

From the time the primeval fires of mankind were kindled, man used a system of barter. With the development of civilization, a medium exchange was sought, whether the economy was a market economy or based on redistribution by a central authority. Direct barter was often inconvenient, particularly when goods or services were neither needed nor desired by one of the parties. A standard value, as a medium of exchange and convenient store of wealth, was developed using a negotiable instrument desired by all. This varied from one primitive culture to another and consisted of such objects often failed to suffice – for example, cattle could not easily be transported great distances without abundant water and grazing, and would be susceptible to weight and stock loss on long journey. More over, animals were not conveniently divisible for making minor payments, and barter was unsuitable for financing armies and levying taxes. Metals as a currency, evolved in the form of ingots, rings, spits and various cast shapes, but these objects were not ideal. They were later made more practical by applying specific standards of weight and purity to them.

The interaction of human agency, cultural fusion and prosperity has throughout the ages been instrumental in the creation of great civilizations. In the ancient world the degree of sophistication in these societies was remarkable. It was probably the increasingly complex activities of Lydia in Asia Minor (Turkey), with Greek Ionia and her other trading partners, that precipitated the introduction of coinage around 650 BC, when it is believed the first coins were struck. Through the democratization of money via personal inventive to the industrious, individual freedom from rigid domination was made possible. The need arose for a medium of exchange that was easily portable, of intrinsically valuable metal, with fixed weight and fineness, bearing the inscription and/or device of responsible authority stamped on it. This new economic weapon was to have profound effect on history. Through coinage, trade was often conducted on a large scale over vast distances. Herodotus, the Greek historian, recorded about 430 BC, “So far as we have any knowledge they (the Lydians) were the first nation to introduce the use of gold and silver coins.” However, the earliest coins known were not made of gold or silver but of electrum, a pale natural alloy of both these metals, believed to be a separate metal. Electrum, washed downstream from Mount Tmolus, was found in the silt deposits of the Pactolus and Hermus riverbeds at Sardis, Lydia’s capital. Electrum was also mined from the inland Tmolus mountain range and at Mount Sipylus near the coast. Herodotus may have been referring to the later coinage of the Lydian King Croesus (560 – 546 BC). He noted that the white gold (electrum bricks dedicated by the Lydians at Delphi) of similar dimensions to the yellow gold, weighed less. This observations was correct, electrum being less dense than gold. The archaeological levels on this site, pinpointed the date of their minting to around 600 BC.

By the reign of its last and legendary King Croesus, Lydia encompassed and held stable dominion over the whole plateau of Asia Minor, as far as the river Halys. The incalculably wealthy King Croesus was defeated in battle against Persia at Pteria in 546 BC. After this defeat Lydia became the main satrapy in the west, with Sardis at its center and close political contact was maintained with the Greek states.

An Account of the Transition From Barter to the Use of Coin
ARISTOTLE
384 – 322

When the inhabitants of one country became more dependent on those of another, and they imported what they needed, and exported the surplus, money necessarily came into use. The various necessaries of life are not easily carried about, and hence men agreed to employ in their dealings with each other something which was intrinsically useful and easily applicable to the purposes of life; for example, iron, silver and the like. Of this the value was at first measured by size and weight, but in process of time they put a stamp upon it to save the trouble of weighing and to mark the value.

The techniques of the Lydians and the Greeks, in the early production of coin, was a natural extension of the skills practiced by the gem and seal engravers, jewelers and masters in the arts of former times. Although their techniques of refining are obscure, they certainly had the practical ability to refine and alloy metals, as is evident from their work passed down to us. In ancient Egypt, according to an account of Agatharchides, they refined gold by placing it in an earthenware pot together with lead, tin, salt and barley bran and kept it in a state of great heat for five days. They were less successful in the separation of gold from silver; these two precious metals usually found together were not easily separable. However, the precious metals were easily separated from the baser alloys. Silver was principally used in the production of coin throughout the early Greek world. Gold coin was usually struck during times of crisis and emergency only. Gold through minted in quantity in Persia at that time only later come into general use throughout Greece. The problems of making minor purchases and the need for practical-sized small change brought about the introduction of bronze coin, produced by alloying copper with tin. Bronze coin was in general use from about the fourth century BC. Metal of predetermined fineness was cut from the end of a cylindrical shaped ingot when heated, or cast into moulds of suitable size. The blanks produced were meticulously adjusted to a precise weight, as it is on these principal factors of weight and fineness where copper pieces of the Seleucids and Ptolemies seem to have been cut from plate rather than cast; Indian coins in very early times were also cut as blanks in square form.

