

ENGLISH TRANSLATION

Chapter : 11

11.1 Metals and their characteristics: Now I am going to describe many miracles (wonders) about the metals. Some of which are as per my experience and some are those which I heard or read in the texts. All these are described here in detail. And by doing or performing these the man gets pleasure and happiness (1).

11.2-66 Gold Making Method

Method 1

Take *rasaka* (calamine/zinc ore), *darada* (cinnabar), *tāpya* (chalcopyrite), *gagana* (mica) and *kunaṭī* (realgar) in equal quantity. Grind these well for seven days with the latex of the red variety of *snuhī*. It is then subjected to heating with the help of *Jalayantra* for twenty four– *yāmas* (3 days). This paste becomes *sahasravedhī kalka* (capable of converting metals into thousand times gold). It is without any doubt. It may be used to convert melted copper, silver or lead into gold (2-3).

Method 2

Take one part mercury in an iron mortar, add five parts *vajra ballī rasa* and grind well. On drying add *trinemrī rasa* and grind well. On drying it should be triturated with *vetrayaṣṭī* and *rāgiṇī* juices. By doing so a *pī takalka* (yellow paste) is made. It is now added in 1/16th part purified melted copper. It converts copper into good quality gold. It is as pure as fourteen coloured gold (4-6).

Method 3

Apply *svedana* with *kānjika* (heat through boiling acidic liquid) to *svaṛṇa māḥṣika* (chalcopyrite) for three days. Now grind it for seven days with juice of *carmarāṅgī*. Wash it with water (hot water) till it converts into gold like colour (7-8).

Method 4

Darada (cinnabar) obtained from Romadeśa should be subjected to *svedana* (heating in boiling liquid) with *gomūtra* (cow's urine) through *dolāyantra* for four *yāmas* (12 hours) for making it very pure.

In the same way lotus like red variety of *manaḥśilā* should be subjected to *svedana* with *muniṣpa* (*Agastya puṣpa*) *rasa* through *dolāyantra* for half *yāma*. With this method it becomes *śuddha* (purified) for its use for all purposes. In the same way purify *navasāra* (ammonium chloride) and *sūta* (mercury) and make *agnisaha* (thermostable). Take all the above mentioned drugs in equal quantity and grind these with *niṃbu* juice, *mātalūṅga* (big variety of lemon) juice and *kumārī* juice in sunrays. Now apply strong heat through *jalayantra* for three days to this paste and then allow it for self cooling. If used in 1/100th part it may convert silver into pure gold. If water does not enter into *kalka* while heating it through *jalayantra* then there is no doubt in its success (9-14).

Method 5

For this first prepare *nāga bhasma* (lead ash) by grinding *nāga* (lead) with *manaḥśilā* and *kumārī svarasa* and then applying twelve *puṭas*. Then also apply further 100 *puṭas* grinding it with *kumārī rasa* in the *śarāva sampuṭa*. The grinding with *kumārī svarasa* should be done for seven days and hundred *puṭas* should be applied.

Now add *sūta bhasma* (*rasa sindūra*), *śuddha tālaka* and *śuddha manaḥśilā* in equal parts to *nāga bhasma* prepared as above and triturate these with *kumārī* juice and apply *varāha puṭa* with thirty *vanyopalas* (dung cakes obtained from forest), apply hundred *puṭas* with this method.

Thus the total 312 *puṭas* are applied. There after it should be heated in a *kācakūpī* for thirty two *yāmas* (96 hour) through *bālukā yantra* method. On self cooling collect the *bhasma* from the base of the *kācakūpī*. It develops the power of transforming copper and silver into gold and it is without any doubt. This method is very successful and tried. There is nothing to doubt about it (15-21).

