Typography papers 2

French academicians and modern typography: designing new types in the 1690s

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The new type made for the French royal printing office in the 1690s, the *romain du roi*, is the first for which a preliminary 'design' is known to have been made. This paper looks at surviving sources for the history of this project, some of which are unpublished. Particular attention is paid to the system of related type bodies that was devised for the new type by Sébastien Truchet, which anticipates many of the features of the 'point system' commonly attributed to Fournier *le jeune*.

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The year 1992[1] was the three-hundredth anniversary of an enterprise which can be claimed to mark the beginning of the concept of 'type design', a process in which the form of the alphabet for a printing type is determined independently of its means of production. In 1692 a small group was appointed under the authority of the French Royal Academy of Sciences and it set to work in January 1693 to begin an exercise of which some of the results are well known. Its researches led to the designing of an alphabet which served as the basis for a new type made for the use of the Imprimerie Royale, the royal printing-house in the Louvre. This was known as the *romain du roi*, on the analogy of the *grec du roi*, the greek type made by Garamond for use by the Estiennes, *imprimeurs du roi*, in the 1540s. It is a type which is rightly illustrated in histories of printing types as one of the decisive steps in the evolution of the 'modern face' types which were to become dominant in printing by the end of the eighteenth century.

Some other parts of our legacy from the work of this committee are less widely appreciated. It was the beginning of a wide-ranging attempt to document contemporary technology with words and images, and the better-known achievement in this field of the *Encyclopédie* of Diderot and d'Alembert in the 1750s owed much to its example. In typography, its most enduring monument is even now almost wholly unrecognized. In keeping with the scientific spirit of the exercise, a series of mathematically-related bodies was planned for the new type, in order to supersede the approximate sizes supplied by contemporary typefounders. Although the basis of the academicians' new bodies was the *pied de roi*, the contemporary official unit of accurate linear measurement, the bodies that they selected were also designed to retain some harmony with the sizes in current use. The reform of type bodies is generally credited to Pierre-Simon Fournier (1712–68), known as Fournier *le jeune*, and to François-Ambroise Didot (1730–1804), Didot *l'aîné*, the first of whom proposed a scheme for related type bodies in 1737, and the second adapted Fournier's scheme in the early 1780s by basing it on the *ligne* (one-twelfth of one *pouce* or inch) of the *pied de roi*. But since it can be shown that, from a date in the later 1690s, the Imprimerie Royale had not only adopted a system of related bodies in theory but was apparently employing types cast on them, a system moreover that can be expressed exactly in Didot points, the claim to originality of both these reformers requires at least some qualification. The 'point' survived the reforming zeal of the 1970s, the last decade of mainstream metal typography, when attempts were made to bring the measurement of type into alignment with the metric

1. This text originated as a paper delivered at the Monotype Conference, Queen's College, Cambridge, in September 1992 and at the Musée de l'Imprimerie, Lyon, in 1993, but it has been extensively revised and rewritten. A part of its title was derived half-consciously from that of the monograph by Robin Kinross, *Modern typography: an essay in critical history* (London, 1992), whose chapter on 'Enlightenment origins' refers to the same episode. I am grateful for help and suggestions to Jacques André, Rennes; to Ellen Cohn, New Haven; and to Paul-Marie Grinevald (Library), Christian Paput and Nelly Gable (Cabinet des Poinçons), members of the staff of the Imprimerie Nationale, Paris.

system, and it is one of the units still employed, after a fashion, in present systems for typesetting.[2] For this reason at least, its confused history is worth clarification, and I have concentrated in this paper on the academicians' contribution to the setting of a fixed standard for type sizes.