The first known coinage was stamped with a punch in various patterns, incuse (intaglio) into the obverse. The reverse was for a brief initial period striated to prevent the blank from shifting on the anvil when struck. The resultant coin was identifiable to its make, obviating the need to re-weigh it in the event of its passing back to him in the small separate communities in which these coins circulated. These markings grew in complexity, culminating in increasingly sophisticated coin types, often of great beauty. The device used for striking these types on to a flan is known as a coin die. Dies were made of tempered bronze and tin, brass or iron. A design was mapped out on the polished uncut surface of the die and then deeply engraved in intaglio (incuse), to produce the design in high relief when struck. The master die cutter, working with a graver, burin, punch and other tools of his trade, was able to achieve incredible detail and a high degree of artistry. Although no evidence of optical aids exists, they were possible used in creating the minute detail. The dies were used in various devices such as a fixed anvil with sunken die housing for the obverse die (pile). The flan (prepared coin blank) was heated in a charcoal-fired clay furnace to make it malleable, and placed on the obverse die with tongs. The reverse die (trussell) was positioned and held in place; resounding blows from a heavy hammer struck the obverse and reverse impressions simultaneously on the flan. The coin was then placed in water to temper it. These dies were often capable of producing thousands of coins without obvious sign of wear. The reverse die, being uppermost, literally took more of a hammering and had to be replaced more frequently than the obverse die, which in many cases was well protected, embedded in the anvil. The substitution of worn dies is of great assistance to numismatists in establishing the chronological order of coins, as dates did not appear on early coinage. Later hubbing was introduced whereby the master die was engraved in relief, from which several incuse dies were produced for later or simultaneous use while preserving the

original master die. Coin dies were often laid up in racks for a period of time between striking and in many cases rusted, as is evident from the pitting effect on certain coins.

Occasionally, coins of other cities were overstruck to save the moneymen the task of preparing new blanks. Sometimes victors overstruck their symbols on existing coins as propaganda – a practice that has proved valuable in historical dating.

Many coins exist which are unevenly struck, struck off center, with unrounded planchets, die cracks, double struck, impact cracks, etc. Perfectly struck hammered coins of antiquity are rare, valuable, and often of great beauty – masterpieces of the die engraver's art.

Coin initially was traded at parity with bullion. However, many mints through the ages gained notoriety by deviating from strict assay standards, debasement and plating of gold or silver on metals of lesser value. A situation was created whereby the worth of their coin was discounted internationally or, conversely, traded at a premium, thereby inflicting a mercurial rate of exchange upon the world. In an endeavor to correct these fluctuations and the ratio came into being. Their application was only partially successful, as any attempt to regulate a bimetallic currency artificially is inconsistent with its availability and production costs, as well as the supply of and demand for precious metals, which affects their current value.

Often, through the connivance of an issuing authority, a local premium was placed on the value of its own currency by refusing to accept foreign coin or summarily discounting it as payment for official debts, such as taxes, and by these manipulations made its minting activities more profitable. Sometimes coin lost its credibility through wear, debasement, deliberate clipping of metal from its edge, change of the status quo, or where the intrinsic value of bullion exceeded face value. The issue was in these circumstances often withdrawn from circulation, melted down, assayed and re-struck. Hammered minting methods, as described, were principally unaltered until the sixteenth century AD. During the Renaissance the remarkable Leonardo da Vinci (1452 – 1519) recorded his design for a coin planchet machine capable of producing blanks of perfect roundness, uniform thickness and weight.

