

Platinum Four Hundred Years Ago

“A substance which it has not hitherto been possible to melt by fire”

While gold and silver were both well known to ancient civilisations and were employed in many beautiful ways for ornamentation and for works of art, the history of platinum begins at a much more recent date. The earliest known reference to platinum occurs, in fact, in a book published just four hundred years ago.

Occasional traces have certainly been found among the relics of the early civilisations of Egypt, but the first platinum to be recovered in any quantity and to attract scientific interest undoubtedly came from a small area in the Choco district of the Spanish colony of New Granada, now the Republic of Colombia. Here it was regarded as a nuisance encountered in the extraction of gold, and was generally thrown away, although a few samples were sent back to Spain as a curiosity. Some of the metal may well have reached other parts of Spanish America, as it was from a region further north that the first indication of its existence originates.

In 1551 the Italian mathematician and philosopher, Hieronimo Cardan, had published his great work, *De Subtilitate Rerum*, which combined the soundest physical knowledge of his time with the most advanced speculation. Contemporary with Cardan was Julius Caesar Scaliger who, at his death in 1558, had the highest scientific and literary repu-

tation of any man in Europe. Most of Scaliger's scientific writings were in the form of commentaries, and the one by which he is best known is his *Exercitationes* on Cardan's *De Subtilitate*, published in Paris in 1557. This shows both an encyclopaedic knowledge and a vigorous polemical style.

It is in chapter 88 that the historic reference to platinum is to be found. Cardan had defined a metal as “a substance which can be melted and which hardens on cooling”,

I V L I I C A E S A R I S
S C A L I G E R I
E X O T E R I C A R V M E X E R C I T A T I O N V M
L I B E R
Q V I N T V S D E C I M V S ,
D E
S V B T I L I T A T E ,
A D
H I E R O N Y M V M C A R D A N V M .

In extremo duo sunt indices: prior breuiusculus, continens sententias nobiliores: alter opulentissimus, penè omnia complectens.

L V T E T I A E ,
A p u d F e d e r i c u m M o r e l l u m , i n u i c o B e l l o u a c o ,
a d i n s i g n e M o r i .
M . D . L V I I .
C V M P R I V I L E G I O R E G I S .

The title page from Julius Caesar Scaliger's "Exotericarum Exercitationum" on Cardan's "De Subtilitate", published in Paris in 1557

EXERCITATIO LXXXVIII.

Quæ ad Metalla.

" **M**ETALLUM, inquis, est quod liquefcere potest: & cū redit, durum manet. Oblito tibi magni illius uicarij metallorum hæc exciderunt. Aurum metallorum rex est: Argentum uiuum tyrannus. Quod ex tua definitione metallum non erit. Est autem tyrannus, quia cætera omnia absumit. Plinius in uicesimo nono ita scribit: Auro liquefcenti si Gallinæ carnes admisceantur, ab illis rapi. Itaque aut uenenum esse. Quòd si uerum est: sanè sic præfentius atque commodius adipiscemur aurum esseulentum, quàm ex tua inani indicatione, aurum portabile. Præterea licito, in Funduris, qui tractus est inter Mexicum, & Dariem, fodinas esse orichalci: quòd nullo igni, nullis Hispanicis artibus hæctenus liquefcere potuit. Adhæc non omnibus metallis uerbum, liquefcere, uidemus conuenire.

The passage from Scaliger's commentary dealing with the nature of metals and containing the first known reference to the existence of platinum

but Scaliger was at pains to fault him as far as he could, first by reference to mercury and then by citing the unmeltable metal—undoubtedly platinum—which he had knowledge of from Spanish America. A translation of the passage in question reads as follows:

"Metal, you say, is something that can be melted and when it cools remains hard. You said these things forgetting the great substitute of metals. Gold is the king of metals. Mercury is the tyrant. From your definition it will not be a metal. But it is the tyrant because it consumes all others. Pliny, in his twenty-ninth chapter,

writes thus: If hens' flesh is mixed with molten gold it is absorbed. And so it is poisonous to gold. If what you say is true, we should get a solid gold more readily, according to your worthless assumption, than a liquid one. Moreover, I know that in Honduras, a district between Mexico and Darien, there are mines containing a substance which it has not hitherto been possible to melt by fire or by any of the Spanish arts. And so, we see that the word melt cannot be applied to all metals. For some, like gold, do melt; some, however, do not, but become very soft."

VACUUM MELTING OF PLATINUM

High-frequency induction melting of platinum and its alloys is usually carried out in air, but for research purposes melting in vacuum is sometimes desirable. An experimental vacuum melting furnace is shown here in operation in the Johnson Matthey research laboratories.

