NOTES

ON THE

HAND MINTING OF COINS

OF INDIA

BY

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H. H. the Nizám's Mint and Stamps.

At the time when I was pursuing my studies at the Royal School of Mines, (London), (1896-97) my friend Mr. E. A. Smith, A.R.S.M., F.C.S., then Demonstrator on Metallurgy, suggested to me that a few short notes on the subject of hand minted coins, their history, and the various processes of minting, according to the methods followed by the Natives of India, would be interesting and instructive; but, owing to pressure of work I have not been able to comply with his wishes earlier.

In attempting to carry out this suggestion I propose to confine my remarks to the Native coinage as was carried on in H. H. the Nizam's State Mint at Hyderabad Deccan (India). This State, by the way, is the only one in India which at the present time enjoys the prerogative of manufacturing its own currency, all the other States having, under the Indian Coinage Act No. XXIII of 1870, accepted the British Indian minted coins as current in their respective realms.

The various processes followed in the making of these coins were very similar to the methods formerly in use in England from the Reign of Edward I, to that of Charles II, who in 1663, by several warrants and commands, ordered only "Milled Money" to be manufactured.

An interesting passage quoted from the Report made to the Lords of the Treasury, by Mr. Williams Cawndes, in 1695, will perhaps not be out of place here :—

"All moneys we have now in England, both "gold and silver are reducible to two sorts, one

"stamped with the hammer, and the other press-
"ed with an Engine called the Mill. The gold
"or silver of the hammered money is first cast
"from the melting pot into long bars, these bars
"are cut with shears into several square pieces
"of exact weight for Sovereigns, Angles, Crowns,
"Half Crowns, Shillings etc. Then with tong
"and hammer they are forged into a round shape
"after which they are blanched, (that is made
"white or refulgent by nealing or boiling) and
"afterwards stamped or impressed with a hammer
"to make them perfect money. This method of
"making money with the hammer (as appears in
"the said Red Book), was practiced in the reign
"of King Edward I (the book referred to is in
"the Exchequer), and this kind of hammered
"money continued through all the reigns of suc-
"ceeding Kings and Queens, till about the year
"of our Lord 1663, when by several warrants and
"commands of King Charles the second to wit,
"by one warrant dated the fifth of November,
"1662, one warrant dated the eighth of April,
"1663, and a third warrant, dated the twenty

"fourth of December, 1663; the other sort, call-
"ed "Milled Money," was first fabricated to
"be current in England, in this manner first the
"gold or silver is cast out of the melting pot into
"long flat bars, which bars are drawn through
"a mill, (wrought by a horse), to produce the
"just thickness of Guineas, Half Guineas, Crowns,
"Half Crowns Shillings, etc. Then with forcible
"Engines called **Cutters**, which answer exactly
"to the respective sizes or dimensions of the
"money to be made, the round pieces are cut
"out from the flat bars, shaped as aforesaid,
"(the residue whereof called **Sizel**, is melted
"again), and then every piece is weighed and
"made to agree exactly with the intended
"weight, and afterwards carried to other En-
"gines, (wrought secretly), which put the letters
"upon the edges of the larger silver pieces, and
"marked the edges of the rest with a graining.
"The next thing is the blanching performed as
"above, and at last every piece is brought to
"the press, which is called the **Mill**, (wrought
"by the strength of men), and there receives

"the impression which makes it perfect "Milled "Money."

The mechanical Minting processes now used, are as elaborate as the old methods were simple; but considering the requirements of the present day, and the enormous quantity of Milled Money produced in the Civilized States, it must not be expected that this coin will, for the depth of Engraving, bear comparison with those of the hand minted moneys, of the old Indians, who, though they succeeded in producing finished works of art, seem to have forgotten the wear and tear to which they would be subjected, and so left them free from a protecting edge; hence it will be found that they lost their superscription very much sooner than the present milled coins do.

Before entering into the details of the history and manufacture of the coinage of this State, I propose to give here a short Physical and Historical description of it, in order to show how the coins of other rulers came to be current in this Dominion.

Physical Description.—The Dominions of His Highness the Nizam, lie between 15°-10' and 20°-50' North Latitude, and between 74°-45' and 81°-35' East Longtitude.

They occupy a polygonal tract 82,698 square miles in area, in the central portion of the table-land of the Deccan, which, in the generally accepted sense of the term, refers to that portion of Southern India, which is bounded on the North and South by the Rivers Narbada and Kishna respectively, and East and West by the Eastern and Western Ghats.

The Dominions are a vast plateau of an average elevation of 1,200 feet, though some summits reach an altitude of 2,500 feet above the level of the sea, as, for instance, Golconda which is 2,024 feet, and was formerly the famous site af the valuable Diamond Mines, which in the 17th centuary became a household word throughout Europe, on account of the "Koohinoor" the famous diamond, now adorning the Imperial Crown of Great Britain.

*History.**—The dynasty of the Nizam was founded by Asaf Jah, a distinguished general of the Moghal Emperor Aurangzib of Turkoman descent. After a long life at the Delhi Court, distinguished alike in war and political affairs, he was, in 1713, appointed Subadar or Viceroy of the Deccan, with the title of Nizam-ul-Mulk, (Regulator of the State), which has since become heriditary in the family. The Moghal Empire was at this time torn by internal dissensions, and threatened by the rising power of the Mahrattas. At this time Asaf Jah asserted his independence against the degenerated descendants of Aurangzib, and at the time of his death in 1748, he was firmly established as an independent Sovereign with Hyderabad for his Capital, and a kingdom roughly co-existent with the present State. The right of succession was keenly contested by his descendants. Nasir Jung, the second son of the deceased ruler, being on the spot, seized the Treasury, and had the support of the troops. The second claimant was the grand son of the late ruler, named Muzafar Jung. Each of the

* Sir William Hunter's Imperial Gazetteer of India, Vol. III.

two Candidates for the succession had the countenance and support of one of the great European Powers, then commencing their career of contention for supremacy in the East. The English espoused the cause of Nasir Jung, the French that of his rival Muzafar Jung. Shortly afterwards dissensions between the commanders and their officers caused the retirement of the French force from the field, and Muzafar Jung, being left without a support, became a prisoner of Nasir Jung. Shortly afterwards Nasir Jung was assasinated, when Muzafar Jung was proclaimed the Subadar or Viceroy of the Deccan, and exercised his authority under the control of the French Commander Dupleix. Some of Muzafar Jung's Pathan supporters, being dissatisfied with the rewards meted out to them, killed him, and the French selected Salabat Jung as his successor. The victories of Lord Clive so threatened the stability of the French possessions in India that they were forced to withdraw from the Deccan, and Salabat Jung found himself without support.

To protect himself against the designs of his younger brother Nizam Ali, Salabat Jung approached the English, and gained their support on condition that he would dismiss the French from his territory, and have no further connection with them, which compact he did not maintain.

Contrary to the advice given him Salabat Jung entrusted his brother Nizam Ali with considerable power, and this power the crafty, but younger man, used to supplant his brother, and succeeded in dethroning him in 1761, and two years later put him to death.

The year 1765, saw Nizam Ali ravaging with great cruelty the provinces of the Carnatic, but he was compelled to withdraw by a force of British Troops.

As, however, the British Government was anxious to retain the maritime districts of the Northern Circars they entered into an agreement with Nizam Ali, stipulating to furnish him with military assistance when required, and

when such assistance was not necessary, to grant him a subsidy of 9 lacs of Rupees per annum. As the Northern Circars were formerly occupied by the French, a treaty was concluded in 1766 by which on condition of the grant of the Circars to them, the British Government agreed to furnish the Nizam with a subsidiary force when required, and to pay 9 lacs of Rupees a year, when the assistance of their troops was not required. Notwithstanding this understanding with the British, Nizam Ali joined Hyder Ali in his exploits in Mysore, but in 1768 made a further treaty with the East India Company. By the 6th Article of this treaty the East India Company, and the Nawab of the Carnatic, who was also a party to the treaty, were to be always ready to send two battalions of Sepoys and six pieces of Artillery, Commanded by Europeans, whenever the Nizam required their services, the Nizam paying their expenses during the time the force was employed by him. The payment of 9 lacs to be made to the Nizam on account of the Circars

had, by this time, fallen into arrears and it was some years before the debt was properly adjusted. Another treaty was subsequently made with the British, and the Governor General, Lord Cornwallis, in 1789, with the consent of the House of Commons, agreed that the force stipulated for in the 6th Article of the treaty of 1768, was not to be employed against any power in alliance with the Company.

In 1790, a war broke out between the English and Tippu, the son of Hyder Ali of Mysore, and an offensive and defensive treaty was entered into between Nizam Ali, the Peshwa, and the British Government.

Tippu concluded the peace of Seringapatam, in 1792; by which half of his territories was divided between the English and their allies. On the fall of Tippu at the battle of Seringapatam, in the fourth Mysore war, in 1799, the territories were divided between the English and the Nizam, who received that portion adjoining his own dominions, and this territory

was subsequently ceded to the English to meet the expenses of maintaining the Subsidiary Force. It became known as the Ceded Districts.

On account of the inefficient condition of the Nizam's forces during the Mahratta war, several advances were made by the British Government for their equipment, and as money was required constantly for this purpose, the British Government made advances in 1843 under the distinct understanding that in future territorial security for payment of the debt would be demanded. As this debt augmented very rapidly, a treaty was concluded in 1853, by which the British agreed to maintain an auxiliary force, and to provide for its payment, and for certain pensions, and the interest on the debt; the Nizam on his part agreeing to cede in **trust** districts yielding a gross revenue of 50 lacs of Rupees (£5,00,000). By this treaty the Nizam, while retaining the full use of the Subsidiary force, and Contingent, was released from the unlimited obligation of service in time of war, and the Contingent ceased to be a

part of the Nizam's army, being an auxiliary force kept up by the British Government for the Nizam's use. In 1857, when the Indian mutiny had broken out, this Contingent did good service in dispersing the rebels. In 1860 a fresh treaty was concluded, by which the territorial acquisitions of the Nizam were increased, a debt of 50 lacs of rupees was cancelled, and the assigned districts in Berar, Yielding a gross revenue of Rs. 32,00,000 (£3,20,000) were taken in **trust** by the British Government for the purpose specified in the treaty of 1583.

Berar.—By the treaty of 2nd November 1902 Berar was leased to the British Government in perpetuity, on the conditions that a fixed and perpetual rent of 25 lacs should be paid to H. H. the Nizam, and the British Government should have sole administration of the province, and control of the Hyderabad Contingent Troops.

The present Nizam, His Highness Sir Mir Mahabub Ali Khan Bahadur G.C.S.I., G.C.B.,

was born in 1866, and ascended the throne on the 27th February 1869. He is the first enlightened Mahomedan Ruler with the Western culture. He is entitled to a salute of 21 guns. The population of the Nizam's Dominions according to the last census, (1901) was 11,141,142.