With the introduction of the rolling press, metal could be rolled to uniform width from which blanks were cut. In the mid-sixteenth century rollers each with several engraved dies were employed. The rolled blanks were passed between them, producing roller mill impressions of the dies simultaneously on obverse and reverse in long strips which were then cut into individual coins. The screw press, generally attributed to the Italian architect/medallist, Donato Bramante (1444 – 1514), overcame the problem of uneven striking by applying a uniform pressure to the coin blanks. The first mint master to use the screw press is thought to be the sculptor Benvenuto Cellini (1500 – 1571), who was appointed Maestro delle stampe by Clemente VII in 1529, and it is likely that he used the screw press shortly after his appointment. He describes it in his *Trattato dell'Oreficeria* of 1568.

Baldassare Peruzzi (1481 – 1536), student of Bramante, also pioneered the design of the screw press during his term of office (1527 -- 1535) as architect and later mint master of the Republic of Siena. Though no positive evidence of the existence of a screw press at the Siena mint is known, documentary evidence and drawings by Peruzzi exist, housed in the Gabinetto dei Disegni, Uffizi Gallery, Florence, and would support the theory, that the screw press was well diffused in Italy before it became common in Germany and France circa 1550.

A screw press was purchased for the Cours des Monnaies from Max Schwab, Augsburg, in 1552.

The introduction (circa 1573) of a die collar produced coins with a uniform roundness while striking a legend and/or design on to the edge of the coin to prevent clipping. This was achieved by encircling the blank with a metal collar during striking.

The screw press was introduced in England in 1561 by the Frenchman, Eloy Mestrel, and was used until 1573. The unfortunate M. Mestrel was executed for alleged forgery on what was probably a trumped-up charge. The press was then discontinued by the Corporation of Moneyers, for fear of their skills becoming redundant. However in 1662, hammered coins were finally superseded by the use of the improved mill and screw press.

The new machines revolutionized minting – rivaling hammered coins in consistency, even striking, definition and productivity. The early screw press consisted of a rigid base and frame through the center of which as a large vertical screw device on which a sturdy, long transverse bar was fixed, heavily weighted at each end. The press was operated by a team consisting of a setter, who sat in a well in front of the machine (with his head out of the path of the rotating transverse bar). His function was to position and change the planchets, while assistants turned the screw, aided by thongs or ropes attached to either side of the weighted bar. The mechanism would compress the dies together by its screw action, which proved superior to the hammering techniques. Later machines were adapted through gear systems to utilize horse and water power for the mill and screw process. In England, the Commonwealth period which followed saw the introduction of the machinery of a French engraver, Pierre Blondeau. He produced superb engraving, and struck coins of great beauty and technical competence.

During the industrial revolution the steam press was invented for the striking of coins. This was the result of the partnership between Matthew Boulton (1728 – 1809) and James Watt (1763 – 1819), which was to prove most effective.

The pantograph, an instrument for the mechanical copying of a drawing or diagram, etc. on the same or an enlarged or reduced scale, made its appearance in Europe in the seventeenth century, and was used for the engraving of coin dies. It consisted of an arm that was used to trace an enlarged design, while at the other end a revolving engraving tool simultaneously cut an exact reduction of the original, to produce a hub from which working dies were made. This reduction device enabled the engraver to work on a scale several times greater than the size of the coin. The quality, artistry and charm of the old

master moneyers were regrettable lost to mass production with modern-day mints that churn out billions of coins annually throughout the world.