There remains a widely-diffused impression that, however important historically, the process that led to the making of the *romain du roi* was in some sense a futile academic exercise, conducted by a group of intellectuals who were as foolish and impractical as the 'projectors' of Swift's Laputa, and moreover that its faults had been redeemed largely by the common sense of the punchcutter who realized their project. The view that the academicians lacked judgement as well as practical skills where the making of type was concerned was promoted by Pierre-Simon Fournier, an independent craftsman who described his own methods in a brilliant treatise, in which he was unwilling to give credit to an enterprise based on academic theory. He derided the instruments devised by the punchcutter Grandjean for striking and justifying matrices with greater precision (similar devices would later be widely used by founders), and he mocked the grid of 2304 small squares on which the academicians' capital letters were projected, asking, 'are so many squares needed to make an O, which is round?' Fournier's text was for two centuries the chief source of information on the project.[3]

A more balanced and better-informed view of the enterprise dates from 1961, when Mr André Jammes published his study of its working, in which he drew on unpublished and hitherto largely unknown manuscript sources. His text accompanied a set of impressions taken from the surviving copper plates of the letters designed by the commission, engraved between 1695 and 1718, which he published formally for the first time.[4] Among the more important of the sources that Jammes located and used were the minutes of the meetings of the 'little committee' of 'academicians',[5] and the papers of one of its members, the mathematician and engineer Truchet. He was able to show that the academicians arrived at their designs after an extensive and intelligent study of the previous literature of alphabet design (Pacioli, Dürer, Tory), of earlier manuscripts and printed books, and of the work of contemporary calligraphers. He distinguished the separate contributions of the trio of academicians: Gilles Filleau Des Billettes, who planned the scheme of the Descriptions of Arts and Trades on an 'encyclopaedic' scale;[6] Jean Truchet, with experience in constructing hydraulic machinery, who as a member of the Carmelite order had

2. In PostScript the American point, originally 0.1384 in. (0.3515 mm), is now rounded off to 1/72 or 0.1389 inch (0.3528 mm). For details see Andrew Boag, 'Typographic measurement: a chronology', *Typography papers*, 1 (1996), pp. 105–21. A 'Cicero' (12 Didot points of 0.3759 mm) is included as a unit by some page makeup software (PageMaker and Quark XPress), but not by word processors such as Microsoft's Word, which have a 'pica' based on a point of 1/72 in.

3. 'Faut-il donc tant de carrés pour former un O, qui est rond?' P. S. Fournier, *Manuel typographique*, vol. 1 (Paris, 1764), p. xvii. Fournier's original text has been recently published in facsimile for the first time by the Lehrdruckerei, Technische Hochschule, Darmstadt, in an edition which also incorporates a reprint of Harry Carter's English translation of 1930, *Fournier on typefounding*. A new editorial commentary by the present writer is added to the edition, drawing on Jaugeon's manuscript account of punchcutting and typefounding.

4. André Jammes, *La réforme de la typographie royale sous Louis XIV: le Grandjean* (Paris: Librairie Paul Jammes, 1961). The work was reprinted in a reduced format as: *La naissance d'un caractère: le Grandjean* (Paris: Promodis, 1985). A partial English translation appeared under the title 'Académisme et typographie: the making of the *romain du roi*', in *Journal of the Printing Historical Society*, no. 1 (1965), pp. 71–95. Note also the supplementary essay by André Jammes, 'Le Grandjean et la naissance de la typographie moderne', in *L'art du livre à l'Imprimerie Nationale* (Paris, 1973), pp. 128–41.

5. These are colloquial terms: the members of the group were not formally appointed members of the Academy of Sciences until 1699, but worked under its authority.

6. Claire Salomon-Bayet, 'Une préambule théorique à une Académie des Arts', *Revue d'histoire des sciences* (1969), pp. 229–50. The basic studies are: Arthur H. Cole and George B. Watts, *The handicrafts of France as recorded in the Description des Arts et Métiers 1761–1788* (Cambridge, Mass., 1952), Publication no. 8 of the Kress Library of Business and Economics; Georges Huard, 'Les planches de l'*Encyclopédie* et celles de la Description des Arts et Métiers de l'Académie des Sciences', *Revue d'histoire des sciences* (1951), pp. 238–49. The most recent and comprehensive study of the plates is that of Madeleine Pinault, 'Aux sources de l'Encyclopédie: la Description des Arts et Métiers' (Thesis, École pratique des Hautes-Études, IVe section, 1984); see also her 'Dessins pour un "Art de l'imprimerie"', 112e Congrès national des Sociétés savantes, Lyon, 1987, Histoire des Sciences, part 2, pp. 73–85.