History of the Coinage.—As the old Hindu Rulers of the Deccan, were swept away gradually by the Mahomedan invasion, and conquest of the country subsequent to 1293, the currency of the Hindu Rules also gradually disappeared, and was replaced by the mintages of the Mohomedan Viceroys on behalf of the Emperors of Delhi, in their respective provinces.

During the reign of Mahomed Taghlak two very powerful states date their origion. The one was the Mohamadan Kingdom of Bahmini, founded by Sultan Alauddin Hasan Gangu Bahamini (1347—1526 A. D.), with Ahsanabad (now Gulburga) as his Capital, the other, powerful Kingdom was the Hindu Kingdom of Vigianagar or Bijanagar, (1336—1565), with a Capital

of the same name situated on the Banks of the Tungabhadra river 34 miles North-West of Bellary now in the Madras Presidency. In 1640, Sri Ranga Raya, the ruler of the Vijianagar Kingdom, taking shelter under the hot persuit of the Mohamedan Kings, at the forts of Chandragiri and Vellore, granted a deed handing over the site of Mordern Madras to the English, and with that the right of coinage.

The Bahmani Kingdom was after a rule of about two hundred years was broken up into five separate Kingdoms, with independent Sultans.

(1) The Bahminies of Bidar in the Centre.

(2) The Imam Shahis of Khandesh and Berar on the North.

(3) Nizam Shahis of Ahmed Nagar on the North.

(4) Adil Shahis of Bijapur on the South.

(5) Kutub Shahis of Golconda and Hyderabad on the South.

All these Sultans had their own mints and struck gold, silver, and copper coins.

In 1510 A. D., Afonso d'Alboquerque founded a mint at Goa, where the Coinage for the Portuguese possessions in India were carried out.

Mr. J. Gerson Da Cunha in his advisable contributions to the study of Indo-Portuguese Nunismatics (1880). says :—

"The subject of Portuguese Coinage in "India is involved in much obscurity. Money "was first minted at Goa in 1510 A. D., only 370 "years ago ; but its history is more vague and "undefined than either of the Greek or Roman "Coinage. The issues of coins by the Vice-"roys, and often by the officers of the mint, "without any intervention on the part of the "Viceroys or Governor-Generals, was conducted "in the most unsystematic, not to say capricious "fashion. The coins not seldom, bore impres-"sions, effigies, and legends, which had no con

"nection whatever with the raining monarches "of the period when they were issued. Some "of them were minted long after a new cur- "rency with crowned or profile busts of Kings "was introduced again, some of these latter "coins were struck years after the Kings whose "busts they bore had ceased to live."

These local Indo-Portuguese Coins, as well as those of Europe manufactures, found their way into the Deccan.

The silver and copper coins struck in India by the Portuguese ceased to be a legal tender in British India in 1893.

It appears that the silver Rupee was first introduced in India by Sher Sha, an Afhgan of the Sur Family, who defeated the Moghal Emperor Humayun in 1539, and ascended the throne at Delhi. The weight of the Rupee was 11·5 **mashas** *i. e.*, 180 grains.

Akbar, the third of the Moghal Emperors, called his rupee the **Jalali,** after his own name

Jalal-ud-din. The word **Jalal** means pomp. This Rupee was of the same weight and value having 179·5 troy grains of pure silver. The latter Rupees of Akbar's successors weigh 175 grains.

After the conquest of Golconda by Aurangzib, the Mogul Emperor in 1687 A. D., and the establishment of Nizam-ul-Mulk the first of the Nizams in the Deccan there was a very large circulation of different varieties of Coins, as, between 1803—1853, after the fall of the Mogul Empire, in 1803, the right of coinage which, from time immemorial constituted one of the prerogative of the ruling power, was arrogated by almost all the petty states, into which India had then been divided, and numerous Mints were established throughout the length and breadth of land. They coined money in the name of their titular Emperor Shah Alum, with the addition of their peculiar marks and symbols. The Rupees issued by these Mints resembled in appearance more or less the Imperial Coinage of Delhi, but as regards their weight and fineness, the productions of no two

Mints were alike, and as competition increased, and new Mints were established, they decreased in fineness and weight.

During the reign of the Moghal Emperors, the towns of Agra, Ahmadabad, and Cabul, alone had the privilege of coining gold. Allahabad, Surat, Dehli, Patna, Srinagar, Lahore, Multan, and Thana, minted silver. Amongst the various states that were established in India on the fall of the Moghal Empire Nizam-ul-Mulk, the founder of the Hyderabad dynasty, had established himself, as the "Subadar or the Viceroy of the Deccan." History tells us that one of the most jealously guarded of the Royal Prerogatives has always been the coining of money for circulation amongst the subjects of the rulers. In the unsettled times which preceded the occupation of India by the English, the Indian Rulers, when travelling through their Dominions, were accompanied by their "Masters of the Mint," who were usually nobles or high officials of the State; coins were struck to commemorate victories, and other

important events. A list of the most important coins of the Moghal Emperors will be found in the Appendix A.

Permission was granted by Charles II in 1677 A. D., to the East India Company to coin money, on the condition that it should not resemble English Currency.

Moor in his "Narrative of the operations of Captain Littles Detachment," (London 1794) gives the following interesting account of the state of the Mint and mode of coining in Bombay at the end of that period.

"In Bombay there is no mechanical pro-
"cess either for ascertaining the value of
"the piece, or of giving it the impression. The
"manner is as follows:—

"The metal is brought to the mint in bars
"the size of the little finger, where are a num-
"ber of persons seated on the ground provided
"with scales, and weights, a hammer and an
"instrument between a chisel and a punch;

' before each man's berth is fixed a stone by " way of anvil. The bars are cut into pices, by " guess, and if, on weighing, any deficiency is " found a little particle is punched into the " intended rupee; if too heavy, a piece is cut " off, and so on untill the exact quantity re- " mains. These pieces are then taken to a " second person, whose whole apparatus consists " in hammer and a stone-anvil and he batters " them into something of a round shape, about " $\frac{7}{8}$ inches in diamater, and $\frac{1}{8}$ inches thick; when " they are ready for an impression.

" The die is composed of two pieces, one " inserted firmly into the ground; the other, about " Eight inches long is held in the right-hand " of the operator, who squatting on his heels " (the posture in which all mechanics and artists " work; the posture in which every thing is " done in India, for if a man has a dram given " him, he finds it convenient to squat upon his " heels to drink it), fills his left hand with the " intended coins, which he with inconceivable " quickness slips upon the fixed die with his

"thumb and middle finger, with his fore finger "as dextuously removing them when his assist- "ant, a second man with a mall, has given it "the impression, which he does as rapidly as he "can raise, and strike with the mall on the die "held in the eight hand of the coiner. The "diamater of the die is about $1\frac{1}{2}$ inch, inscribed "with the Great Moghul's names, titles, date of "Hejra, his reign &c., but as the coins are not "so large, they do not, consequently, receive all, "nor the same impression. The rupee is then "sent to the treasury, ready for currency, as "no milling or any further process is thought "necessary."

In the South the East India Company had mints in the chief towns of Madras, Arcot, Porto Novo and various other places.

In 1835 A. D. The Companys' Coinage was adjusted according to the Present British Indian Standard, as regards weight and fineness.

In 1773 the East India Company ruled that all the Rupees coined by the Native States in

India, should bear the impression of the 17th year of Shah Alam the last of the Moghal Emperors, and thus the **Sicca** Rupee retained the value of the Moghal Currency.

On the consolidation of the British Empire in India, the outturn of these numerous Mints, was gradually melted down and recoined into the British Government Rupee, but, as far as native states are concerned, these coins still find a ready, acceptance as currency.

The feudatory Nawabs and Rajas, of His Highness the Nizam's Dominions, in their turn enjoyed the rights of minting in their **Jaghirs** or fiefs, as their Lord Master the Nizam did in the state. Hence we find that 30 to 35 varieties of coins were in circulation in the state in the begining of the present century, and even now about 8 to 10 varieties are still found in many of the districts., though they are not tendus.

The element of specific value, which is a necessary associate of every recognized legal tender within the territorial limits of its circu-

lation, was not a feature of the currency of that period. Three distinct kinds of Rupees were issued from these Mints, their fineness depended on the territorial limits of their circulation. Those intended for the payments of the Palace were called **Bag Chulni,*** (current in the garden or Palace); while those for circulation in the city had the appelation of **Shar Chulni,** (current in the city), and those for Mufasil or country were termed **Hukam Chulni,** (forced token). The first was the best in fineness, having about 720 parts of silver per **mille,** whereas the last, being the lowest, sometimes went much below 700 per **mille.**

The state Mints were at Surunagar, Asifnagar Lalaguda, the suburbs of the Capital city Hyderabad, and at Raichur, and Aurangabad, the chief towns of the districts of the same names, *Vide* Appendix B. That of Aurangabad, though a state Mint, was entrusted to the charge of Pestonjee Meherjee, the younger brother of Viccajee Meherjee, the leading bankers of Hyderabad at the time. A silver coin was struck at this

* Prinsep's Tables (published 1835.)

state Mint, bearing the initial letter of Pestonjee, and widely known after him as the "Peston-Shai" Coin of the Nizam's Government, and which Coin was current until lately in the Nandair, Aurangabad, Parbhani, and in some parts of the ceded districts of Berar. Since the advent of the Parsis into the country, there has perhaps been no other family that was permitted by the state to have its own initials or marks engraved on the National Coin. (Vide Appendix C. No. 1i.)

In addition to these state Mints, the Rajas of the Samasthans (fiefs) of Sugoor, Gadval, Gopalpett, Narayanpett, Gurumitkal, Kalvakurthi Kalyani etc., had Mints of their own, and manufactured lacs of Coins, each of which was called after the place where it was minted. Out of these state and private mints, the mint of the Samasthan of Sugoor had become so very prominent, that it threw all the rest in the back ground, and obtained for its manufactured coin the appellation of **Chalni,** *i. e.*, the legal tender, an appellation applicable only to state Minted Coin.

In 1853, the late Sir Salar Jung I * the Prime Minister of the State, while introducing reforms into the other branches of the state, directed his attention to the Coinage. He ordered all the official and non-official mints to be closed in the Dominions, and established a state Mint in the City of Hyderabad, at Sultan-Shai, and fixed the weight‡ and fineness§ of the new state Coin, which he called the **Halli Sicca,** *i. e.*, the Current Coin, on the same basis as the Imperial coinage of Delhi, during Akbar's reign.

In spite of these restrictions, the state not having taken any further steps for the withdrawal of the then current coins of the various mints, there were two kinds of currencies prevalent in the state. The **Halli Sicca,** the official currency, was used in the payments of salaries of the Government servants, and the state demands, whereas the unofficial currency the **Chalni,** served for commercial transactions.