Coin types or symbols are devices struck on coins principally to guarantee their weight, purity (fineness) and value and to identify the status and origin of one coin from another. The incredible variety of coin types which has come down to us from antiquity, evidence of perpetual minting activities throughout the ages, provides the framework of numismatic study and appreciation. The motives for the choice of symbols are complex. Coin types were often heraldic symbols, applied to coinage as a signet of authority directly responsible for the coins' correctness: e.g. early coins from Ephesus bore the symbol of a stag with the inscription "I am the badge of Phanes". The device was often the city's badge, family crest, royal coat of arms, or mark of the magistrate personally responsible for the validity of the coin issue. The designs were based on considerations of religion, commemoration, decoration, imitation, commercial or political needs, and other diverse motives. Coins, mirrors of history, reflect statements of fact; in contrast to the writing of historian who often seek to impose their points of view. The value of coins as public documents was soon realized and exploited. Coins were often struck or overstruck as a propaganda medium to inform the populace of a victory or succession, as a manifesto, or act of defiance. Strong rivalry existed between the city-states of the ancient world and in character with their national sentiments and with their love of aesthetics in general they pursued artistic and technical superiority, guarding their minting rights as tenaciously as their commercial and political autonomy. The artistic achievement, originality and inventiveness of the Greek world are well known. Regrettably, however, only a very small part of its art works are known to exist. It is rare that an artwork is found from this period in its original condition. Copies and forgeries even from the later Greek periods often lack the spirit of the originals. Miraculously, however, numerous coins have survived over a period of two and a half thousand years; some in remarkable condition, little changed from the day they were struck. This has been made possible by their small size and duplication, assisted by the practice of hoarding (an inevitability in times of crisis or war, from which the hoarder often failed to survive or return from), and the ideal conditions under which some of the specimens were buried. Coins of noble metal have often survived without corrosion in less than favorable conditions. These factors have enabled us to feast our eyes on many of these masterpieces in their original state without the need for restoration, just as the artist would have wished. The master seal/die engravers were generally held in high regard and for good reason. We can but marvel at their superb sense of design, and skilful positioning of type (principal device) and symbol (ancillary device) within the confines of the planchet.

The coins' artistic merits were appreciated and, because of the great number produced, possessed by the masses, unlike any other art form. Their aesthetic value was realized apart from their intrinsic worth.

Wherever practically possible, art and pagan worship were closely interrelated. Temples in the ancient Greek world were vast storehouses of art treasures. These treasures often portrayed a deity, religious object or symbol, in honor of their gods. This trend became

firmly established as is evident from their appearance on coin types. During the various reign coin was used as a medium of deification. Until the fourth century BC the occurrence of portraits on coins are practically unknown. From the sixth century BC Persian coinage bore a full figure of their king with bow and arrow, a type repeated in many areas of Persian influence. It is unlikely that, before the death of Alex the Great, portraits on coins were anything more than a symbolic representation. His deified likeness made its appearance with the issue of a regular series following the fragmentation of his Empire. Kings and Roman emperors who adopted rule cult as a means of political control used coins to advertise their divine associations. Busts on coins were to become commonplace to the extent that during the Roman Empire that followed an identifying legend encircling the portraits became necessary – the model on which our modern coinage is based.

The versatility of coinage beyond its obvious usage is manifold, some of its ancillary use being: prizes for athletes and competitors at games; a medium for publicizing a noteworthy event (such as an alliance, diplomatic exchange, or visit or an eminent dignitary); and a means of promoting personal renown throughout colonies and dominions. In addition coins made excellent souvenirs. Occasionally by portraying items in which the city-state traded, coin types and symbols served as ideal advertising media, enjoying wide circulation.

The legend (lettered inscription) on coins became commonplace as a municipal or national label, primarily to augment the type or portrait of a ruler, the authority of an issue, or to name the monetary magistrate responsible for its correctness. It was used on occasion to record the date of issue and the mark of denomination, to describe a type in whole or part, to elaborate on inscriptions, to commemorate an alliance or to record the die engraver's signature. Legends on coin appear in various forms: a complete inscription, an inscription interspersed with abbreviation, a letters in monogram or initial marks.

The use of secret code – privy mark (including mintmark/initial mark) – was sometimes incorporated in the overall design or the legend, on occasion in the form of heraldic or personal symbols. This served to aid the issuing authorities in guarding against forgeries, by establishing the chronological minting sequence (as early coins were not dated), or by giving the identity of the moneyer, and was sometimes uses as a commercial control or trademark.

The malpractice of defrauding the public by tendering counterfeit coin as official issue is almost as old as coinage itself. Man was quick to exploit its possibilities, with all its inherent evils, as is testified by the anti-counterfeit laws of Athens in the sixth century BC.

Counterfeiting was rife during the Roman era and evidence of the forger of coin during the Roman occupation was discovered at Halton Chesters, in England. In Saxon times, Aethelstan, King of Wessex (924 – 939 AD), introduced antiforger measures.