taken the name Sébastien; and Jacques Jaugeon, who also had some practical knowledge of technology. Jaugeon was, unfortunately in some respects, since his style is far from lively,[7] to undertake the task of writing up the volume that was intended as the first of a series that would ultimately cover all contemporary trades.[8] To these names must be added that of the worldly young cleric, the *abbé* Jean-Paul Bignon (born 1662), favourite nephew of Louis Phélypeaux, Comte de Pontchartrain, who as *contrôleur général des finances* had responsibility for the administration of the Imprimerie Royale, and who was able to secure for him a series of brilliant appointments. As director of the operations of the various royal academies, Bignon was able to secure their cooperation on the making of the great folio illustrating the medals of the reign of Louis XIV, *Médailles sur les principaux événements du règne de Louis le Grand* (Paris: Imprimerie Royale, 1702), which would display the *romain du roi* publicly for the first time. It was in his house that the academicians began to hold their meetings, and he took an active part in the supervision of their work.[9]

The 'Description of Trades' ultimately became the victim of its large ambitions. Reports and engraved copper plates continued to accumulate during the first decades of the eighteenth century, and proofs of the plates were circulated unofficially. For some years the editor of the project was the natural scientist Réaumur. The later engravings for Jaugeon's text, made by Rochefort in 1719, suggest that there was some intention about that time to prepare the text for publication. But by the time that the *Encyclopédie* began to appear in the 1750s, the Academy of Sciences had still published nothing, and it was not until 1761, after complaining of Diderot's 'plagiarism' of their project, that it began to issue single fascicules containing the description of individual trades. In all, 73 parts of the *Description des Arts et Métiers* were issued. However, the section on printing and its related trades, the revision of which had been entrusted to the Parisian printer Philippe-Denis Pierres,[10] was not among them, and soon the death of the editor, Duhamel du Monceau, and the Revolution, put an end to the series.

For many decades, therefore, the type known as the *romain du roi* was the only practical achievement of the academicians and their punchcutter, Philippe Grandjean, with which the public was at all familiar. Indeed, later accounts of its making, such as that by Duprat,[11] from whose narrative the account by D. B. Updike was largely derived, have almost wholly ignored the project for the *Description des Arts et Métiers* and suggested that it was primarily the need for a new type

7. An anonymous writer in about 1750, cited by Jammes, thought that Jaugeon's style of writing had made his text unpublishable: 'Le stile effrayant dans le quel cet ouvrage est écrit est peut être ce qui l'a empescheé de voir le jour.' (B.N. MS. fr. 9181, p. iv.) Jean Toulet, who examined the account of bookbinding in Jaugeon's manuscript when preparing his edition of Dudin's later text on the subject, which was published in an Italian translation, commented on the 'oppressive detail' of its descriptions (M. Dudin, *L'Arte del legatore e doratore di libri*, introduzione e note di Jean Toulet, Milano, 1964, introduction, pp. 20, 21). Nonetheless, a close acquaintance with Jaugeon's text compels admiration for the tenacity with which he assembled a detailed account of the trades of punchcutting and typefounding which, naturally unaware of Moxon's work in English, he believed never to have been described before.