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*Created a K.C.S.I., in 1867, and a G.C.S.I., in 1871, in recognition of his services rendered during the Indian Mutiny of 1857.

‡ 11 mashas is = 172·5 grains.

§ 9 mashas silver and 2 mashas copper, or 818·1 of silver per mille. This standard of weight and fineness is yet maintained.

The Halli Sicca Rupee of His Highness' State weighs 172·5 grains (11 **mashas**) and has a fineness of 818·18 per **mille,** *i. e.*, 141·13 grains of pure silver and 31·37 grains of alloy.

It would be interesting to note that until (1272 Hijri) 1853 A. D., the inscriptions on all the coins of the Hyderabad State minted either at the state or the private mints were those of the kings of Delhi, as proclaimed by the East India Company in 1773, but after this year, the coins were issued with the following inscriptions in Persian, which are yet found on all the Coins of the state:—

Obverse:—"*Nizam ul-Mulk, Asaf Jah Bahadur,*" the year of mintage in Hijri. the figure "92" which represents the name of the Prophet Mohamed, and the initial letter of the ruling Nizam.

Reverse:—Minted at the auspicious town of Hyderabad, in the auspicious year of the installation" (Here the current year of installation of the ruling Nizam is inscribed).

In Appendix C. is given the various coins that are, and were in circulation in the Nizam's State, their years of mintage, distinctive marks, as far as they could be deciphered, their weight in grains and their fineness etc.

Some of the coins shown in the appendix are very few in number, indeed, their very existence may be considered as nominal. The fineness of these coins is not uniform, some are higher than the fixed standard, and some much below, as the process of assaying was of a very primitive style of cupellation.

Having described the historical facts regarding the currency, I will now, before proceeding to give the details of manufacture, speak a few words on the weights used in the state for weighing gold and silver, and consequently for the manufacture of the coins.

The measure of weight has been established from the weight of a seed called **Rattie,** the

red seed of the Plant Abrus-Precatorious (the wild Liquorice) and **Masha** (broad beans).

The following table shows the relation of the weights that were used in the manufacture of the coin at the Hyderabad Mint till 1900, for coinage. All the transactions in gold and silver in the market are still carried on by these weights. These weights have been handed down from the weights used in the imperial Mint at Delhi:—

8 Chaval ... (grains of rice) ...		Make one Ruttee.
4 Jawar (sorgham vulgares) ...		
2 Ghaun ... (grains of wheat) ...		
8 Ruttees ...	make one masha.	
11 Mashas...	make one Halli Sicca Tola or Bhar.	

The tola is the standard weight, and weighs 172·5 grains troy. The British Indian Rupee at this weighs 11·5 mashas or 180 grains troy.

Process of Manufacture Coin.

When the Bullion was tendered to the Mint by the Bankers it was weighed by the tola

weights. and sorted according to the different qualities of the metal as shown by the assay marks on the bars. As a general rule bars of gold and silver of European, American and Chinese manufacture were not premelted, but the standard fineness marked on them was taken as of sufficient accuracy for alligation purposes at the different fixed rates per cent of alloy for each. As for those bars on which the fineness was not marked, a chip was cut from each and assayed by the native processes of cementation for gold called "*Pulum*," and blow-pipe cupellation for silver. which I will describe further on.

The Hyderabad scale of alloy, which was fixed by Government for different kinds of silver Bullion and coins of higher fineness than the standard (9 parts of silver to 2 parts of alloy *i.e.*, 818·18 per mille) is shown below:—

1	London	bar silver,	902·0	fine	10·554 % Copper.
2	Do.	do.	995·8	,,	21·721 ,, ,,
3	Do.	do.	997·9	,,	21·977 ,, ,,
4	American	do.	988·0	,,	21·989 ,, ,,

5	American	bar silver,	975·0	fine	19·172	% Copper.
6	San Francisco	do.	985·0	,,	20·400	,, ,,
7	Geneva	do.	997·0	,,	21·867	,, ,,
8	Australian	do.	996·0	,,	21·745	,, ,,
9	Paris	do.	997·0	,,	21·857	,, ,,
10	Chinese Syece *	do.	986·0	,,	20·523	,, ,,
11	Mexican	Dollars	902·0	,,	10·255	,, ,,
12	Mixed	do.	900·0	,,	10·011	,, ,,
13	Zanzibar	do.	901·0	,,	10·133	,, ,,
14	Peruvian	do.	898·0	,,	8 766	,, ,,
15	Chopped	do.	902·0	,,	10·255	,, ,,
16	Maria Thersa	do.	835·0	,,	2·068	,, ,,
17	Double Florin		900·0	,,	10·011	,, ,,
18	Romania 5 Lai		902·0	,,	10·255	,, ,,
19	Japanese Yen		900·0	,,	10·011	,, ,,
20	Java guilders		835·0	,,	2·068	,, ,,
21	British Indian Rupee		916·6	,,	12·040	,, ,,
22	Persian Rupee of Shiraz					
23	Bhopal Rupee		896·0	,,	9·522	,, ,,
24	Bikanir Rupee		962·0	,,	17·589	,, ,,
25	Goa Rupee		865·0	,,	5·732	,, ,,
26	Madras Half Pagoda		894·0	,,	9·293	,, ,,
27	Do. 5 Fanam		900·0	,,	10·011	,, ,,
28	Larin of Arabia		965·0	,,	17·956	,, ,,

* This word is the foreign rendering of the Chinese word "Sai-Sz" which means "fine silk," and evidently relates to the fine fibrous or silky fracture of fine silver (*Vide* Percy Vol. 1 P. 298 foot note.)

Every other kind of silver was alligated on a cupellation assay; the whole metal tendered for coinage was not premelted for granulation assay musters, as is now done, but a tola weight cupelled and alloyed, as the bead weighed more or less than 9 mashas of pure silver. For gold assay $\frac{1}{4}$ tola or about 86·125 grains were taken.

In appendices D. and E. two tables are given showing the weight of silver or copper required for each excess Ratee (or its fraction) of copper or silver found on the cupellation assay.

The losses allowed on melting silver and coins were:—

For Bar silver of all denominations	·500 to ·625	tola	%
,, Coins ,, ,,	·750 to ·875	,,	,,
,, Clipping from the manufacture of coins	·625 to ·750	,,	,,
,, Silver recovered from Dross	1·000 to 1·125	,,	,,
,, Coin wasters	1·000	,,	,,
,, Country Refined silver	1·000 to 1·250	,,	,,

For the sake of convenience I divide the process of manufacture of hand minted coins, as had been carried out in the Hyderabad Mint (on the same bases as those at the Delhi Mint) as follows :—

I. The blow-pipe cupellation assay called in the native language "*Chashni*" meaning *taste or trial.*

II. The melting called "*Gulakht.*"

III. The manufacture of blanks (plain-discs) called "*Billa-Sazi.*"

IV. The annealing and blanching called "*Tab-Kashi*" *i.e.*, drawing through fire.

V. The coining called "*Sicca Sazi.*"

1. Process of Assay or "Chashni."

(*a*) *Silver Assay.*

This operation is termed by the natives "*Chashni*" which literally translated means in Persian "*taste or trial.*" In the presence of a responsible officer of the Mint, called the Sadar (Head) Daroga, the blower accura-

tely weighs on a pair of hand-made fine scales one tola (172·5 grains), of the silver to be tested. He then prepares his fire for cupellation, by filling wood ashes almost to an inch of its top, in an earthen ware tumbler shaped vessel, about 8 to 10 inches in diameter at the top 4 to 6 inches at the bottom, and about 9 inches high. The surface layer of the ashes is smoothed and levelled by slight pressure of the fingers, and then the cupel is placed in the centre of the ash-bed, and to prevent the edges of the cupel being broken by the weight of charcoal around it, it is buried in ashes; the surface is sloped towards the inner side of the furnace.

The cupels are made of calcined bones reduced to a coarse powder, mixed with cow-dung, shaped like little saucers about 1″ or $1\frac{1}{4}$″ in diameter. The weight of each of these cupels is from 300 to 350 grains. The cow-dung is used as a binding material with just sufficient water to allow the dough to be moulded by hand into shallow saucers. The cupels are air then dried.

In this cupel the weighed metal is placed with 1 to 1½ tolas of pig-lead, and large pieces of charcoal are placed round it, so as to completely cover the cupel on all sides, leaving just sufficient opening in front of the operator to allow his blow-pipe, (a broken piece of gun-barrel from 18 to 24 inches long, of a ½ to ¾ inch bore or a gas pipe of the same dimension) to be inserted, so that the flame can be made to play directly on the cupel. Even this opening is closed round the blow-pipe by smaller pieces of charcoal, so as to prevent any draft of air playing on the cupel. Now a few pieces of ignited charcoal are placed about the pile and the operator commences to blow. No further precautions are taken to heat the cupels before charging, so as to prevent the spurting of the molten mass by the escape of steam, from insufficiently dried cupels, or escape of CO_2 from the unburnt carbon of the bone-ash used, by contract with PbO.

In one charge of the furnace, an expert blower can blow two assays at a time. As the charcoal gets burnt the operator piles fresh char

coal on the top. Should ashes fall into the molton mass on the cupel it is blown off by a stonger blow, and pieces of charcoal too heavy to blow off are removed carefully by a pair of tongs.

This process of cupellation continues for about 20 to 30 minutes. When the button "brightens up," the operator immediately extinguishes the fire by sprinkling water over his refined button allowing very little time for "spurting." An expert can manage this very well, but I have seen many a time that "spurting" does take place.

When perfectly cooled by water, the cupel with its adhering ashes is taken out of the furnace, and the button is removed by breaking the cupel. It is then scratched with the nails or a sharp pin of iron to remove the adhering bone ash, and washed. The appearance of the button on the bottom indicates the adherence of the oxides of the base metals. These are removed by hammering on an anvil and washing, and again hammering wet. Thus a greater part of the oxides is removed, but a part of it in fine powder is imbeded in the button which under a

magnifier distinctly shows itself, as a black or brownish stain on the dead shining surface.

When the button is taken off the cupel, it often presents a globular surface or even more sharply rounded on its under than on its upper surface, showing the presence of lead. The proportion of lead used for cupellation being very small, the button is always impure and from several analyses I have made of such buttons. I found that the silver which was taken as 1000, fine is invariably between 997 and 998 per mille. This button is then weighed against the weight taken for assay and the excess or the deficiency per 9 mashas of pure silver is calculated in Ratties and its fractional parts. The whole of the metal tendered for minting is then calculated for alligation. If the silver is found to be more than 9 mashas in the tola of alloy taken for assay, copper is added, and if less, silver, to bring the metal to the standard fineness.

From the above it will be observed that no allowances are made for the presence of silver in the lead used, nor for the cupellation losses.