Method 6

Tāpyaka (*svarṇa māṣika*-chalcopyrite) should be subjected to *svedana* with *gomūtra*, *kānjika* and *kulattha kvātha* for three days then grind it in hot iron mortar. Grinding in *tapta khalva* should be done with lemon juice adding frequently. Then add 1/4th part *saindhava lavaṇa*. Now add three times mercury to one part *tāpyaka* and grind it well with lemon juice and strain it with a cloth piece. The *piṣṭi* remained in the cloth should also be collected. Repeat the above process for two, three times. By doing so mercury absorbs/digests *tāpya satva*. Prepare a bolus of this *piṣṭi* and apply strong heat to it in a *mūṣā* and collect a beautiful red coloured *tāpya satva* from the *mūṣā*. (22-26)

Now take *hīnavarṇa svarṇa* (low quality gold) one *tolaka*, *tuttha* (copper sulphate) one *balla* and *hema* (*hema māṣika satva*) one *balla* and heat these strongly in a *mūṣā* till melting. Prepare its *patras* (leaves) and apply following paste on these *patras*. To prepare paste *tutthaka* may be triturated with *bījapūra* variety of lemon juice mixed with equal part *gairika* (red ochre). On drying these *patras* should be heated mildly by *puṭa* system for two or three times carefully. By doing so these gold leaves develop a very good colour similar to very good variety of *kuṅkuma* i.e. (fine yellow) definitely. (27-29½)

The author claims here that the *vārtikendrāḥ* (alchemists) should try this method for improving the quality of the gold from fourteen colours to sixteen colours. This claim is as true as the statement of the teacher and there is no doubt in it (29½-30).

Method 7

Take purified *tāmra* (copper) and *tāpya* (chalcopyrite) powder in equal quantity and melt it in a *mūṣā* by giving strong heat and pour it in a *lakuca rasa*. On cooling prepare their powder. This powder and sulphur powder when added in *hīnavarṇa svarṇa* (low carate gold) in one *balla* amount makes its (gold) *varṇotkarṣa* (improves colour/carate of gold). It has been said by Śrī Nandi for *kautuka* (wonder) (31-32).

Method 8

Take *tāpya* (chalcopyrite), *śuddha nāga* (lead), *gandhaka* (sulphur), *sūtarāja* (mercury), *hiṅgula* (cinnabar), *śuddha hema* (gold) and *śilā* (realgar) powders in equal quantity. Put this powder in a *kācakūpī* (glass bottle) and fill the bottle with the *sāka* juice and apply heat to the bottle with *lāvaka puṭa* (mild heat). In this way apply sixty *puṭas* to convert it into *kalka* (paste) form. This paste when added in one *balla* quantity in *śuddha* one *gadyāṇa* (one *tolā*) silver converts it into pure gold (33-34).

Method 9

Mix equal part of *ahiripū* (*erimeda/manaḥ śilā*) and lead in the mercury then add sulphur and *gairika* (red ochre) powder and apply heat in a vessel made of *kānta loha*. In this way mercury made solidified with lead or gold mixed in different proportions is called '*Bhujagajita rasendra*'. It develops the power of transforming lower metals even if it is mixed in one lac part and called as '*lakṣa vedhī*'.

[This recipe is not very clear as the term used '*ahiripū*' is not clear as it is used to denote for which drug] (35-36).

Method 10

Take two parts purified copper, two parts purified gold, four parts purified silver and eight parts *rasaka* (zinc ore), put all these together in an *andha mūṣā* (closed crucible) and heat it strongly till melting. This melted material on cooling converts into gold (37-38).

Method 11

The experts of *Rasaśāstra* have mentioned that mercury made solid with three times lime if mixed with silver converts it into gold.

[As per the original text silver made solid with three times lime powder converts into gold, but silver is already solid material hence it may not need solidification thus, I suggested to make the *bandhana* of mercury with three times lime and such solid mercury if mixed with silver may convert it into gold] (39).

Method 12

Take mercury in one *pala* (50 grams) quantity and purified sulphur in half *prastha* (8 *palas*/400gm.) quantity, mix both together and grind it with *kiṅśuka* (*palāśa*) *patra* or *palāśapuṣpa rasa* in sun rays for six months continuously. This if mixed with silver in one by sixteenth part converts it into gold seven colours which is suitable to be sold in the market as gold. There is no doubt in it (40-41).

