raised legend would be a still more effectual means of protecting the coinage from interference.

Another matter of importance in the process of coining is the nature and proportion of alloy to be used. The necessity for some mixture arises from the fact that gold and silver are both naturally soft, and, to obviate this, copper has been mixed with them, so as to produce a harder substance. The Austrian ducat is the nearest approach to purity among the principal coins of Europe, being composed of seventy-one parts of pure gold to one of alloy. The English gold coins are eleven-twelfths pure gold, while the silver ones are thirty-seven-fortieths pure silver. The origin of the difference is purely historical. The general gold proportion is nine-tenths gold to one-tenth alloy, while in some coinages the proportion of silver to alloy is nearly five to one, the countries composing the Latin Union having adopted that proportion in order to reduce their smaller silver coins to tokens. Copper is the usual material for alloying, but the Melbourne mint used silver for some time. It is this silvery alloy that accounts for the yellow appearance of many Australian sovereigns. They, however, are rapidly disappearing, as it is profitable to melt them down. It has been mentioned above that the wear of small coins is greater than that of large ones, and it may be added here that the wear of coins in general is an important question in connexion with their legal circulation. The English sovereign is believed to remain above the least current weight for from fifteen to twenty years. For the technical processes of coining, &c., reference may be made to the article MINT.

The next topic to be considered is: Who should issue money? In the earlier stages of currency the question was not so prominent, but the establishment of coining brought it forward. In Greece each city being autonomous claimed and exercised the right of freely coining as it desired, the coins being, of course, received in other cities only at their real value. The consequences of this system were generally beneficial. The Greek coins were usually up to their nominal value, as debased coinage was unable to circulate beyond the place of issue, and therefore extremely inconvenient to the members of the state issuing it.[1] Under the Roman republic private persons were probably allowed to bring metal to be coined, though the coins seem generally to have had the name of one of the consuls for the year on them. Under the empire the doctrine became established that the right of coining belonged exclusively to the emperor, and till the fall of the Western empire this was acted on. After the establishment of the various barbarian kingdoms, each sovereign assumed the privilege of coining, a right which in France was extended to or rather usurped by the principal nobles.[2] In England the king alone coined silver.[3] At present the control of the operations of the mint is completely in the hands of the executive; and, until recently, no question on theoretical grounds as to the propriety of this method has ever been raised.[4]

In close connexion with the right of coining comes the consideration as to the proper persons to bear the expense of the process. At first sight the answer seems plain enough. Coins are a manufactured article quite as much as plate, and are rendered more valuable by being assayed, weighed, and certified. It appears therefore quite proper that those who bring metal to be coined should bear the expense of the coinage, or, in other words, should give up a part of the metal to the mint, thus paying for the service rendered to them in the same manner as those sending letters pay the postal department for their transmission. This course has been usually adopted. England, however, has taken a different line. In order to encourage the coining of the precious metals, no charge was made at the mint beyond that involved in the necessary delay in the operation, and this is at present the case with gold. Though this arrangement was originally introduced in obedience to the prejudices of the mercantile system which regarded gold and silver as being peculiarly wealth, it may be defended on reasonable grounds: for (1) the expense of the mint is very small compared with the amount of coin turned out, and (2) the coins produced are used by the nation, and therefore their expense may quite fairly be defrayed from the national revenue. Again, as the profit on the silver coinage (owing to circumstances to be subsequently discussed) is large, that may be set off against the free coinage of gold. The charge levied on coining, if confined to the expenses incurred, is called *brassage*; if it is anything above that cost it is known as *seigniorage*, which latter term is also used to denote both kinds of charge. The effect of seigniorage (using the term in its more extended sense) on the value of coins is to lower them, in fact, as Tooke has put it, seigniorage is always a kind of debasement, unless accompanied with limitation.[5] If the same quantity of metal be in circulation there will be a greater number of coins, and therefore nominal prices will be higher. It is, however, possible that the increased prices may check the production of the precious metals, thus making the value of the metal higher than it would otherwise be. Whether this will happen or not depends on the actual conditions of production, and is incapable of being predicted. One advantage which undoubtedly results from a charge on coinage is that it checks the tendency to melt coin when exported, for where a seigniorage is imposed coins are more valuable than the uncoined metal by the amount of the seigniorage. It therefore becomes the interest of the holder not to melt down the coins, as in doing so he loses the extra value given by the coining. Another factor in the expense of currency is the loss which arises from the wear and tear which money undergoes, and the consequent cost of replacing the light or missing pieces. The last and largest item is the interest on the total amount of money in use. To take the case of England, the value of the metallic currency is estimated at about £130,000,000. The interest

[1] See Lenormant, *Contemp. Rev.*, February 1879.

[2] Hallam, *Middle Ages*, i. pp. 205-206.

[3] Lord Liverpool, *Coins of the Realm*, ch. v.

[4] "We may take as an example the function (which is a monopoly too) of coining money. . . . No one, even of those most jealous of state interference, has objected to this as an improper exercise of the powers of government." Mill, *Princ.*, B. v. ch. 1, § 2. But see, for objections, H. Spencer, *Social Statics*, pp. 400-402, and J. L. Shadwell, *System of Pol. Econ.*, p. 264.

[5] Tooke, *Hist. of Prices*, i. 121 *sq.* It is impossible, however, to agree with Tooke that uncoined bullion would be higher in value than coin when a seigniorage is charged on the latter. He seems to ignore the fact that the value of the precious metals is partly dependent on their use as currency, and that the seigniorage represents a tax levied on the extra value resulting from the use of the metal as money.