In Germany between 1815 and 1825 the brilliance of Karl Wilhelm Becker, master forger, came to the fore. It is said that Becker offered his coins as acknowledged copies and his works, some three hundred and fifty different specimens, eluded the detection of many numismatic experts. It is significant to note that only through the use of photography and the subsequent publication of photographs of Becker's coins (which enabled detailed comparisons to be made) was the full extent of his activities realized. His forgeries were in the main Greek, Roman and Medieval. He produced hand engraved dies, using genuine old coins of low numismatic value for the fabric, from which he prepared his blanks. He struck his coins with a heavy hammer to simulate ancient striking techniques and thereafter placed them in a container filled with iron filings which was attached to the axle of his carriage, in order to produce an aged finish on the coins.

The methods and activities of forgers and monetary opportunists have made their mark historically. This is a scourge which continues to be omnipresent in contemporary society.

There are several motivations for counterfeiting activities: greed, pursuance of dishonest profit, the satisfaction of the forger in passing off his work as genuine, and undermining an enemy's economy by large scale forgery and manipulation of its currency. During World War II, Germany (under the direction of S.S. Major Bernhard Kruger) printed counterfeit bank notes, operating from Sachsenhausen concentration camp. Its inmates were forced to produce millions of English bank notes, which the Germans used to secure war supplies and intelligence services. Counterfeit coins have also been used as a weapon to inflict commercial sabotage on rival trading nations.

Debasement was employed throughout the ages by issuing authorities in times of crisis, or even for lesser motives. Its practice was aggravated by the introduction of paper money, a new concept introduced in China during the T'ang dynasty (618 – 907 AD) to supplement the coinage which had become scarce. This concept was conveyed by Marco Polo on his return from China in the thirteenth century. He noted the daily use of paper money on his journey during the Yuan dynasty. Western introduction of paper money originated in Sweden in 1661, to augment the shortage of specie, and was moreover potentially useful as a means of preventing the irrecoverable gold lost through normal daily wear and tear of gold coins in circulation.

Inflation, in the main a product of debasement, is not peculiar to our time – its ravages were experienced on many occasions throughout the ages. The effects of World War I precipitated a monetary crisis that ultimately forced most nations to abandon the gold standard (i.e. the convertibility of paper money for gold in specie).

As attempted in the past, governments issue bank notes in excess of their backing (gold reserves) with which they endeavor, through legislation, to create additional reserves. The resultant debased fiat currency causes inflation; a temporary state of euphoria is reached and all known remedies become politically disastrous. Time is bought in the short term by injections of indiscriminate credit, handouts to curry favor with the electorate and printing a greater volume of bank notes, thereby widening the rift between

the bank note issue and its gold backing. This feeds inflation, thereby eroding economic stability and confidence with alarming effect on the real worth of savings, fixed incomes, pensions and the entire economic system. The tax collector at this point is obliged to impose additional punitive taxation to try to make sense of the inflated money (of little value) that is returned by the taxpayer. This adds further fuel to the fire and ultimately rampant inflation stifles incentive, causing widespread dissatisfaction and demands for higher wages. In the economic vortex of despondency the public at large becomes the victim of misrepresentation, having to face the bleak realities of the inflationary/deflationary spiral. This is, of course, an oversimplification but it is hoped that it will suffice to illustrate the point.

Throughout history the control of money, contrived by means outside the natural disciplines of specie, has succumbed to human frailty – for example, Winston Churchill's overvaluation of sterling in 1920. The introduction in 1970 by the International Monetary Fund of special drawing rights (SDRs), machinery for the arbitrary granting of credit against imaginary reserves of paper gold of no intrinsic value, is yet another contrived scheme in history aimed at the demonetisation of specie. Some notable failures of fiat money which ended in disaster were: its introduction during the Ming dynasty in the fifteenth century; John Palmstruck's Kreditivedlar notes in Sweden in 1661; the attempt by John Law (a Scot) to save the French economy in 1716; the German economic disaster of the 1920s and the Hungarian failure of 1946 – to name but a few.