Method 13

Take equal parts of *pārada*, *gandhaka*, *tāmra*, *mākṣika*, *rasaka*/*kharpara*, *hiṅgula*, *svarṇa*, *gairika*, *navasāra*, *sūra kṣāra* and *manah śilā* and grind all well in a mortar. Put these in a *vajra mūṣā* and also put *rasaka* powder half to above mixture, close and seal it properly with a *mudrā* in such a way that no fumes come out of it. Apply heat to this *mūṣā* strongly for four *ghaṭikās* continuously. By doing so the alchemists could make one *tolaka* gold and there is no doubt (42-44).

Method 14

Prepare a half *tolaka* size *mudrikā* (ring) with inferior quality gold. Take *mākṣika*, *rasaka*, *tuthaka*, *gairika*, *navasādara*, *sūrakṣāra hiṅgula* and *taṅkaṇa* each in two *balla* (6 *ratti*) quantity triturate these with *kāsamarda puṣparasa* and *stri dugdha* (breast milk of woman). Apply this paste over the ring. Now take *sūrakṣāra*, *darada*, *taṅkaṇa* and *saindhava* one part each and *iṣṭikā cūrṇa* two parts and mix these well, put this powder in a *sthālī yantra*, also put *mudrikā* pasted with the above paste inside this powder and apply heat to this apparatus carefully for three *yāmas* (9 hours), and allow it for self cooling. On self cooling take out *mudrikā* (ring) from it. On rubbing, its golden colour and shining becomes very bright and there is no doubt in it (45-49).

Method 15

Take *dhoṣākṛṣṭa tāmra* and mix it with equal part of silver, *tīkṣṇa*

cūrṇa and *hiṅgula*, grind it well with *kanyā rasa* and prepare its small round pills of *āḍhākī* size. These should then be dropped into the melted metal. Repeat the process till copper disappears and only silver remains. Then take it away from the fire and melt it with equal part of gold. By doing so it converts into gold similar to *daśa varṇa suvarṇa* (ten colour gold). It is a true statement (50-52).

Method 16

Mix seven times lead into copper by heating, then add seven times *rasaka* with the above copper mixture and mix it by heating. By doing so the whole converts into the golden colour and it is without any doubt (53).

Method 17

Prepare a *mūṣā* with *bhūnāga satva*. Melt good quality gold and *tāpya satva* taken in equal quantity in this *mūṣā*. Repeat the process for hundred times. By doing so it converts into a gold similar to *japāpuṣpa* in colour and shining. It is without any doubt (54).

Method 18

Put one *balla* (3 *gunjā*) *rakta* (not clear) (may be *suvarṇa gairika*) in a half *tolaka dasavarṇa* gold and mix these by strong heating, by this method the gold colour improves by two points i.e. *dvādaśa* (twelve) *varṇa suvarṇa* is made. And this gold may be claimed suitable to be sold in the market (55).

Method 19

Take superior quality *puṣpākasīsa* and prepare its paste with *arkapatra* juice. Also prepare a *cakrikā* (round flat pillet) of one *pala* (50 gms.) size of *rasaka*. Apply above paste on this *cakrikā* and allow it to dry in sunrays. Then apply twenty (20) *puṭas* to it using thirty *vanyopalas* in each *puṭa*. The product obtained as such may transform silver into gold if mixed in 1/16th part. So transformed gold looks like seven *varṇa* gold in colour, it is without any doubt (56-58).

Method 20

Take purified mercury in two *pala* quantity, *śuddha somala* in four *pala* quantity and white alum in one *tolaka* quantity. Mix all well and grind well in *bṛścikālī rasa* for one day and prepare its bolus and dry it. Then take *damaru yantra*, put *gairika* in this apparatus first then *khaṭikā* (chalk) over it make a small hole in its middle, put *navasādhara* one *ṭaṅka* (1/4th) *tolaka* in it then keep *sūtaka* bolus over it and again cover it with one *ṭaṅka navasāra*. Now seal the *damaru yantra* and dry its joints, put the apparatus on *culhī* (small furnace) and apply heat for sixteen *yāmas*. On self cooling collect the sublimed material from the upper pot of the apparatus. Put it in a *khalva* and triturate it with *bṛścikālī* juice and allow it to dry. On drying powder it and fill it in a *kāca kūpī* and fix the *kūpī* and *bālukā yantra* and apply twelve *yāmas* heat. On self cooling collect it from the *kūpī*. One *balla* of this material if mixed with one and half *ṭaṅka tāmra* the whole converts into gold. It is an experienced formula and has been told by the scholar named Nātha Sundara (59-66).

