The Identity of M de l'Isle

A FOUNDER OF MODERN PLATINUM REFINING

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Among the early workers on the refining and melting of platinum, credit has been given by many authors, including myself (1), to the distinguished mineralogist and crystallographer Jean Baptiste Louis de Romé de l'Isle for being one of the first to obtain the metal in malleable form by melting platinum that had been freed from iron and other impurities by dissolving in aqua regia, precipitating with sal-ammoniac and igniting the precipitate in a crucible.

This work was communicated to the Academy of Sciences in Paris in 1775 by Lavoisier (2), and although the paper was never printed it was discussed freely among contemporary scientists, to whom were distributed a number of small discs of malleable platinum. Among these was Guyton de Morveau, who repeated the work and reported his results to the Comte de Buffon in a letter of which the first page is reproduced here (3).

The procedure adopted was also described by B. G. Sage, another distinguished mineralogist and actually a friend and one-time teacher of J. B. L. de Romé de l'Isle, in his *Elements of Mineralogy*, published in Paris in 1777 (4). After the comment that "M. de l'Isle a fait part a l'Academie d'un moyen, à l'aide duquel on fond très aisement cette substance" he continues (in translation):

> "Sal-ammoniac dissolved in the cold in distilled water is poured into a solution of platinum made by aqua regia; there is a reddish precipitate composed of platinum and sal-ammoniac; . . . this precipitate of platinum, exposed to a violent fire, melts and produces a button of malleable platinum of a whitish-grey colour resembling that of silver, and which does not alter in the air."

As is often the case in French scientific literature, none of these references to the work of M de l'Isle discloses his Christian name or initials.

Romé de l'Isle (1736–1790) was the author of a four-volume treatise on crystallography published in Paris in 1783 (a first edition, in one volume, had appeared in 1772), and reference to this work has been made by numerous writers as a record of his experiments with platinum. In fact there are only two short references to the refining of platinum in the book, one on page 408 of Volume I being incomplete and quoting largely from Sage, and the second in the form

SUR

LA FUSION DU PLATINE.

Du 12 août 1775.

M. Lavoisier a annoncé que M. Delisle, premier commis du bureau de la guerre, avait trouvé un moyen très-simple de fondre le platine, qu'il a répété ses expériences avec beaucoup de succès et qu'il a obtenu un métal blanc très-dur, attaquable cependant par la lime et un peu malléable.

De l'Isle's method of producing malleable platinum was reported to the Paris Academy of Sciences on August 12th, 1775, by Lavoisier, who described him as "premier commis du bureau de la guerre"

(Reproduced from the collected works of Lavoisier, published by the Government of France in six volumes, Paris, 1862-93, Vol. IV, 1868, p. 237)

The first page of the letter from Guyton de Morveau to the Comte de Buffon, published in 1775, in which he records his repetition of de l'Isle's experiments. After recording that he was first given the news of de l'Isle's discovery by Lavoisier, he describes how the latter had himself tried the experiment with success, although using a reducing flux, and had produced a beautiful metallic button that was not malleable. In the lower part of the page de Morveau reports that de l'Isle had told him later that "he had not employed any flux, that he had simply treated his platinum in a double Hessian crucible in the fire of a forge animated by the wind of two blowers, and that he obtained a very compact and brilliant button which could be flattened and filed, and moreover was reasonably malleable; the two little plates which he enclosed with his letter furnish a most complete proof of this"

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LETTRE

DE M. DE MORVEAU

A M. LE COMTE DE BUFFON,

Sur la fuſibilité, la malléabilité, le magnétiſme, la denſité, la cryſtallifation de la platine, & ſon alliage avec l'acier.

MONSIEUR, tout ce que vous maniez prend une nouvelle face, & produit un nouvel intérêt. Votre Mémoire ſur la Platine a éveillé les Phyſiciens & les Chymiſtes : ils ont porté leurs recherches ſur cette matière ſi ſingulière, ſi digne d'être obſervée, & vous avez ſans doute ouï parler du procédé qui a été découvert depuis peu par M. Deliſle pour la fondre : ce que j'en ai appris, & qu'il a bien voulu me confirmer lui-même, m'a engagé à profiter de quelques momens de loiſir pour répéter ſes expériences, & reprendre celles que j'avois négligé de pourſuivre depuis plus d'un an ; j'ai recommencé à traiter ce minéral dont, grace à votre générosité, il me reſtoit encore une aſſez grande quantité ; & je me perſuade que vous verrez avec plaiſir le récit exact de tous les phénomènes curieux & intéreſſans que m'a préſenté ce nouveau travail, quoiqu'il ne ſoit pas encore poſſible de tous les concilier.