No "Checks" are used. Invariably the cupelled button is cut in two and its fracture and colour noted. If the button shows larger grains and a white colour, the assay is said to be "incomplete," and a fresh assay is taken, if it is of a fine grain and bluish gray colour it is said to be "properly finished."

The whole of the cupellation work is done by the operator in a sitting posture.

All the pieces of broken cupels are collected, and, when in sufficiently large quantities, silver and copper are recovered from them by the following processes.

This is a process of liquation on the primitive style.

The bone ash, with its adhering litharge and ash, is ground fine on a slab of stone with a cylindrical stone, mixed with fresh litharge in the following proportions, made into balls about the size of an egg, air dried and liquated.

Cupel with its litharge called "*Kharal*," —2 parts.
Fresh Litharge called "*Ada*." ——————1 part.
Cow-dung and clay———— sufficient to bind.

These balls are heaped in a conical form in an earthen-ware bowl shaped furnace with a spout to let the liquated Argentiferous lead run out, charcoal is placed over them and blown with a pair of belows. As the scum forms on the surface it is cleared to one side with a piece of bamboo stick. This scum, with the slag contains the copper.

When it is found that no more lead liquates, the scum with the slag is removed, cooled, ground, washed clear of wood ashes, melted with borax, and cast into finger bars.

The cost of liquating 50 lbs. of cupel dust is.

Charcoal	20 lbs.	6 annas or 5*d.*
Litharge	25 lbs.	Rs. 4 or 3*s.*

A man employed at a cost of 8 annas (6 *d.*) a day can work 50 lbs.

When a supply of litharge is not at hand, lead is melted and granulated in wood ashes and well ground while hot with a wooden muller and used instead. The lead and the ashes are taken in equal quantities.

(*b*) *Gold Assay.*

For gold assaying the following cementation process called "*Putum*" was in vogue, as far back as 1894, and is even now generally followed by the Indian jewellers for purification of gold.

About (80·125 grs.) or half a tola of gold that is to be assayed or purified is taken and beaten into four very thin leaves. Each weighing approximately 21·5 grs. The weight of each gold leaf is recorded before and after subjugation to the process.

The cementing mixture is made of:—

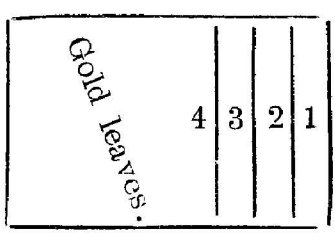
Finely ground red brick dust, 2 parts.

Sodium chloride (salt) finely tritrated 1 part.

Tamarind water or rice gruel. { Sufficient quantity to make the above ingredients into a paste.

A piece of broken earthen pot about $6'' \times 4'' \times {}_{16}^{3}''$ is taken, and on this the dry brick dust and salt mixture is evenly spread to about $\frac{1}{4}''$ in thickness.

On this one of the four leaves smeared in the cement is placed. On this first layer of leaf another leaf smeared as before is laid leaving about $\frac{1}{4}$ of the first leaf on the longer side uncovered with the second one, and so on till all the four leaves are properly arranged thus :—



All these four leaves are now covered with dry cement and kept aside. Any number of such assays are got ready as are necessary.

Now 40 cow-dung cakes about the size of the palm of the hand are arranged in a circular heap about 18'' in diameter on the floor of a room, and in the center an assay is placed and

covered up without disturbing the cement, with 60 other cow dung cakes in a conical heap.

When all the required number of assays are thus got ready, they are set on fire and allowed to burn down. These assays remain in the ashes till the earthen pot pieces are perfectly cool which generally takes 10 to 12 hours. For convenience this work is got ready in the evening and allowed to burn down all-night. The room during the night is locked. The next morning the assays are removed carefully from the ashes, the leaves carefully cleared of the adhering dust and weighed. If a piece of the leaf falls on the earthen-ware piece it is carefully removed and weighed.

If the purified leaf has a beautiful pale gold colour, and is soft and does not emit a sharp metalic sound on being rung on a hard surface but a dull sound, the assay is supposed to be complete: invariably touch-stone is used to verify this.

If these tests are not satisfactory, the leaves are again subjected to the same process. It was also a practice to weigh the leaves before and after this second or third fire, and if they continually lost weight the gold was considered to be of a very inferior quality and allowed to go through fire till weight was constant and gave the above tests.

After my return from England I had specially interested myself in the cementation process and had many assays made. When carefully carried out the gold assayed 998·6 to 999·0 fine, which was taken as 1,000 for alligating purposes.

In this process I found that the fineness of gold depended mostly on the procedure adopted, and the material used for cementation.

1. When a draft is allowed to play freely on the assays, a fierce fire is made causing the gold leaf to be melted instead of being purified, hence a slow fire is required.

2. If the same mixture of cement is used for the second or third trial, the loss was grea-

ter. For the second and third cementation I tried the following mixture with satisfaction.

Brick dust,————3 parts.
Sodium Chloride——1 part.

3. The piece of earthen pot had also much to do in reducing the weight of gold and causing loss of metal, the thicker the piece used I found the loss heavier—$\frac{3}{16}$" answers the purpose very well.

When about 10lbs. or so of the brick dust from the gold cementation process is collected, the gold and silver are recovered, by mixing with

2 parts calcined brick dust.
1 part Litharge in fine powder.

This is liquated and cupelled by the processes described above. The button of gold-silver alloy is melted with equal weight of sulphur and copper in a clay crucible and allowed to cool down. The pot is then broken, the sulphides of copper and silver are separated, from the refined button of gold by hammering. These

sulphides are roasted on a piece of broken earthen pot and then cupelled in the usual way and silver recovered.

II.– The Process of melting called "Gudakht."

This operation is termed the "*Gudakht*" which means in Persian "*melting.*"

Before describing this process, it would be better to know how the melting pots, moulds, furnaces etc., are made.

(a) *The melting pots.*

A special kind of red earth. (Clay with ferric oxide) ...	20 parts.
Charcoal	$2\frac{1}{2}$ parts
Rags or Bengal gunny bags (a kind of coarse hemp cloth).	4 parts.

Water sufficient to bring the whole stuff to the contingency of a plastic paste for moulding by hand.

All these are pounded to such an extent that the fibres of the canvas are no more visible,

and the whole forms a plastic mass, capable of being moulded by hand.

Oval crucibles are moulded by hand from this mixture to melt from $\frac{1}{2}$ a tola (86·25 grs.) to 5 to 6 thousand tolas (125 to 150 lbs.) of metal.

The outward dimensions of one of the largest crucibles are $18'' \times 12'' \times 2\frac{3}{4}''$, the bottom being from two to two and a quarter inches thick, these crucibles are air-dried, and when found to be perfectly dry, a coating of half an inch in thickness is made inside and outside with a mixture of 5 parts of the prepared clay, 3 parts fine sifted sand and glazed with saturated borax water and air-dried.

The upper edge of the crucibles to about $2\frac{1}{2}$ to 3 inches, is made from the same mixture as the coating. When the coating and the edge have perfectly dried, they are used for melting. The object of this coating is the same as that of the coating of borax given to the Morgan's Plumbago crucibles.

The crucibles used by native jewellers in India are made in the same way, but those used for melting gold are glazed inside by melting borax in them before use.

(b) *Moulds for casting finger bars.*

The moulds are made of the same material as the crucibles, a wooden pattern is made for them and casts taken.

The pattern is made by nailing half round pieces of $6'' \times \frac{3}{4}'' \times \frac{1}{2}''$ wood on a board $18'' \times 12'' \times \frac{1}{2}''$. Each mould contains recepticles for casting 10 to 15 finger bars.

When these moulds are perfectly air-dried they are well smeared with castor oil and burnt on a charcoal fire. These moulds are oiled with castor oil when being used for work.

(c) *The Furnaces.*

A circular pit about 2 feet in diameter, and of the same depth is dug and built up with red earth bricks to about a foot on the surface of the ground. A slant hole about 3" in diame-

ter is left from the surface of the ground to the middle of the furnace for a pair of hand bellows made from raw cow hides; a wall about 2 feet high by 9 inches thick is built on one side to protect the bellows-man from the radiation of heat, and to prevent the bellows being burnt by sparks of fire.

The crucible is placed on four crucible stands made of the same material as crucibles, representing a fruston of a cone, so as to allow the draft to play all round the crucible.

(d) *Fuel and the melting process.*

Wood charcoal is used for melting purposes. In order to expedite the melting a pair of bellows is used on the top of the fire with a long hollow cylindrical nozzle like a test tube, made of the moulded clay, having a side hole about $\frac{1}{2}'$ in diameter, about 2 to $2\frac{1}{2}$ inches away from the closed end.

When the crucible becomes red hot the charcoal fire from it is scooped off with an iron ladle and the silver placed in it, covered up with fire and fresh charcoal added. The blowing is con-

tinued till the metal is melted. For a pot of five to six thousand tolas (120 to 150 lbs.) it takes 3 hours for the 1st charge and 2½ hours for the subsequent charges, three charges in each furnace in 8 hours are taken.

When the mass is in a perfect liquid state it is well stirred with an iron rod, and the alloyed metal ladled out with a small crucible, into the open oiled moulds placed on the floor. This casting continues till the whole or nearly all the metal in the large crucible is finished. When fresh metal is added and melting continued. During a working day of 8 hours with one man for blowing, and one man for ladling and casting, and one man to supervise, 18,000 tolas or (about 443·5 lbs.) of metal can be turned out for coinage at a cost of 1 Rupee or 1 s. per day for wages. It takes (one maund) or 80 lbs. of charcoal, and ¼ lb oil, per 1000 tolas (25 lbs.) of metal cast.

After the requisite amount of work is turned out, the furnaces are cooled down with the crucible in it by throwing water on them, and

when found perfectly cool the droppings of the metal and the silver particles from the crucible are recovered the next day by pulverizing and washing the pounded stuff in water.

The melters are allowed a melting loss of 1·5 to 2% on the weight of the metal given for work. After casting into finger bars, a bar is taken at random and cut in two, and a piece from the centre, weighing about one tola (172·5 grs.) is taken by the Head man and assayed by the blow pipe cupellation process described above. The Head melter thus is left to the mercy of the blower, unmindful of the inaccuracies and teacheries of the latter in cupellation. If they both disagree as to the fineness of melted silver, the decision is left to a stanger gold smith under the supervision of the Head of the Mint. The defeated party has to pay all costs of remelting. This has led to the mutual union of the melter and the blower, and the debasement of the hand minted coins in India.

For melting gold the same process is followed, but great care is taken in the working.

III. The Manufacture of Blanks (plain discs) called "Bill-Sazi."

After the settlement of the fineness of silver by blow pipe cupellation assay, the metal is passed on by weight for cutting and making plain discs or blanks called in Hindustani "*Billa.*"

In this processes of manufacture, the cast finger bars are cut with a cold chisel into approximate bits for the intended coin.