8. Jaugeon's manuscript, 'La Description et Perfection des Arts et Mestiers', Bibliothèque de l'Institut de France, Paris, MS. 2741, is dated 1704. This was the only formal account to be completed of the first subjects investigated by the academicians. This volume covers the history of the alphabet, the design of roman and italic letters, punchcutting, typefounding, printing and bookbinding, the last two topics being dealt with more briefly than the others. There is a draft for the section relating to typefounding in the Newberry Library, Chicago (Case Wing MS. +Z4029. 886), where there are also extensive but disjointed notes on printing in the hand of Gilles Filleau des Billettes. A later copy of Jaugeon's text in two volumes is in the department of manuscripts of the Bibliothèque Nationale, MSS. fr. 9157, 9158. It is a copy of MS. 2741 with some slight modernizing of spelling, but apparently no editorial changes or additions: there are many errors of transcription, and omissions of some words and whole sentences. This copy does however contain a full set of plates, with annotations regarding their current condition (many were evidently corroded), including some that were made after 1704. Several illustrations and tables which are handwritten in the manuscript of 1704 were engraved by Rochefort in 1719, perhaps as a result of an abortive move to prepare the text for publication. Another manuscript account of punchcutting by Jaugeon, dated 1708, was listed among the effects of E. J. A. Anisson, Director of the Imprimerie Royale, after his execution in 1794 (E. Coyecque, *Inventaire de la Collection Anisson, Paris, Bibliothèque Nationale*, 1900, vol. 1, p. lxxv); its whereabouts is not known. Where references to 'Jaugeon's manuscript' are made in this paper, this is MS. 2741 of the Bibliothèque de l'Institut de France. For comments on Jaugeon's work, see also James Mosley, 'Illustrations of typefounding engraved for the Description des Arts et Métiers of the Académie Royale des Sciences, 1694 to c. 1700', *Matrix*, no. 11 (1991), pp. 60–80 (at pp. 63–4). I am currently preparing an edition of the part of Jaugeon's text relating to punchcutting and typefounding.

9. The group has sometimes been called the 'Commission Jaugeon', no doubt because his name appears on the title page of the manuscript: it would be more appropriate to call it the 'Commission Bignon', as Jammes proposed, in recognition of his active part in the project.

10. P. X. Leschevin, *Notice biographique sur P.-D. Pierres* (1808), p. 4; George B. Watts, *Philippe-Denis Pierres, first printer ordinary of Louis XVI* (1966), pp. 16–21.

11. F. A. Duprat, *L'Histoire de l'Imprimerie impériale de France* (Paris, 1861), pp. 75–82.

which led to the setting-up of the committee. It is true that there were factors that might in any case have led to some reform of the material of the Imprimerie Royale at this time. Some prestigious texts relating to the royal collections, known corporately as *le Cabinet du Roi,* including the account of the medals struck to commemorate events during the reign of Louis XIV, had been prepared in manuscript, and now required a suitable typographic dress.[12] Jean Anisson succeeded Mabre Cramoisy as its director in 1691, and one of his first commissions was to order the refurbishment by Philippe Grandjean of the punches of the *grecs du roi*. But the project was always seen by the academicians themselves in the larger context of a complete survey of contemporary technology.

A detailed analysis of the features of the *romain du roi* is beyond the scope of this paper, but some of its main characteristics may be mentioned.[13] A relatively greater contrast between thick and thin strokes than is found in the classical sixteenth-century types of Garamond and his school had been a feature of some newer types since early in the seventeenth century, and may well partly reflect the taste of readers in the Low Countries, Germany and England who were still accustomed to the contrasting strokes and compact proportions of gothic types. In the case of the *romain du roi* there can also be no doubt that this contrast, and also the smoothness of the curves and the thin serifs, are features engendered by the new school of calligraphy that had spread from Italy to France during the century, and which was brilliantly deployed in engraving on copper plates.

The alphabets that appear on the engraved plates of 1695 show two features which illustrate the independent logic with which the academicians approached their task. The first appears in the roman lower case types, where the asymmetrical sloping terminations of conventional ascenders – a feature derived from the forms of early scripts rendered with the oblique broad pen – were replaced with symmetrical flat top serifs. Perhaps because its adoption would have been too blatant a copy of a type that was supposed to enjoy royal protection against plagiarism, this feature made its appearance in only one commercially-cast type, the *Cicéro 'la Police'* of Malherbe Des Portes.[14]

The second innovation, as Jammes noted in 1961, was the addition between the roman and the conventional cursive 'italic' of a 'median' (*moyen*) type of the kind later known as 'sloped roman'. With the exception of one or two letters, this consists essentially of roman letters of which the shape has been changed by sloping the vertical lines of the grid within which they are drawn. Jaugeon's text places these *lettres penchées* as an intermediate form between the *lettre italique courante* and the roman, or basic lower case *lettre courante*. Jaugeon described it in his manuscript as a letter between roman and italic 'that after the trials we made, had been found to be too close to both' to be 'put into general use' (*pour estre mise en commerce*).[15] Although there is no evidence that a

12. André Jammes, 'Louis XIV, sa bibliothèque, et le Cabinet du Roi', The Library, 5th series, vol. 20 (1965), p. 11; Anne Sauvy, 'Le Cabinet du Roi et les projets encyclopédiques de Colbert', in *L'Art du livre à l'Imprimerie Nationale* (Paris, 1973), pp. 103–27.