11.67-134. The Silver Making Methods**Method 1**

Take one *pala* (50 gms) *loha cūrṇa* and *somala*, *abhraka* (*sveta*) and *ṭaṅkaṇa* each in one *sāṇa* (1/4th *tolaka*) quantity, triturate these together with *eraṇḍa taila* for two *ghaṭis* and prepare its bolus. Keep it in a *mūṣā* and apply strong heat till melting of iron. Now take this *loha cūrṇa* one part and three parts *rasaka/kharpara cūrṇa*, put both in *vajra mūṣā* and melt by heating strongly. Heating should be continued till only iron remains there. Now add this alloy in one *balla* (3 *rattī*) quantity in one *tolaka* pure copper and mix these by heating. By doing so copper converts into silver. This silver should be mixed with half quantity of pure silver by melting. The resultant material becomes pure silver free from any *doṣas* (impurity) (67-70).

Method 2

Take one piece of white *sumal* (arsenic) weighing one *karṣa* in quantity, wrap it with human hairs (*narakeśa*), dip it in melted lead and quench it in *nimbu*

jala (lemon juice). Repeat the process for twenty-one times. Add this paste in 5 *rattī* amount in one *tolaka* melted copper carefully, by doing so the copper converts into white silver, take one *tolaka* of this material and add four *ballas* (12 *rattī*) of pure silver to it and melt both by heating, the resultant material is pure silver as per the author (71-73).

Method 3

Take eight *palas* (400 gms.) of white *sumala* (arsenic). Grind it with *gojihvā rasa* for one day then with *niṃbu rasa*, *dhattūra rasa*, *kākamācī rasa* and *gṛinjana rasa* for one day with each. Also apply the *bhāvanā* of *arka dugdha* and *eraṇḍa taila* to it. Prepare its pills of *yava* size (about 60 mg.) and dry these in intense sun heat. Put these in *kāca kūpī*, close and seal it properly and heat it through *bālukā yantra* for sixteen *yāmas* (48 hours). On self cooling collect the *satva* adhered in upper portion of the *kūpī*. (74-77½)

Take one *tolaka* of this *satva*, one *tolaka* of *tārasaṃpuṭa* (closed *andha mūṣā* type apparatus made of silver), mercury one *tolaka* and *ṭaiṅkaṇa* one *balla*, also add *kṣāra satva* (an unknown material or *surakṣāra*) equal to mercury, mix all these well and triturate with *ketaki rasa* and prepare its bolus and dry it. Keep this bolus in *tārasaṃpuṭa* and close it in *tāmra mūṣā* made with eight *balla* amount. Then close this *mūṣā* in a *sarāva saṃputa*. Wrap the *saṃpuṭa* with a paste made of *dhānyābhra* and *paṅka* (wet soil). On drying heat it through *varāha puṭa*. By doing so a *kalka* (paste) is made of the above materials. Now take twelve *balla* copper, two *balla* silver and one *balla* tin and prepare their alloy by melting together, add the above *kalka* to it in four *gunjā* amount. By doing so the whole converts into best quality silver. The author claims, it as very true (77½-84).

Method 4

Take tin made into *bhasma* with *asthibhakṣa mala* (*asthi saṃhāra* juice), *tālaka*, *abhraka*, *vatsanābha*, *pārada* and *ṭaiṅkaṇa* in equal parts, apply *bhāvanā* with *snuhī dugdha* and *arka dugdha* to above drugs. By doing so one may convert/obtain huge amount of white silver or *narandra* (85).