When a number of blanks is thus cut, a man weighs them on a fine country scale one by one to the standard weight, if the blank is heavy a chip is clipped off and adjusted. If it is light, a notch is made in the centre of the blank with a cold chisel and a piece of metal required for the difference is hammered into it and weighed. Thus all cut blanks or weighed singly and in batches of 50 and 100.

When the cutting and adjusting of all the blanks is finished, a charcoal fire is made on the ground and 200 to 300 blanks spread and heated to almost dull red heat. A boy does this work

Each piece is then taken out of the fire by a pair of hand clippers and the four edges hammered alternately, this gives the blank an octagonal shape ; after this process they are reheated and the corners are rounded, and the blank flattened and made circular ; all this is done on a fine black granite stone with a hammer. The final trimming and bringing the blank to the circular form of the coin is done on an anvil fixed in a stone, by holding ten blanks in a hand made pliars, and giving light continuous blows on the edges, while continually turning them so as to make all the ten blanks in the batch of the same diameter. When the blanks are ready they are counted, weighed, and made over to the annealers for blanching. Gold coin blanks of all denominations are made on the same principle.

IV.—Annealing and Blanching "Tab Kashi" *i.e.*, drawing through the fire.

The blanks are weighed over to the annealers *i.e.*, Tab-Kash in bags of 2000 pieces. They are then boiled in a large copper vessel containing the following solution.

Tamarind 2 lbs.
Sodium Chloride (salt) ½ lb } per 1000 blanks.

Water sufficient to make a thick gruel like paste.

Only one-third of this is taken for the first boiling.

A bed of charcoal from 2½ to 3 inches high is made on the floor of a room sufficient to take ten to fifteen thousand blanks, and the blanks boiled in the above solution in a copper vessel are evenly spread over the bed, wetted with the solution, and covered with charcoal pieces evenly. This pile is set on fire by fanning with bamboo fans. When the pile is on fire all round it is allowed to burn. When the blanks have assumed a dull red heat, the top cover is cleared off with a piece of bamboo, and swept over with a broom, and the blanks are removed from the fire and allowed to cool in the air. When cool, they are again boiled in the remaining two-thirds of the solution of the tamarind mixture till they are dull white. The trace of this mixture

is removed by washing the blanks in pure water. They are then wiped dry with unbleached calico cloth and given over for coining.

During the process of heating, when the fire is fierce, many blanks get sweated and cause loss. The ashes are cleared and particles of silver recovered by washing.

The object of fanning the heap is to raise the temperature rapidly until the blanks have attained a dull red heat, after which they are cooled in the air on the floor of the room. It is at this stage, that no consideration having been paid to the fact, that the copper in the silver—copper alloys below a low red or black heat combines rapidly with oxygen, and too much of the copper having been oxidised is rendered soluble in the acid mixture of the tamarind water, a greater loss is caused in the weight of the coin.

This loss is under unskilled labour invariably exceeds 5 %.

The tamarind water is thrown away, and no recovery of copper is made to verify the results. Nor is any allowance made in the melting for this loss in allegating the metal by addition of extra copper, and no account of primitive unskilled assay in the first instance, the coins run either much higher or lower than the fixed standard.

The following is the average cost of annealing for an out turn of 50,000 blanks per day:—

For labour per mensem:—

12 Labourers on Rs. 8 (8s.)

1 Head Annealer on ,, 15 (15s.)

For Material per day:—

Tamarind 100 lbs. for Rs. 5·25 (5s. 3d.)

Salt 25 lbs. for Re. 1·5 (1s. 6d.)

Cloth 50 yards Rs. 8 (8s.)

For gold coins a different process is used—

The blanks are annealed to dull red heat and air cooled, and boiled in earthern saucers to almost dryness in the following mixture till the liquid assumes a syrupy consistency and fumes

of Nitrogen Pentoxide (N_2O_5) are given off Voluminously, when fresh water is added, and cooled.

Alum	$\{Al_2(SO_4)_3 + K_2SO_4 + 24 H_2O\}$.	5 Tolas per 100 blanks.
Nitre	(KNO_3)	5 ,, ,, ,, ,,
Salt	(NaCl)	10 ,, ,, ,, ,,

Water sufficient to cover the blanks.

The blanks are washed with clean water and colored by boiling in the following mixture The red stain of red chalk is allowed to remain on the partly wiped blanks to give them a reddish appearance when coined.

Red chalk	10 Tolas.
Sulphate of copper ($CuSO_4$)	$\frac{1}{4}$,,

Water sufficient to cover the blanks.

Native Jewellers use one of the following colouring, mixtures for gold, which is sometimes used for this work also in the same way. The gold articles are first heated to a dull heat and immersed in dilute sulphuric acid (1:8) to remove the oxide flim, wiped clean before using these mixtures, or pastes.

(1) Nitre (KNO_3) 2 parts
Sal ammoniac (NH_4Cl) 2 ,,
Salt ($NaCl$) 2 ,,
Sulphate of copper ($CuSO_4$) $\frac{1}{16}$,,
Water one ounce.

The articles are boiled and the mixture is evaporaten till the yellowish gold colour comes on

or

(2) The following stock solution is made and when required for use it is diluted with an equal quantity of water, and the article to be colored is cleaned of grease etc, with Jeweller's red sand, wiped dry and boiled in it till the desired colour is attained.

Nitre (KNO_3) 2 parts.
Alum $Al_2(SO_4)_3 + K_2SO_4 + 24H_2O$. 1 ,,
Salt ($NaCl$) 1 ,,
Water one ounce.

A piece of sovereign gold (9-5 per mille) in immersed in this mixture and boiled till almost dry, stirring all the time with a piece of bamboo. When it has assumed a syrupy consistency the

piece of gold is taken out, water added and kept as a stock solution.

This process of coloring is called "Buni" in the native language.

or

(3) The following receipt for gold coloring pastes used by the native jewellers, are kept as a trade secret: though tedious in operation, they give the best results as I have tried them.

For this three different pastes are made as shown below; each to be used in succession. Care is taken that the articles are clean from grease etc., and thoroughly washed before the other paste is put on.

Paste I.

Sulphate of copper	1 part.
Salt	2 parts.

Water sufficient to make a thick paste.

With this the articles are well smeared. For a number of smaller articles, earthen saucers (I used Berlin evaporating dishes) are use for boiling and evaporation.

The article being well covered with the paste are placed on a hot charcoal fire and continually turned over with a piece of a bamboo stick till the paste is almost dry. Then the article is dipped in water washed clean, with jewellers red sand.

Now it is ready for the second process.

Paste II.

Nitre	1 part.
Sal Ammoniac	1 ,,
Salt	1 ,,

Water sufficient to bring it to pasty consistancy, as (I).

This is used after cleaning and washing the article, those parts that are required to be burnished, when finished should now be burnished, and those to be left dull are allowed to be dull. After the articles are ready the final colouring paste as shown below is applied in the same way, and the articles are heated or boiled as required, and then washed clean.

Paste III.

Copper Sulphate	1 part.
Salt	2 parts.
Sal Ammoniac	2 ,,
Water to form a thick paste.	

V.—The coining called "Sicca Sazi."

This is last process in the manufacture of coin by which the impression is given to the coin from the design cut on a steel surface called a die.

The bottom die on which the coin is placed is called the obverse, and is made from a circular piece of steel $1\frac{7}{8}''$ long $\times 1\frac{1}{2}''$; diamater.

The bottom is tapered and made square to about 1", leaving about $\frac{1}{4}''$ circular on the top surface, on which the inscreption is engraved by hand. The reverse die is also of the same shape and size but about $\frac{3}{16}$ smaller in length.

The diamater of the surface of letting for Rupee die is $\frac{3}{4}''$. That for the $\frac{1}{2}$ Rupee $\frac{5}{8}''$, for $\frac{1}{4}$ Rupee and $\frac{1}{8}$ Rupee $\frac{1}{2}''$ and for $\frac{1}{16}$ Rupee $\frac{5}{16}''$.

The obverse die is firmly wedged in a hole made in a piece of iron anvil 4" square at the top and 3" at the bottom 5 to 6" high, of which nearly half is well imbeded in a hole cut in a large bolster of black granite burried partly in the ground. This bolster is sufficiently large to avoid the vibration caused by the blow of a sledge-hammer and prevent the quivering that would arise, and cause the coiner's hand unsteady.

The reverse die is similarly wedged in wrought iron handle, 9" long and from $1\frac{1}{2}$" to 2" thick at the bottom. This handle is called "*Muthi*."

In front of the operator on the other side of large bolster a small pit 2 feet square and as much deep is dug in which the hammerman stands-leaning his knees on the boloter when he strikes the blow.

The operator or the coiner has a platform raised sufficiently high, on the opposite side of the hammer, so that he can sit at ease during the coining. He takes a few blanks in his left

hand, and puts a blank on the engraved surface of the bottom die and with the reverse die in his right hand, turns it round and round till he finds that both the dies are perfectly level. If they are not level a slight blow is given by the hammer in the centre, and again examined. As soon as he finds that his dies are perfectly level and give perfect impression on both sides, the coining operation goes on. The coiner places a blank on the obverse die and holds his reverse on it, and with a well practiced blow the hammer finishes the coin. This struck coin is pushed forward by the coiner by a push with a fresh blank in his left hand.

The blank not being large enough to cover the full surface of the Engraving on the dies, consequently the coin does not receive a full impression.

The top die is always moved round as the handle gets worn out under the blows of the sledge. This changes the position of the lettering on the coins.

The gold coins are called the Ashrafees or Gold Mohors. The mode of manufacture, inscreption, weight, shape, size, and the denominations, are the same as these of the Silver Coins.

The alloy used was Bar silver; the proportion was 10 parts of gold to 1 part of the alloy or 909·09 per mille. The gold coin is not a legal tender of the State, but is expressly used for distribution of alms by His Highness the Nizam, or for special presentation purposes. The smaller pieces are invariably used for the manufacture of Jewellery.

The mode of manufacture of the copper currency was the same as that of the silver. The metal is a mixture of 4 parts by weight of copper and 3 parts of lead. The pieces are cut irregularly to the weight of a tola, and after boiling them in tamarind water, in a cold state, are coined. The following is a discription of the various hand minted copper coins that were in circulation in the State.

1. *Sahi-Pice.*—This is a coin of the Bahamani Kings of Bedar. It has been in circulation in the Gulbarga, Bedar, Nandair, Purbhani, Aurangabad districts and the Berars. Lately it has been called in from circulation. These coins are all worn out, but on some selected species the inscription that could be deciphered was "Sultan Abdul Gazi Ahmed Shah," and the mark of a toddy tree.

There are two kinds, one of a smaller size and weight called the single pice, and the other double pice or Dhaboo, equal to two of the smaller kind in value weighing 2 tolas.