Counterfeit coin circulated in quantity would tend to have an effect similar to the undisciplined printing of paper money. In 405 BC Aristophanes said of the emergency money issued in Athens, "In our Republic bad citizens are preferred to good; just as bad money circulates whilst good money disappears." This has been the case throughout history. In the reign of Queen Elizabeth I of England, it is recorded that Sir Thomas Gresham explained this phenomenon to the Queen as the reason for the flight of gold from the realm, due to debased coin struck during the reign of her father, Henry VIII. This phenomenon became known as Gresham's Law: Bad money drives out the good.

The standards of counterfeits vary greatly, from crude replicas to masterpieces of deception that have on occasion deceived the experts. Allied to counterfeiting is the malpractice of removing small amounts of metal from coin and passing them off as full measure. This took the form of clipping, i.e. cutting or machining small slivers of metal from the edge of the coin. This practice has been prevented by the introduction of inscriptions (in either incuse or relief) circumscribing the edge, sometimes with the inclusion of an edge design or by the use of a milled rim.

Rubbing or filing of coin was curbed by the inclusion of fine detail such as hair locks, harp strings, etc., within a protected area of the design which served to indicate any appreciable signs of wear or removal. This indicator assisted in countering the practice of sweating – a method of removing gold by chemical reaction. Coin was laid in a glass vessel raised on three glass points. The vessel was then filled with aqua regia (a mixture of nitric and hydrochloric acids) which dissolves gold. This diminished the weight

without producing an appreciable difference in the visual appearance of the coin, due to the uniform reaction.

Further precautions have been taken to minimize monetary malpractices and counterfeiting. Activities are restricted by the complexity of coin design, requiring the expert skills of craftsmanship. On occasion, coin is struck on specially prepared blanks, sometimes with the inclusion of privy marks (secret inscriptions). In some countries the disabilities of the blind are catered for in the design of contemporary coinage to enable them to differentiate between the various denominations through their sense of touch; this assists in preventing unscrupulous persons from giving them incorrect change.

The rise in popularity of vending machines brought with it other fraudulent practices such as the use of foreign coins, metal discs and other substitute objects. Despite the introduction of acceptor/rejecter devices it became clear that a sophisticated means of countering the boundless ingenuity of the human mind was essential. As an answer special metals were developed which have a lower saturation magnetization than that of nickel. These metals are not used industrially nor are they commercially available. Their production is restricted to government-controlled orders, as with the printing of bank notes. Nickel and cupro-nickel when used in laminates of various combinations and permutations- provide a coin fabric which is discernible by modern magnetic acceptor/rejecter devices - thus making positive detection of counterfeit coins possible. Mint authorities have set up a central register to avoid duplication of their specifications. Anti-forgery devices are also applied to the printing of paper currency. Special paper, water marks, metal coding strips manufactured between the paper's fabric, special inks and complex designs of intricate and sharply defined illustrations are employed. Laws of legal tender, generally in use, specify the prescribed weight and tolerance (remedy) governing the acceptance of coin. Punishment of great severity has been meted out to counterfeiters as a deterrent, but the profitable felony continues with coins of noble metals or numismatic value. Counterfeiting or treatment of contemporary coins (usually mere tokens of value), has been curtailed and discrepancies today would have to be minimal requiring treatment of vast quantities of coin, which would negate the profitability of this activity. The use of debased metal is bound to reveal itself by its incorrect weight, specific gravity, poor fabric, colour variance, etc. It was often the practice of counterfeiters in ancient times to plate or dip coins of base metal in either silver or gold to pass them off as coins of noble metal. To guard against this, suspect coins were violated by cutting them through. Another consideration is the wear factor which is minimized by the introduction of alloying elements to harden the metal. Alloys such as cupro-nickel, used in contemporary minting, are selected for their hardwearing properties, relative cheapness and resistance to corrosion. Modern coins are usually designed with an edge rim in relief protruding slightly above the surface of the coin type. This acts as a buffer to minimize abrasion when coins are stacked and to assist in withstanding the general wear and tear of circulation.