Method 5

Take *vaṅga*, *tālaka*, *abhraka*, *pārada*, *tikṣṇa loha*, *viṣa/vatsanābha*, and *ṭaṅkaṇa* in equal parts, put these in an *andha mūṣā* and apply strong heat for three times. By this method these may convert into *candra* (moon) like white material. It is known as *bīja*. Now take *pittala* 12 parts, copper 8 parts and the above mentioned *bīja* one fourth part to the above mentioned both the metals and by melting these silver may be obtained free from all the *doṣas*/defects. It has been said by Śrī Pūjya Pāda. (86-87)

Method 6

Take *pārada* three parts and *rajata* one part, mix both together and prepare their *piṣṭi* by grinding carefully with lemon juice. For making its *stambhana* treat it with *kānjika* for three days. This *sūtaka piṣṭi* is then put in melted tin and lastly it should be treated with *haritāla satva*. In melted copper the above mentioned material should be added in 1/16th part for *vedhana* (transformation). By doing so the good quality silver is produced which is as white as the moon and the stars (88-90).

Method 7

Take *pārada* three parts and *vaṅga* two parts, grind both with *kānjika* for one day, then grind it with *sumala* three times to the above mixture, the whole may be triturated with *snuhī dugdha* and *arkadugdha* taken in equal parts for three days, prepare its *guṭīka* equal to *yava* (barly grain size) and dry these in sun rays. Put these in *kācakūpī* wrapped with cloth and clay paste and apply heat through *bālukā yantra* for sixteen *yāmas* carefully. On self cooling collect *satva* portion adhered in upper part from the *kūpī*. If it is added with copper in 1/16th part it transforms copper by *kuntavedha* method. By doing so the good quality silver is produced and it is suitable to be sold in the market (91-95).

Method 8

Take *tālaka* in eight *pala* quantity and *pārada* in two *karṣa* quantity, mix both and grind carefully with lemon juice for one day. Then grind it carefully with

eraṇḍa taila. It is then applied heat through *bālukā yantra* for sixteen *yāmas*. There after collect *satva* from the *yantra* and it should be ground with *ataṣī taila* for one day. Then put it in *kācakūpī* and apply heat through *bālukā yantra* as earlier. On self cooling take it out and repeat the process. In the end collect the good quality *satva* from the bottom of the *kūpī* each time. It is when added with copper in 1/16th part transforms copper into silver without any doubt (96-100).

Method 9

Take *pārada* in one *ṭaṅka* (1/4th *tolā*) amount and *saindhava lavaṇa* in double amount, grind both in a mortar till mercury completely loses its form and appearance. Then take copper purified in one *gadyāṇa* (one *tolā*) and *vaṅga* in one *balla* (3 *rattī*) quantity and melt these together. On melting add *pārada* and *lavaṇa* mixture in one *māṣaka* (1 gm.) quantity and 1/4th part silver. Now in this silver add ground *pārada* and put it in *jala yantra* for treatment. By doing so the whole converts into thirteen colour silver without doubt. (101-103).

Method 10

Take *vaṅga* made into ash with *tālaka* and silver, mix both together and apply heat for eight *yāmas*. By doing so the whole converts into a paste form. By adding this paste in one *gadyāṇaka* melted tin makes its *stambhana* (fixation) definitely (104).

Method 11

Take *darada* (cinnabar) made into pieces in three *ṭaṅka* (9 gms.) quantity and apply *svedana* with *snuhī dugdha* through *dolāyantra* method. Then take *tāra cūrṇa* (silver powder) equal to *hiṅgula*, mix both and grind well with equal part *mātulunga rasa*. Apply heat with cowdung cakes slowly for twelve *yāmas* (36 hours). By this method *piṣṭi stambha* takes place (*piṣṭi* of *hiṅgula* and *tāra* becomes fixed). Now take silver powder equal to *hiṅgula* and lead equal

part, melt it in a *mūṣā* by heating. On cooling collect solidified material. Then mix both *piṣṭi stambha* and *khoṭaka* in a *bhasma mūṣā* and apply heat slowly. By heating so only one *niṣka* silver is obtained similar to white *śaṅkha* (conch shell) (105-108).

Method 12

Take two *palas* of purified *pārada*, two *palas* of *rasaka*, two *palas* of *tālaka* and two *palas* of *sumala*, mix all together, fill it in *kācakūpī*, close its mouth with a copper *patra* piece and apply heat through *bālukā yantra* for twelve *yāmas* (36 hours) continuously. On self cooling collect its *satva* adhered at the neck and the mouth of *kūpī* carefully. This *satva* if mixed with sixteen part *tāmra* (copper metal) melted converts it into good quality silver (109-111).