2. *Alamgiri.*—The Old Alamgiri is circular in shape weighing one tola (172·5 grains). This was minted at Aurangabad in the Reign of His Highness the Nizam Ali Khan Bahadur. The inscription is not tangible, but a letter NUN (ن) the initial letter of His Highness, and a "Spendent Sun" are found on good specimens. The Current Alamgiri which is yet in circulation in the State bears the same inscriptions as those

on the silver coins but are of irregular shape and size, minted at Hyderabad.

3. *Shamsheri.*—Resembles the Old Alamgiri minted at Basmathnagar in the Parbhani District, Current during the reign of His Highness Siraj-ul-Mulk Bahadur – Now found as rare specimen.

4. *Hatti Paisa.*—The Elephant Mark Coin, distinctive marks the figures of an Elephant on one side and a letter Tai (ت) on the other. minted at Nagpur in the year 1272 Hijri, was current in the Berars, Nanded and Parbhani district, now found as rare specimens. The rate of exchange was two Alamgiri dubs per coin.

5. *Tirsul* —This was a Peshwa coin weighing 7 mashas (165 grains). The distinctive mark on one side Trisulia (adopted from the trident—Trisul of Siva, the Hindu God), and on the other side a bow and an arrow. Was found in the districts adjoining the Mahratwara country; rare.

6. *Dowlatabad.*—Minted at Adjunta in the Aurangabad District, in the year 1232 Hijri weight 2 tolas.

7. *Jalnapeit.*—Smallest size copper coin weighing 4 mashas (60 grains), minted at Jalna.

8. *Pharal.*—Another smaller copper coin weighing 4 mashas (60 grains) was in circulation in the Parbhani District.

Pestom Shahi Paisa.—A copper coin minted at Aurangabad by Pestonjee Meherjee. There were two Varieties:—the Half Paisa and the Dhaboo. They bear the same inscriptions and distinctive marks as the Pestonshahi Rupee-Rare.

Symbols:—The different varieties of the hand-minted coins, that were and are in circulation in the various parts of India, resembel each other to such an extent that it is only with patience and practice, that, they could be seperated into various coins of the different rulers under whose sway India has passed. The assay values and the weights are not the

satisfactory testes, that could be applied to these coins, as no two coins of the same mints are similar in touch and weight.

This is mostly due to the debasement of the hand-minted coins, the unskilful procedure of minting as described herein.

The only reliance that could be placed is a careful study of the form of the charecters on the coins, the various mint or town marks adopted, the symboles used with certain inscriptions on the coins; as on the breaking up of the Moghal Empire in the middle of the 18th Century, the various Feudatory States of India, and their dependant Nawabs and Rajas, continued to coin in the name of the last of the Moghal Emperor with the inscription 'Mohomed Shah Bahadur Gazi."

But under the British Indian Coinage act of 1872, all hand-minted coins of the native states were made admissible as currency under

special conditions, thus, withdrawing them from circulation and melting them for recoinage, for the establishment of a Standard British Indian Currency.

The only Native State in the whole of India, yet enjoining the Prerogative right of coinage is the Hyderabad State. Under the Benign rule of the present Nizam His Highness Nawab Mir Mahboob Ali Khan Bahadur, G. C. B., G. C. S. I., the untold difficulties, and loss to the poor Ryots by the exchange between these various coins, and the current Hali Sicca coin and the British currency has been totally removed by withdrawing all these old coins from the currency and, the introduction since 1903 of a milled coin called the Mahaboobia Hali Sicca (*Vide* app. c. 25·d.). The State mint has the best and improved pattern machinary of the latest make, and is worked on the same principles as one of the best mints in the world. It is capable of a daily out turn of 2 lakhs of Silver and a lakh of Copper coins.

The chief symbols that could be found on all hand-minted coins of India are:—

the figures of

(*a*) Animals:—such as the horse, the dog, the fish, a serpant or eel, the lion, the bull, the elephant.

(*b*) Weapons:—such as elephant-goad (Ankus), sword, dagger, spear, mace, bows and arrows, armours.

(*c*) Mythological symbols. The Hindu deities such as the figures of Siva, Vishnu, Hanuman &c. The spedant sun, the lotus, Pádám and Sanká shells the Trisūl, and the swastika cross.

(**d**) Flowers, leaves, trees, dotts, squares, crescents, and stars.

From such marks or symbols, the place of mintage, could be traced. These marks with the year of coinage give a distinctive chapter of history of the epoch.

Here I give the various marks or symbols adopted by different mints on their coins, as far as I have been able to collect.

1. A fish mark is found on coins struck at Lucknow; Fattehgar, Baraili, Azamgar; Benaras.

2. A pistol—on copper coins of Agra.

3. A dagger—on Nagpur, Chanda, Aurangabad, the Berars, and Hyderabad coins.

4. A swand—on Rohilkhand, Bharatpur, Narva coins.

5. An armour—on Bhopal, Bhelsa, Raigad coins.

7. An arrow with three strings:—Kota, Bandi, Partabgar coins.

8. Varieties of Trisula (Trident of Siva) on Sagar, Shrinagar, Jalvan, Balashi coins.

9. Indore (Holkar). Coin have a sun, and on some the figure of the deity Mahadeve.

10. Udaipur, Salimshai, Old Chettur, Kishengad, Jaipur, Mathra have a distinctive mark of a leaf like a fern with some distinctive letters in the Devenagri charactors.

11. Jodhpur, Kochaman, Bapushai, coins have a mark resembling a canned pattern

12. Madras, Arkot, Chandore, Shahpur have a lotus.

13. The Gawaliar coins have a bunch of 5 leaves resembling Holley leaves.

APPENDICES.

Appendix

A list of most important coins of the

Serial No.	Shape of the coin.	Characters on the coin.	Name of the Emperors in whose reign they were minted.	Inscription — Obverse.
1	Round ...	A Togra in Nastaliq.	Humayun 1530—1540.	Al-Khaqanul-Azum, Mohamad Humayun, Badshah Gazi, Khaladullahi Mulkahoo *i. e., The Grand (Khakan) Emperor, Mahomed Humayun, the Victorious King, may his dominions long endure!*
2	do.	Suls ...	Akber 1556—1605.	Nasir-ud-dunyan-Wad-din, Jalaluddin Mahomed Akber Badshah, Gazi Abul Fatteh *i. e., Support of the World and the Faith, Jala-lu-din Mahomed Akber, the Victorious Monarch*
3	do.	Nastaliq ...	Jehangir 1605—1627.	Abul-Fatteh-Nur-ud-din, Jehangir Shah, Akber Shah *i. e., (Abbul-Fatteh) Father of Victory, Nur-ud-din Jehangir Shah, son of the Emperor Akber.*
4	do.	do.	Shah Jahan 1627—1658.	Shah Jahan Badshah Gazi, Shahbudin Mohomed Sahib qirani-Sani *i. e., Shahbudin Mahomed, Shah Jahan, the Victorious Monarch, the Second Qiran (born in planetory conjunction.)*
5	do.	do.	Aurangzeb 1658—1707.	Sikka Zad-der Jehan Cho Bedr Munir; Shahi-Aurangzeb Alumgir *The Emperor Aurangzeb, Alumgir struck coin in the World like the refulgent moon.*

A.

Moghal Emperors now found as rare specimens.

on the coin. Reverse.	Remarks.
Kalima Thaiab. La-illa-illi-la-Mahomed Rasulillah. Meaning ("There is none entitled for worship but God and Mohamed in his Apostle.")	*On account of this religious inscription on the coin, it is held in great reverence. Found very rare, but a lot of spurious coins are found on the market.
do.	Do. do. do. There are also square varieties. The Gold coin called the Akberi Ashrafee bears the same inscription. Real Ashrafees are very costly.
Zarb Jehangir Mahai, Farwardi Elahi *i. e., struck during the reign of Jehangir in the divine month of Farwardi.*	
Abu-bakar-o-adal-Omer Bafzarum Oosman-o-Alum-i-Ali *i. e., Abubaker Justice of Omer, peace of Usman and learning of Ali.*	There is also a square coin with the same inscriptions minted at Surat. In the square the Kalima Thaiab is inscribed.
Zarb-i-(Place of Mintage)* Sun-i-Juloos-mai-manat Manus *i. e., struck at (places of mintage as per Remark Column) in the auspecious year of accession.*	*During the reign of Aurangzeb, coins were struck at the following 24 places. (1) Surat between the years 1076—1114 Hijri. (2) Cambay (Kambayet) 1089—1100 Hijri. (3) Golkonda 1079—1091 Hijri. (4) Shahjahanabad 1094—1097 Hijri. (5) Hyderabad 1117 Hijri. (6) Sholapur 1096 Hijri (7) Ahmadabad 1090 Hijri. (8) Akberabad (Dehli) 1099—1102 Hijri.

Appendix

A list of most important coins of the

Serial No.	Shape of the coin.	Characters on the coin.	Name of the Emperors in whose reign they were minted.	Inscription	
				Obverse.	
6	Round ...	Nastaliq ...	Jahandar Shah 1712-13	Zuddh Sicea ber Nuqra Choon Mehr-o-Mah, Abul Fatteh Gazi Jahandar Shah *i, e., Abdul Fatteh Jahandar Shah, the Victorious, coined silver like the Sun and the Moon.*	
7		do.	Farrukhsiar.	Siccazad Az-Fazl-i-Haq-ber Sim-o-Zer ! Badshah-i-Bahr-o-ber Farrukhsiar *i. e., Farrukhsiar the lord of the land and the sea, coined silver and gold by the Grace of God.*	

A.—*(continued.)*

Moghal Emperors now found as rare specimens.

on the coin. Reverse.	Remarks.
	(9) Baraili 1108—1111 Hijri. (10) Murshadabad 1117 Hijri. (11) Etawah 1100—1101 Hijri. (12) Muzafarabad 1107 Hijri. (13) Barhanpur 1099 Hijri. (14) Gulburga 1098 Hijri. (15) Ajmere 1104—1107 Hijri. (16) Narnole 1099 Hijri. (17) Chinnapatten 1107 Hijri. (18) Multan 1100 Hijri. (19) Bijapur 1105 Hijri. (20) Lahore 1106 Hijri. (21) Sohrand 1136 Hijri (22) Zafarpur 1092 Hijri. (23) Ahmednagar 1096 Hijri. (24) Alahabad 1114 Hijri. The names of places of mintage and the years are taken from specimen coins that are in His Highness the Nizam's Mint, at Hyderabad, Deccan.
Sun-i-Abed Mubarak Zerb-darul-Khilafat Shah Jahan-a-bad *i. e., struck at the Metropolis of Shajahanabad in the auspecious year of accession.*	
Sun-i-Julus Mannat Manus *i. e., struck in the auspecious year of accession.*	