With the meteoric rise in coin prices and the ever-swelling ranks of the numismatic fraternity throughout the world, counterfeiters unleash their activities on the unsuspecting public at large, preying on the bargain hunter and those imprudent collectors and dealers

who acquire coins from doubtful sources. On occasion, excellent and dangerous counterfeits have passed the scrutiny of experts and dealers of repute. To counter this problem, the International Association of Professional Numismatists (IAPN) founded the International Bureau for the Suppression of Counterfeit Coins in London, under the direction of Mr. E.G.V. Newman OBE, BSc, an internationally acknowledged expert. Mr. Newman, who recently retired as Chemist and Assayer of the Royal Mint, has been actively concerned with counterfeits since 1953, and has prepared expert evidence in over 500 cases to date. The objectives of the Bureau are:

- (i) to collect, edit, publish and circulate information on counterfeits, not only to members of the IAPN but also to other interested bodies and individuals;
- (ii) to build up a data bank of information on counterfeits of both antique and current coins which will be available for use by members of the IAPN, by law enforcement authorities and by other institutions and interested individuals;
- (iii) to arrange for the authentication of doubtful coins by experts and, where necessary, for their testing by scientific methods;
- (iv) to work for changes in legislation in different countries which would make illegal the manufacture of counterfeits of both current and non-current coins of all countries and of reproductions of coins which are not adequately marked as such; and
- (v) to collaborate closely with the American Numismatic Association Certification Service and with other bodies in the furtherance of these aims.

The Bureau publishes a quarterly bulletin on counterfeits which is of high standard and includes many photographic illustrations, clearly indicating the defects, to aid the identification of counterfeits. Technical information, such as coins' dry weight, specific gravity, edge faults and other peculiarities are indicated. In rare cases, sophisticated tests are employed in reaching a decision as to the authenticity of a coin, such as X-ray fluorescence spectrometry and/or spectrography.

Several non-destructive methods of analysis and dating are now in use, employing the physical, nuclear and photographic sciences. Detailed reports are issued on a restricted basis. These reports are sent to members of the IAPN and are available on a subscription basis to numismatic and other academic institutions, government agencies, mints, police, banks, bullion merchants and dealers as well as collectors able to supply the required reference to the Board of Management of the IBSCC. The IBSCC does not grade items as to condition nor determine where the coins are produced as proof or otherwise, nor does it offer any estimate of value. It does not identify, contribute items, describe the criteria for determining that an item is a counterfeit or an altered piece, or recommend dealers or other authorities. The IBSCC and ANACS (American Numismatic Association Certification Service) are complementary and work closely together. The IBSCC strongly recommends that numismatists in North America wishing to avail themselves of an authentication service send both their North and South American coins to the ANACS, as that body has particular knowledge of American issues.

The existing series of coins is so profuse and complex that its incorporation is beyond the scope of any one book. The photographic plates represent a cross-section of coins spanning two and a half thousand years. The enlargements have been juxtaposed with photographs of the coins in their actual size and the accompanying notes are keyed with detailed line drawings. Facsimiles of the legends have been illustrated, expanded and translated.

Seals predate coins; examples together with their impressions illustrate the use of the incuse/embossed (negative/positive) technique. Each seal was unique and was used to append a symbol and/or signature to attest a tablet, document or object, to denote authority and as a mark of ownership and a method of preventing undetected access. Seals were made from semi-precious stones or other hardwearing and decorative materials and were often worn as amulets or jewelry.

The presentation scene depicts a deity, wearing a flounced robe and headdress, seated beneath a crescent moon, facing left, with one hand raised. A goddess approaches leading a worshipper by the hand. There are two vertical panels bearing symbols which have not been deciphered and it is possible that these have been recut in more recent times. A bearded god with a headdress gestures towards a figure in a short robe and turban (probably a king). He stands facing the goddess Lama who has both hands raised. A worshipper in a striped robe and turban headdress faces a bearded god who has on open skirt and headdress and stands with one foot raised. He holds a symbol known as the rod with (seven) balls which has been associated with various deities, especially Adad and Shamash, and is flanked by symbols which have interpreted in various ways; a ball staff; libation vessel; scales for weighing; a measuring rod and a hookah. Between the god and the king is a seven-pointed star and a fish.

The scarab shaped amulet, resembles the sacred beetle of the ancient Egyptians, and is carved on its underside in intaglio with a bull which has the beak of a bird. Its long tail extends to form the base line and the design is surrounded by a single line.