13. Updike's account of the type (*Printing types*, vol. 1, pp. 241–4), within the limits indicated, is adequate. A better one, taking account of recent studies, is given by John Dreyfus, *Aspects of French eighteenth century typography: a study of type specimens in the Broxbourne Collection at Cambridge University Library* (Cambridge, 1982). However, there is no doubt that a fuller narrative of the making of this type, for which much original documentation survives, would be worth doing.

14. Too much has been made of the supposed 'protection' of the design of the royal types. The only recorded occasion on which the matter ever became an issue was in the late 18th century, when Louis-Laurent Anisson-Duperron, Director of the Imprimerie Royale – perhaps as part of the long-running feud between the Anissons and Didots – objected to the resemblance of the new types made for Pierre-François Didot (Didot jeune, younger brother of François-Ambroise Didot) to the *romain du roi*. In his defence Didot cited the example of the *Cicéro la Police*, which had been sold for decades without objection. The complaint was not supported by the authorities: 'La plainte d'Anisson fut rejetée, comme pouvant nuire au progrès de la typographie' (Bernard, *Hist. de l'Imprimerie Royale*, p. 97). See also, Jeanne Veyrin-Forrer, 'Les caractères de Pierre-François Didot (1783–1790)', in *La lettre et le texte* (Paris, 1987), pp. 141–3. On the 'Cicéro la Police', see Jeanne Veyrin-Forrer, 'Le "Cicero la Police" et Mathieu Malherbe Des Portes' *Bulletin de la librairie ancienne et moderne*, 51 (1971), n. s., no. 140, pp. 207–214 (*La lettre et le texte* (Paris, 1987), pp. 81–7).

15. 'On a imaginé entre la Courante Droite et la Courante Penchée ordinaire ou l'Italique une Courante moyenne, dans la veüe dabord de tenir lieu de la derniere, mais qu'on a trouvé apres l'experiance qu'on en a faite, approcher trop des deux pour estre mise en commerce. ... Sependant, quelque inutile quelle ait parut dans ce premier dessin, elle nous produit un troisiesme genre de lettre d'une richesse merveilleuse pour les ouvrages uniformes, je veux dire, dont les matieres ne demandent aucun meslange de caracteres.' (MS. 2741, p. 175)

type was ever cut on this model at the time, a 'sloped roman' type that was clearly influenced by the plates engraved in 1695 appeared briefly in the printing of Benjamin Franklin and his grandson in France and the United States in the 1780s.[16] This 'sloped roman' may have had some influence on the romanized initial strokes of lower-case letters in the 'new italic' types of Fournier and Luce, which through the influence of the types made for Didot *l'aîné*, became standard features which would distinguish French modern-face types from those of the English school.[17]

Philippe Grandjean may have been taught by Mathieu Malherbe Des Portes (c. 1659 – c. 1726), a cutter of punches and dies for coins and medals who had turned his hand to occasional punchcutting for typefounders at a time when the craft had declined for lack of demand.[18] In the preface to his *Modèles des caractères* (1742), Fournier remarked that, after the death of the second Jacques de Sanlecque, which was about 1660, there followed a period of sixty years in which a man could hardly be found to cut the new capital letters J and U when they were introduced into French printing. If Grandjean learned his craft from Malherbe, his lack of direct contact with the traditional school of typographical punchcutting may have helped him to accept the authority of the designs on paper that were put before him.[19] However, it appears to have been a relationship that was not without tensions. In the preface to his manuscript of 1704, Jaugeon remarks that the commission of which he was a member had produced types of hitherto unknown perfection by setting rules for their size, their thick and thin strokes, their serifs, and their spacing; and also by their relentless attention for years on end to the corrections that were needed to induce the 'maker' (or *ouvrier* – evidently Grandjean in this instance) to realise their spirit and taste. In his extended section on the 'construction' of letters, setting out the geometrical rules that underlay the models that the punchcutter was to follow, Jaugeon acknowledges that, at least where small sizes are concerned, it is difficult to achieve such precision, and the eye of the punchcutter must be the guide, but Jaugeon insists that he must achieve such precision in making the larger sizes that he is aware when he works in conformity with these rules – and when he departs from them:

> When we began to have our punches cut, the man we chose for this job sloped his characters in reverse, thinking they were vertical, because he saw them like that, and when he made them upright, saw them sloping forward – an error that he eventually acknowledged. The engraver's wish to have his share of the credit and to appear more able than his masters must not be allowed to permit him to make changes which spoil the letter, such as truncation of the serifs, lack of bracketing and of square terminations, details which make the type look worn as soon as it is cast. ...

16. I owe my knowledge of this remarkable type to Ellen Cohn, who is currently editing the correspondence of Benjamin Franklin relating to his period in Paris in the 1780s. It is an even more thoroughgoing sloped roman than the lower case engraved by Simonneau, having a sloped two-storey a rather than the cursive *a*. Franklin operated a press at his residence at Passy, producing personal and diplomatic documents, and while in France he acquired materials for typefounding which were used by his grandson Benjamin Franklin Bache in Philadelphia. Details of this episode will appear in a forthcoming volume of Franklin's *Correspondence* (New Haven: Yale University Press). The sloped roman type, of which the punchcutter remains unknown, appears on a loan certificate printed in Paris by Franklin, and also on the 'one penny' banknote printed by B. F. Bache for 'The Bank of North America' in 1789 (illustrated in Eric P. Newman, *The early paper money of America*, Racine, Wisconsin, 1967, p. 266). The concept of the 'sloped roman' was a subject that for a time interested Stanley Morison ('Towards an ideal italic', *Fleuron*, no. 5, 1926, pp. 93–129): the italic to the Romulus type of Jan van Krimpen was one outcome of their discussions, and its influence can also be seen in the 'roman' style of the initial strokes to lower-case letters like *i*, *m*, *n*, *p* in the italic of Times Roman, although this feature, as Morison put it, owed more to Didot than to dogma.

17. These 'roman' initial strokes do not appear in the more conventional 'italic' letters that are described and shown in Jaugeon's manuscript and which were later engraved by Rochefort, nor in the italics cut by Grandjean for the *romain du roi*, but they are characteristic of French calligraphy of the 17th century, which is known to have been studied by the academicians, and they can be seen in the script types with which Pierre Moreau printed several books in Paris in the 1640s (see Updike, *Printing types*, fig. 147).

18. For Des Portes, see Jeanne Veyrin-Forrer, 'Le "Cicero la Police" et Mathieu Malherbe Des Portes' (1971), in *La lettre et le texte* (Paris, 1987), pp. 81–7. In about 1720 he made a greek type comprising about 300 punches which were acquired by Fournier le jeune. According to Jaugeon he made a music type in 1702. The type known as 'La Police' (after its use in N. de la Mare, *Traité de la police*, 1705), cast on a Cicéro body, appears in the specimens of Pierre Cot and his successors. It has horizontal double serifs to ascenders and an identifying tick on the lower case l, details in which it closely resembles the *romain du roi*.

19. There can be no doubt, however Grandjean's rôle as an independent interpreter of them is assessed, that he was given precise 'models' of the types – in other words, 'designs' – to follow. Jaugeon insists on this subordinate rôle for the punchcutter in his first section on punchcutting: 'Je dis qu'il faut que nostre ouvrier commence par mettre devant luy le model de sa lettre pour la regarder de moment a autre en travaillant, a fin que s'imprimant une juste idée de ses contours, de ses plains et de ses deliés, il ait moins de peine a les executer' (MS. 2741, p. 263).