Appendix

A list of most important coins of the

Serial No.	Shape of the coin.	Characters on the coin.	Name of the Emperors in whose reign they were minted.	Inscription — Obverse.
8	Round ...	Nastaliq ...	Mohomed Shah	Sicca Mubarak Mohomed Shah Badshah Gazi, *i.e., The auspecious coin of Mohomed Shah the Victorious King.*
9	do.	Arabic and Nastaliq.	Ahmed Shah ...	Sicca Mubarak Ahmed Shah Bahadur Badshah Gazi. *The auspecious Coinage of Ahmed Shah Bahadur, the Victorious King.*
10	do.	do.	Alamgir II.	Sicca Mubarak Alamgir Badshah Gazi. Sanı. *The auspecious Coinage of the Victorious King Alamgir II.*
11	do.	do.	Shah Alam ...	Sicca-i-Sahib Qiran Zed-Ze-taid Alah. Hami-a-Din-Mohomed Shah Alam Badshah. *Shah Alum the defender of the Faith of Mohomed, with the áid of God struck the Coin of Saheb Qiran.**
12	do.	do.	Bahadur Shah ...	Mohomed Bahadur Shah Badshah Gazı. *Mohomed Bahadur Shah the Victorious King.*

A.—*(concluded.)*

Moghal Emperors now found as rare specimens.

on the coin. Reverse.	Remarks.
Zerb-Mustaqir-ul-Khelafat Sun-i-Jaloos Mai-manat Manus. *i. e., struck* at (the) *Capital in the auspecious year of accession.*	.....
Zerb (Place of Mintage) Sun-i-Julus Mai-manat Manus. *Minted at (place of mintage) in the auspecious year of accession.*	.....
Do. do.	... .
Do. do. and a mark of a dagger.	* *i. e., Impressed the world that his Majesty resulted from a happy conjunction of the Planets.*
Do. do.	This inscription was adopted by all the other Native States on the fall of the Moghal Empire.

Appendix B.

Statement showing the Towns within the Nizam's Dominions (before 1853) where the State and Private Mints were Established.

Serial No.	Name of the town.	State or Private Mint.	Name of the Coin struck.	Remarks.
1	Aurangabad ...	State Mint ..	Chalni ...	These coins were the state coins called Aurangabad Chalni and bear the same appellation as :— (1) Bagh Chalni Wt. 170·8 Fine 833 per mille. (2) Shar Chalni Wt. 171·5 Fine 812 per mille. (3) Hukam Chalni Wt. 170·5 Fine 807 per mille. These coins should not be mixed with Chalni or Sugur, but they were the coins struck under the Govt. authority before, the right of coinage was given to the Masters of the Mint, Kasim Ali Khan, Namdar Khan, Kushall Chund. Girdhardass, Tokaraj, Govindbuksh, and Pestonjee Meherjee, between 1823-40 A. D.
			Govind Baxi...	
			Peston Shai ...	
			Toka ...	
2	Amraoti ...	Private ...	Amraoti ...	
			Nathni ...	

Appendix B.—(*continued.*)

Statement showing the Towns within the Nizam's Dominions (before 1853) where the State and Private Mints were Established.

Serial No.	Name of the town.	State or Private Mint.	Name of the Coin struck.	Remarks.
3	Bidar ...	State Mint ...	...	..
4	Baiganpally (Kurnool Dist. British).	Private „	...	...
5	Chandore (near Jalna Aurangabad Dist.)	State Mint ...	Chandori ...	...
6	Dowlatabad (Aurangabad Dist.)	State Mint ...	...	..
7	Ellichpore (Berars).	do. ...	...	...
8	Gudwal ..	Private „ ...	Gudwal ..	...
9	Gurmatkal (Gulbarga Dist).	Do. „ ...	Gurmutkal ...	...
10	Gopalpett ..	Do. „ ...	Gopalpett ...	...
11	Hyderabad ...	State Mint ..	Hali Sicca ...	...
	Sultanshai ...			
	Surunagar ...			
	Asafnagar ...			
	Lalaguda ...			

Appendix B.—(*concluded.*)

Statement showing the Towns within the Nizam's Dominions (before 1853) where the State and Private Mints were Established).

Serial No.	Name of the town	State or Private Mint	Name of the Coin struck.	REMARKS.
12	Indore ...	State Mint ...	...	...
13	Kalvakurti ...	Private ...	...	...
14	Kulbarga ...	State Mint ..	...	...
15	Kalyani (Bidar District).	Private ...	...	...
16	Kosa ...	Do.	...	...
17	Malkapur ..	Do.	Mulkapuri ...	...
18	Narayanpett ..	Do.	Narayenyett...	..
19	Nalkhora ..	Do.	...	...
20	Raichore ...	State Mint ...	..	...
21	Saugur (Wanparti Taluk).	Private ..	Sugur or Chalni.	...
22	Tirnamal ..	Do.	Tirnamalli ...	...
23	Umerchintha ..	Do.	...	...
24	Wabgaon (near Chandore.	Do.	Wabgaon , ...	...

Appen

Statement showing particulars of the various

Nizam's

Serial No.	Name of the Coin.	Where Minted.	Year of Mint-age. Hijri.	Year of Mint-age. A. D.	In the reign of H. H. the Nizam.	In the reign of Emperor of Delhi.	Distinctive marks.
1	Nagpuri ...	Nagpur	1162	1744	Nasir Jung.	Ahmed Shah.	On Julus. ۳۴
2	Tirmalli ...	Tirmal, during the Ministry of Rukun-ud-Dowlah or Zafar-ud-Dowlah Dhansa ...	1170 to 1171	1752 to 1753	Asafud-Dowla.	Mohamed Azeez-udin Alamgir II.	A "Tika," the distinctive caste mark of Brahmins.
3	Gadwal ...	Gadwal and Latur ...	1180 to 1235	1762 to 1817	Nizam Ali Khan.	Mohamed Shah Alum Badshah.	A date tree on the reverse under "Julus."
4	Gopalpett ...	Gopalpett and Latur..	do.	do.	do.	do	"Go," गो in Mahratti language on the obverse and "La" ला on the reverse on the letter Gazi. غازی
5	Arkati or Ankosi.	Chandore ...	1183	1765	do.	do.	An "Ankose" a hook used by elephant drivers.
6	Narayenpett ..	Narayenpett, in Mahbubnagar District.	1186	1768	do.	do.	"Na," ना in Mahratti on obverse and "La," ला on the reverse on some.
7	Dowlatabad ...	Dowlatabad ...	1227	1809	do.	do.	A "fort."
8	Govind Baksh	Aurangabad, by Govindbaksh, brother of Raja Chandu Lal the Prime Minister.	1227 to 1235	1809 to 1823	Secunder Jah.	Mohamed Akbar Badsha.	A finely cut dagger on the reverse.
9	Amraoti ...	Amraoti in Berar, by a relative of Raja Chandu Lal.	1227 to 1241	1809 to 1823	...	...	A dagger on the reverse.

dix C.

Silver Coins past and present in H. H. the Dominions.

INSCRIPTION OF THE COIN.		AVERAGE WEIGHT.		AVERAGE FINENESS MILLE.		REMARKS.
Obverse.	Reverse.	Minimum.	Maximum.	Minimum.	Maximum.	
Sicca-i-Mubarak Mohamed Akbar Badshahai Ghazi	*Zarb San Julus, Maimanat Manus.*	..	...	...	..	Found as rare specimens in the frontier of His Highness' Territory on the Nagpur limits.
Sicca-i-Mubarak Mohamed Azeezuddin Badshahai Alumgir Sani.	*Zarb San Julus, Maimanat Manus.*	176·6	174·6	Said to be of pure Silver.		Found in Nandair district Rare.
Sicca-i-Mubarak Mohamed Shahai Alum Bahadur Badshahai Gazi.	*Zarb San Julus, Maimanat Manus.*	168·5	169·1	752·0	778·6	Current in the Karnatic District.
Sicca-i-Mubarak Mohamed Shahai Alum Badshah.	*Zarb San Julus. Maimanat Manus.*	173·0	173·5	774·5	778·5	The "Go" is for Gopalpet and the "La" is for Latur where it was minted.
Sicca-i-Mubarak Mohamed Shahai Alum Badshahai Ghazi	*Zarb Arcot San Julus Maimanat Manus.*	...	...	...	...	This is a kind of Chandori coin found in Nander District. Rare.
Sicca-i-Mubarak Mohamed Shahai Alum Badshahai Ghazi.	*Zarb San Julus Maimanat Manus.*	170	171·1	773·0	778·2	Minting sanctioned by the King of Delhi. The "Na" for Narayenpett and the "La" for Latur where it was minted.
Sicca-i-Mubarak Mohamed Shahai Alum Badshahai Ghazi.	*Zarb Dowlatabad Khujista Bunyad San Maimanat Manus.*	..	...	...	...	Rare.
Sicca-i-Mubarak Mohamed Akbar Badshahai Ghazi.	*Zarb San Julus Maimanat Manus.*	1 9·1	170	809·8	811·7	Was in circulation in Nander, Aurangabad, Parbhani Districts. and the Berars.
...	...	...	...	...	...	Rare

*For translations of inscriptions see appendix (A).

Appen

Statement showing particulars of the various

Nizam's

Serial No.	Name of the Coin.	Where Minted.	Year of Mint-age. Hijri.	Year of Mint-age. A. D.	In the reign of H. H. the Nizam.	In the reign of Emperor of Delhi	Distinctive marks.
10	(1) Sugoor or Chalni 3 varieties.	Wanparthy ..	1180 to 1235	1762 to 1817	Secunder Jah.	Mohamed Akbar Badshah.	"Ja," जा Mahratti letter on the obverse and अ on reverse.
	(2) Bagh Chalni ...	...	..	...	...		
	(3) Shar Chalni ...	...	..	...	...	...	...
	(4) Hukum Chalni ..		.	..	...	...	...
11	Pestonshai .	Aurangabad. Pestonji Meherji	1239 to 1256	1821 to 1838	Naserud-Dowlah.	Bahadur Shah.	Splendent Sun on the obverse the letter "Nun" and a thickly cut dagger on the reverse.
12	Nathemi ...	Amraoti in Berar	1237 to 1239	1819 to 1821		...	A Sword with a ring in its hilt.
13	Shri Sieca ...	Poona	...	...	Nizam Ali Khan	Mohamed Shaj Alum Badshah.	"Sri," the name of a Hindu God.
14	Madur ...	..	1240 to 1243	1822 to 1825	do.	do.	Star.
15	Tura ...	..	...	...	do.	do.	An arrow pointed downwards on the reverse with ∴ mark in the letter "Sin."
16	Toka ...	Aurangabad by Toka Raja.	1240 to 1243	1822 to 1825	Naserud-Dowlah.	Bahadur Shah.	A daggar on the reverse.

dix C.—(*continued.*)

Silver Coins past and present in H. H. the Dominions.