La première nouvelle de la découverte de M. Deliſle m'avoit été donnée par M. Lavoiſier, & ce ſavant m'avoit écrit qu'il en avoit fait l'épreuve avec ſuccès ; qu'ayant diſſous la platine dans l'eau régale, l'ayant enſuite précipitée par une diſſolution très-concentrée de ſel ammoniac, ce précipité traité avec mon flux réductif, lui avoit donné au bout d'une heure, un beau bouton ſuſceptible de ſe polir, de ſe limer, mais non pas malléable ; (le flux dont parle ainſi M. Lavoiſier, eſt celui que j'ai publié, comme devant remplacer éminemment le procédé ſecret de M. Bouchu pour l'eſſai des mines de fer). M. Deliſle m'avoit marqué poſtérieurement, qu'il n'avoit employé aucun fondant, qu'il avoit ſimplement traité ſa platine dans un double creuſet de heſſe au feu d'une forge animée par le vent de deux ſoufflets, & qu'il avoit eu un bouton très-bien lié, brillant, qui s'étoit laiſſé piler & limer, & de plus, ſuffiſamment malléable ; les deux petites plaques qu'il avoit joint à ſa lettre, en fourniſſoient la preuve la plus complette.

of a footnote (No. 44) on page 488 of Volume III which states:

> 'M de Buffon has suggested 'that platina may be only a ferruginous substance more dense and of higher specific gravity than ordinary iron, intimately combined with a large quantity of gold'. But what demolishes this theory is the fact that I possess a button of platina melted by the late M de l'Isle and several laminae of this same platina flattened under the hammer, which have not the slightest action on the magnetic needle; which proves that all the iron which occurs interposed in platina when it is in grains can be separated from it by means of sal-ammoniac as employed by M de l'Isle . . . .'

As I have pointed out in my book, *A History of Platinum* (1), the authorship of this passage is obscure since it refers to "the late M de l'Isle".

Now, in his article on L. B. Guyton de Morveau in a recent issue of this journal, Dr W. A. Smeaton (5) states his belief that the M de l'Isle who worked on the subject of malleable platinum in the early 1770s was not the same person as the crystallographer Romé de l'Isle. His main evidence for this view lies in the reference to his work by Lavoisier (2) who, in reporting de l'Isle's work at the meeting of the Academy on August 12th, 1775, described him as "premier commis du bureau de la guerre", and of course in the footnote already mentioned in the crystallographer's own book referring to "the late M de l'Isle" (feu M de l'Isle).

This opinion of Dr Smeaton's is now confirmed by M le Conservateur-en-Chef des Imprimés of the Bibliothèque Nationale,

Paris, with whom I have been in correspondence on the subject. He has found another reference to "the late M de l'Isle" in the same work (Volume III, page 601). This comprises part of the "Table des Auteurs" of the book, and here J. B. L. de Romé de l'Isle lists himself and his publications; these include some fourteen catalogues on natural history that he had drawn up since 1767, including the following:

> "9—Catalogue raisonné des minéraux, crystallisations, etc., qui composoient le cabinet de feu M de l'Isle. Paris, 1780."

Further, I am informed, a copy of this catalogue has been found on the shelves of the Bibliothèque Nationale. This disposes entirely of the possibility that the crystallographer's own book might have been reprinted after his own death in 1790 without alteration to the date on the title page but with the addition of new matter in footnotes. Further, throughout Romé de l'Isle's considerable literary output there is nowhere any reference to platinum except in these three references to M de l'Isle.

In consequence of all this, I have tried to identify the two men more clearly but have found much difficulty in doing so. In the case of the crystallographer Romé de l'Isle there is quite voluminous detail (but no mention of platinum) in an anonymous obituary published in 1790 in Rozier's *Observations sur la Physique* (6), but nothing has been handed down to us about the other de l'Isle with the confusingly similar background.

Both appear to have served in a clerical capacity under the Bureau de la Guerre (the crystallographer went to India as secretary to a detachment of gunners and was taken prisoner by the English at Pondicherry in 1761); both were interested in natural history and both formed important collections of crystallised minerals. Further, both seem to have spelt their name de l'Isle, variations in this apparently being the work of other people.

However, following the matter up, I have been in touch with General de Cossé Brissac, the head of the French Service Historique de l'Armée and he has found in his archives the *dossier de pension* of a man who seems to be the one for whom we are looking, namely:

> "Nicolas Anne de l'Isle, son of Jean Baptiste de l'Isle of Paris and of Anne Froment, born in Paris on 27th July, 1723, in the parish of St Roch."

This man entered the Royal Musketeers in 1739 and served with them until 1743, when he was transferred to the supply service of the armies and served in Germany, Flanders, Italy, Minorca and Corsica until 1769. In 1770 he was brought back to the Department de la Guerre in Paris and, with the rank of *premier commis*, took over work in the administration of Corsica, to which was added in 1772 responsibility for supplies there as well. He continued with this double work until July 2nd, 1776, when he seems to have retired. The dossier records that he died on August 23rd, 1780.

Here therefore is a man who was *premier commis* in the War Department in 1775 and was dead before the end of 1780. This seems to be the object of our search for the right M de l'Isle.

At the present time nothing else is known about Nicolas Anne de l'Isle or of how he came to interest himself in mineralogy and thence in platinum, and he apparently left no written record of his work. Others, including Lavoisier, Guyton de Morveau, von Sickingen and the Comte de Milly, as recorded elsewhere (1), carried it further and consolidated his findings, but clearly it is to this rather mysterious M de l'Isle that the honour belongs of being one of the first to devise a process that still forms the basis of modern platinum refining.

References

1 D. McDonald, A History of Platinum, London, 1960, 41

2 A. L. Lavoisier, Oeuvres, Paris, 1868, IV, 237

3 L. B. Guyton de Morveau, *Obs. sur la Physique*, 1775, **6**, 193

4 B. G. Sage, Eleméns de Mineralogie, Paris, 1777, II, 361

5 W. A. Smeaton, *Platinum Metals Rev.*, 1966, **10**, 24

6 *Obs. sur la Physique*, 1790, **36**, 315