There follow further examples of the means by which the punchcutter may frustrate the designer's intentions, and it is strongly implied that these are faults which, in Jaugeon's view at least, Grandjean had committed.[20]

Grandjean's first recorded punchcutting for the Imprimerie Royale consisted of the making of ligatures for one of the sizes of Garamond's greek type, for which he was paid in June 1693.[21] In January 1696 the minutes of the meetings of the academicians recorded that they made critical comments on 'various punches by Grandjean', which appears to be the first reference to the cutting of the *romain du roi*. The surviving accounts relating to this first size, known as the 'ninth alphabet' (see Document 2), show that the punches were 'destroyed' more than once and remade to meet the 'improved models' that had been supplied. The specimen of this 'ninth alphabet', the type that was used for the text of the folio *Médailles sur les principaux événements du règne de Louis le Grand* in 1702, records that it was completed in 1699. This first size of the *romain du roi* was designed for a body of Gros Romain, or exactly 17 Didot points. To account for its description as the 'ninth' – and the singular fact that its body can be designated using a scheme that was not devised for another ninety years – we must examine the systems for type bodies devised by Sébastien Truchet.

Among Truchet's surviving papers are several drafts which relate to the planning of a series of related bodies for the new type. Many of them are sketchy and inconclusive, but enough material survives to make possible a reconstruction of Truchet's schemes. Two of the documents were printed by Jammes: a copy of a scheme dated 13 June 1694 and signed by Pontchartrain, and a smaller list of only twelve bodies, dated 6 August 1695, which gives a note of their relationship to the *ligne*, or one-twelfth of the official inch.[22] The scheme of 1694 is thoroughly worked out, relating the parts of each alphabet to the body on which it would be cast. The official endorsement notwithstanding, it appears at first sight a purely academic exercise, with no indication of the basis of the units employed.[23] The resounding names attached to each size – *Le Louis, Le Bourbon, Le Louvre* – are designed, as the minutes record, to reflect the origin of the types and to eliminate all connection with the chaotic names and sizes in current use. However, several of the drafts among Truchet's papers make it clear that he had observed and measured a great many examples of printing in an attempt to record and analyse these traditional sizes and their relationships. One of these documents (figure 1) has been used to construct table 1 at the end of this paper.

It has often been remarked that the traditional sizes used by founders before the introduction of the point system had no clear relationship to each other nor to any standard unit of measurement. That may be broadly true, but the effect should not be exaggerated: many of the types cast by Parisian founders during the first half of the eighteenth century originated with punches cut nearly two centuries earlier.[24] Unless the ascenders and descenders were deliberately truncated to fit the type on a smaller body, which did indeed happen on occasion, there was only one practical and economical body for each of these types. The widespread existence and long use of different sets of matrices for the same types in foundries in France, Germany, Spain

20. MS. 2741, p. 109. The passage is reprinted as Document 1, appended to this paper. One should probably be cautious about accepting Jaugeon's strictures on the punchcutter too literally. As Jammes has shown, Jaugeon was not greatly appreciated by his colleagues, and he may have wished to project some of the blame for the halting initial progress of the type away from himself. It is possible that similar motives may also lie behind his remarks on Grandjean's inability to make sketches for the jig that he devised for striking matrices, having found that he kept breaking punches when doing it by hand: 'He could never draw, and could not understand that this skill was of service in his work, being confident that he was quite capable of cutting punches, as indeed he was after we had spent several years teaching him the principles and, so to speak, taking him by the hand' (MS. 2741, p. 278). Although there is a suggestion in these remarks of the settling of old scores, they cannot be dismissed altogether. Part of the fascination of the whole project lies in the fact that the 'designers' and the punchcutter were equally inexperienced and equally open to new directions.

21. Philippe Grandjean, 'Mémoires 1693–1711' (requisitions for payment), Archives Nationales, Paris, AJ 17/8.

22. Jammes, *La réforme de la typographie royale sous Louis XIV*, pp. 27, 28.

23. It was presented in these terms by Harry Carter in the new Foreword to the reprinted edition, 1973, of his *Fournier on typefounding*, 1930.