Method 13

Take one *pala pārada* and one *pala* white *sumala*, mix both together and grind well with *eraṇḍa taila*. Put it in a strong *kharpara* (earthen pot). Close its mouth with a copper vessel and seal its joints. On drying place it on a *culhī* (furnace) and apply slow heat for one and half *yāma*. On self cooling collect the whole *satva* portion adhered to copper vessel, put this *satva* mixed with *ghee* and *ṭaṅkaṇa* in a *mūṣā* and heat it till melting. Now add this *satva* in one *balla* quantity to melted copper sixteen parts, it converts copper into *śaṅkha* like white silver certainly. There is nothing to think about it i.e. there is no doubt in it (112-116).

Method 14

Take *tālaka*, *tāmra*, *rīti* (*pittal*) and *dhoṣa* (*kāṃsya*) in equal parts, apply heat to these metals till melting. On melting pour these in the *amlavarga* drug's liquid. Repeat the process for seven times, now add it in equal amount silver and melt whole. By doing so the whole converts into sixteen colour pure silver. I have seen it being converted into silver. It is very true and there is no doubt in it (117-118).

Method 15

Take pure white *sauvīrānjana* and heat it with *viṣamuṣṭi* (*kupīlu*). On cooling, add one *balla* of it in pure mercury. By doing so mercury converts into silver (119).

Method 16

Take white *sumala* (arsenic) similar to *suddha sphaṭika*, put it in half earthen pot with lemon juice and apply heat for two *ghaṭikās*. By this its paste is prepared. This paste when added in 1/64th part transforms good quality copper into best quality silver free from all the *doṣas*. (120-122)

Method 17

Prepare a *mūṣā* with an alloy made of seven metals, put *kṣāra bhasma* in it first and then *kadalī kṣāra* and *apāmārga kṣāra* in it and keep *pārada* in between and put *kṣāras* again on *pārada*. In the same way prepare another *mūṣā* and keep one *mūṣā* inside the other *mūṣā*, close and seal carefully in an earthen pot and apply heat with dung powder. By doing so mercury converts into solid state and becomes white like *vaṅga* (tin metal). It may stand to hammering and could be melted easily and quickly. It is my experience (123-125).

10.126-128 Kṛitrīma Mauktika Karaṇam (Method of Making Artificial Pearls)

Take out the eye balls of fishes, clean these and heat these with milk for one *yāma*, then separate the round blackish (retinal) part from the eye ball, thereafter mix *śālidhānya* (paddy grains) with these and crush them till these become white. Then take these in a hand and rub these with *iṣṭikā cūrṇa* (brick powder). By doing so these become white and shining pieces like *mauktikās* (pearls). This I have done by myself, claims the author (126-128).

10.129-132 Method of Making Bigger Pearls from small Pieces

Prepare a *mūṣā* (crucible) either with *sphaṭika* gem or with *dahanopala* (*sūryakānta*) gem stone, put small pieces of pearls in this *mūṣā* with lemon juice for one day and night. Within that period these pearl pieces turn into *navanīta*

(butter) like soft (paste). Then with that paste prepare very smooth *guṭikās* (round pieces). There after these *guṭikās* are to be kept in a *mūṣā* and applied sun heat in *citrā nakṣatra* for two *yāmas*. Now keep four *kāṃsya pātras* (bell metal vessels) in four *diśās* (directions) and one in the center. Now put all the small pieces in the middle vessel and apply sun heat. By doing so a good quality big pearl is formed by uniting all the small pieces which possess all the best qualities of pearls (129-132).

10.133-134 *Kṛtrima Pravala Karaṇam* (Method of preparing artificial corals)

Prepare a fine powder of *śuddha śaṅkhas* (best quality conch shells) and also prepare the powder of the half quantity *hiṅgula* (cinnabar), mix both the powders together and grind it with the milk of newly delivered sheep. On getting semi-solid state prepare a *varti* (roll) with this paste and apply *svedana* (heat) with *kārpāsāṣṭhī* (cotton seeds) *kvātha* for one *yāma*. On self cooling collect brilliant (brightly shining) *pravālas* (corals) (133-134).