Inscription of the Coin.		Average Weight.		Average Fineness Mille.		Remarks.
Obverse.	Reverse.	Minimum.	Maximum.	Minimum.	Maximum.	
Sicca-i-Mubarak Mohamed Akbar Badshahat Ghazi	*Yzarb San Julus Maimanat Manus*	167·2	168·4	702	722-2	(1) Chalni mean Current.
...	...	...	...	71·1	...	(2) Bagh „ Garden.
...	...	...	..	173·3	...	(3) Shar „ City.
..	..	...	..	170·5	...	(4) Hukum „ Forced
Sicca-i-Mubarak Mohamed Bahadur Shah.	*Yazrb San Julus Maimanat Manus* and in coins of 1256 H. *Yazrb Peston* is found.	169·9	171·1	702·7	809 1	The author's Grandfather had minted this coin.
		..	...	..	..	Rare.
Sicca-i-Mubarak Mohamed Shahat Alum Badshah.	*Zarb San Julus Maimanat Manus.*	..	..	.	...	Found as rare specimens on the frontier of His Highness' Territory on the Poona limits
Do	*Do*	...	...	...	..	Rare.
Do.	*Do.*	169·1	169·3	m	...	Rare. Supposed to have been minted by Turai Baz Khan.
Sicca-i-Mubarak Mohamed Shahat Badshah.	...	168·0	169·0	805·6	80 9	Was is circulation in Nandair, Aurangabad and Parbhani Districts, and the Berars.

Appen

Statement showing particulars of the various

Nizam's

Serial No.	Name of the Coin.	Where Minted.	Year of Mint-age. Hijri.	Year of Mint-age. A. D.	In the reign of H. H. the Nizam.	In the reign of Emperor of Delhi.	Distinctive marks.
17	Chandori .	Chandore near Jalna in Aurangabad District.	...	.	..	..	...
18	Wabgaon ...	Wabgaon near Chandore.	...	...	.	.	...
19	Balapuri ..						
20	Malkapuri ..	Berars ...	...	..	..	...	..
21	Raichori ...	Raichore ...					
22	Gurmitkal ..	Gurmitkal in Gulbargah District.	...	...	.	...	..
23	Phulchari ...	Pondichery ...	...	..	..	...	...
24	Lalagurah ...	Struck by General Lalle ...	..	..	...	..	..
25	Halli Sicca ...	...	...	...	..	...	...
	Is of the following varieties.						
	(a) Old Halli Sicca.	Minted prior to 1853.					
	(1) Asaf Jahi..	Hyderabad ...	1170 1174	1752 1756	Asafud-Dowlah	Mohamed Azeez-udin Alamgir II	The letter *Alif* ا the initail of the Nizam.
	(2) Secunder Jhai.	Do ...	1227 1235	1809 1817	Secunder Jah	Mohamed Akbar Badshah	The letter *Seen* س the initial of the Nizam.

dix C.—(continued.)

Silver Coins past and present in H. H. the Dominions.

Inscription of the Coin.		Average Weight.		Average Fineness Mille.		Remarks.
Obverse.	Reverse.	Minimum.	Maximum	Minimum.	Maximum	
...	..	...	..	..	..	Where found in Nandair District. Rare.
..	..	.	...	...	..	Rare.
..	..	..	...	...	..	These also were Current in Berar. Found as specimens.
..	..	...	..	...	..	These are two varieties, one of pure silver, and the other alloyed, were much in circulation in His Highness' Territory, but found largely in the Karnatic District.
...	...	...	...	...	...	
..	...	..	...	...	..	
..	...	...	...	...	...	The Halli Sicca rupee, was the State currency in addition to the other coins shown in this statement which were in circulation during the reigns of the Nizams until the 4th April 1905, from which date old Halli Sicca coins minted prior to 1272 H. (1854) were declared uncurrent by Government Notification of the 26th September 1904.
Sicca-i-Mubarak Mohamed Shahai Alamgir Sani.	*Zarb Hyderabad Farkunda Bunyad Julus Maimana Manus.*	...	...	..	..	All the Halli Sicca coins have their smaller denominations such as 1/2 rupee, 1/4, 1/8 and 1/16 of a rupee with the same inscriptions on them
Sicca-i-Mubarak Mohamed Akbar Badshahai Ghazi.	*Do.*	...	..	..	..	

Appen

Statement showing particulars of the various Nizam's

Serial No.	Name of the Coin.	Where Minted.	Year of Mint-age. Hijri.	Year of Mint-age. A. D.	In the reign of H. H. the Nizam.	In the reign of Emperor of Delhi.	Distinctive marks.
	(3) Nasir Shahi	Hyderabad ..	1222 1271	1804 1853	Secunder Jah and Nasar-ud Dowlah	Mohamed Akkar Badsha and Bahadur Shah.	The letter *Nun* ن the initial of the Nizam
	(*b*) Current hand made	Do. ...	1272	1854	Sir Mir Mahbub Ali Khan Bahadur.	...	The letter *Meem* م the initial of the Nizam.
	(*c*) Machine made Halli	Do. ..	1312	1894	do.	..	...
	(*d*) Machine made Halli Mahbubia Sicca.	Do. ..	1321	1903	do	...	Char Minar with the letter *Meem*, م initial of the Nizam in the arch.

dix C.—(concluded.)

Silver Coins past and present in H. H. the Dominions.

INSCRIPTION OF THE COIN		AVERAGE WEIGHT.		AVERAGE FINENESS MILLE.		REMARKS.
Obverse.	Reverse	Minimum.	Maximum.	Minimum.	Maximum.	
Sicca-t-Mubarak Mohamed Akbar Badshahan Ghazi	*Zarb Hyderabad Farkunda Bunyad Julus Maimanat Manus.*	...	...	...	...	
Nizam-ul-Mulk Asaf Jah Bahadur with the initial letter "*Meem*," the figure 92 which represents the name of the prophet Mohamed, and the year of mintage		171·8	173·4	818·1	816·1	From the year 1272 H (1854) coins of the Hyderabad State show the inscription of the Nizams. The inscription showing the Mogal Dynasty was discontinued
Nizam-ul-Mulk Asaf Jah Bahadur, with the initial letter "*Meem*" the figure 92 which represents the name of the prophet Mohamed, and the year of mintage.	*do.*	171·8	173·4	818·1	816·1	This was the first machine made milled coin
A representation of the *Char Minar* with the letter "*Meem* below the arch. The words *Asaf Jah* and figure 92 between the Minarets. *Nizam-ul-Mulk*" on the right, and "*Bahadur*" on the left of the coin. The year of mintage below the base of the *Char Minar*, and the Grecian border round the coin.	*Zarb Hyderabad etc., etc., the denomination in the centre within a corded ring. A Grecean border as on obverse*	171·8	173·4	818·1	816·1	The rupee 1/4 rupee, and 1/8 rupee are in circulation The 1/2 rupee has not yet been issued

Appendix D.

Table showing weight of Silver to be added for each ratti of Copper or its fraction in excess of 2 mashas of Copper per tola, the standard value.

Excess of Copper in rattis per tola.	Silver to be added per 100 tolas of the metal.	Excess of Copper in rattis per tola	Silver to be added per 100 tolas of the metal.	Excess of Copper in rattis per tola.	Silver to be added per 100 tolas of the metal.	Excess of Copper in rattis per tola.	Silver to be added per 100 tolas of the metal.
·125	·171	4·125	5·676	8·125	11·171	12·125	16·671
·250	·343	4·250	5·843	8·250	11·343	12·250	16·843
·500	·687	4·500	6·187	8·500	11·687	12·500	17·187
·750	1·031	4·750	6·531	8·750	12·031	12·750	17·531
1·000	1·375	5·000	6·875	9·000	12·375	13·000	17·875
1·125	1·546	5·125	7·046	9·125	12·546	13·125	18·046
1·250	1·718	5·250	7·218	9·250	12·718	13·250	18·218
1·500	2·062	5·500	7·562	9·500	13·062	13·500	18·562
1·750	2·406	5·750	7·906	9·750	13·406	13·750	18·906
2·000	2·750	6·000	8·250	10·000	13·750	14·000	19·250
2·125	2·921	6·125	8·421	10·125	13·921	14·125	19·421
2·250	3·093	6·250	8·593	10·250	14·093	14·250	19·593
2·500	3·437	6·500	8·937	10·500	14·437	14·500	19·937
2·750	3·781	6·750	9·281	10·750	14·781	14·750	20·281
3·000	4·125	7·000	9·625	11·000	15·125	15·000	20·625
3·125	4·296	7·125	9·796	11·125	15·296	15·125	20·796
3·250	4·468	7·250	9·968	11·250	15·468	15·250	20·968
3·500	4·812	7·500	10·312	11·500	15·812	15·500	21·312
3·750	5·156	7·750	10·656	11·750	16·156	15·750	21·656
4·000	5·500	8·000	11·000	12·000	16·500	16·000	22·000

Appendix E.

Table showing the Alloy (Copper) to be added for each ratti of silver or its fraction in excess of 9 mashas of Silver per tola, the Standard Value.

Excess of Silver in rattis per tola.	Copper to be added per 100 tolas of the metal.	Excess of Silver in rattis per tola.	Copper to be added per 100 tolas of the metal.	Excess of Silver in rattis per tola.	Copper to be added per 100 tolas of the metal.	Excess of Silver in rattis per tola.	Copper to be added per 100 tolas of the metal.
·125	·781	4·125	25·781	8·125	50·781	12·125	75·781
·250	1·562	4·250	26·562	8·250	51·562	12·250	76·562
·500	3·125	4·500	28·125	8·500	53·125	12·500	78·125
·750	4·687	4·750	29·687	8·750	54·687	12·750	79·687
1·000	6·250	5·000	31·250	9·000	56·250	13·000	81·250
1·125	7·031	5·125	32·031	9·125	57·031	13·125	82·031
1·250	7·812	5·250	32·812	9·250	57·812	13·250	82·812
1·500	9·375	5·500	34·375	9·500	59·375	13·500	84·375
1·750	10·937	5·750	35·937	9·750	60·937	13·750	85·937
2·000	12·500	6·000	37·500	10·000	62·500	14·000	87·500
2·125	13·281	6·125	38·281	10·125	63·281	14·125	88·281
2·250	14·062	6·250	39·062	10·250	64·062	14·250	89·062
2·500	15·625	6·500	40·625	10·500	65·625	14·500	90·625
2·750	17·187	6·750	42·187	10·750	67·187	14·750	92·187
3·000	18·750	7·000	43·750	11·000	68·750	15·000	93·750
3·125	19·531	7·125	44·531	11·125	69·531	15·125	94·531
3·250	20·312	7·250	45·312	11·250	70·312	15·250	95·312
3·500	21·875	7·500	46·875	11·500	71·875	15·500	96·875
3·750	23·437	7·750	48·437	11·750	73·437	15·750	98·437
4·000	25·000	8·000	50·000	12·000	75·000	16·000	100·000