24. This raises the question whether there was any kind of standard for bodies among early makers of types, one to which there is at present no conclusive answer. Certain bodies, notably the 'English' or 'St Augustin' of about 4.8 mm (20 lines = 96 mm), were remarkably stable and common, but there were many different values for the *Cicéro* or its equivalent at any one period and in any one locality. For an argument for the de facto existence of a sort of 'standard', see David Shaw, 'Standardization of type sizes in France in the early sixteenth century', *The Library*, 6th series, vol. 3 (1981), pp. 330–6.

and Italy – the Gros Parangon italic of Robert Granjon, for example – served as an encouragement to keep body sizes fairly stable. Nevertheless, it was often impossible to say exactly how two bodies related to each other, whether, for example, two Nompareilles made one Cicéro. Moreover, the clear distinction between sizes such as Petit Texte, Petit Romain and Cicéro had been blurred by introducing intermediate sizes like Philosophie (between Petit Romain and Cicéro), and one founder's Gros Romain might be the same size as another's Petit Parangon, as Truchet's working papers show.[25]

The resulting confusion was a great inconvenience to printers, and the reforms of the academicians were explicitly designed to remedy the situation:

> We have given an exact table of the proportions of the different sizes of letters, which are normally called 'bodies'; where it can be seen that, by means of the new construction of letters, each body bears the same relationship with that which follows or precedes it; which, in addition to promoting an agreeable regularity, will in the future be to the advantage of printers.[26]

In one of his drafts, Truchet relates how he measured the bodies in use in the best examples of printing, using the official unit of measurement, the *pied de roi*, with each foot divided into twelve inches, each inch into twelve *lignes*, and each *ligne* further subdivided into twelve *lignes secondes*, using 'a good microscope' for the purpose.[27] The table to which this document relates provides a set of measurement for type bodies in current use, with two or three alternative measurements for each body. Truchet then constructed a 'New proportion to be followed', of related bodies with regular increments in his *lignes secondes*: one and a half for the first four bodies, three for the next four, and so on. This document is the key to the table of proportions approved in June 1694, in which the units were Truchet's *lignes secondes* of one-twelfth of a *ligne*.

However, this first scheme was not put into practice. A second scheme, dated 6 August 1695, covers only twelve sizes and is stated to be based on a *ligne seconde* of 1/24 *ligne*. Truchet reported to his fellow academicians in November and December 1695 that he needed time to produce the final version of his tables, on which he was still working urgently.[28]

The third and definitive scheme for the *romain du roi* can be identified in a plate engraved for the abortive *Description des Arts et Métiers* and headed 'Calibres de toutes les sortes et grandeurs de Lettres' (figure 2). It was the 'first' in the sequence of four plates relating to punchcutting and matrix making that were engraved by G. Quineau to illustrate this section of the work,[29] and the same dimensions are repeated in a table, 'Valeurs des lettres en tout et en partie', in Jaugeon's manuscript of 1704 (table 3).[30] In this third scheme the unit is a new and considerably smaller one: 1/204 *ligne*, or 0.011057 mm.[31] This very fine measurement provoked a sneer from Fournier at the impracticality of the academicians: 'For making the *gauge*, which I divide into seven parts, none too easy to arrive at for small sizes of letter, there are rules given in one of the printed plates, where it will be found that for this purpose *the twelfth part of an inch is divided into 204 parts.*'[32]

The relationship of the sizes is shown by the diagrammatic presentation of the bodies in Quineau's plate. For the modern reader it may

25. The French book trade regulations of 1723 introduced a prescribed height to paper (10.5 lignes or 23.73 mm) and recommended relationships between some bodies, without however prescribing dimensions for many of them. These relationships agree broadly, but not invariably, with those given by M. D. Fertel, *Science pratique de l'imprimerie* (St Omer, 1723), p. 2, and those adopted by Fournier.

26. Jammes, *La réforme de la typographie royale sous Louis XIV*, p. 21.

27. 'Mesures et Proportions des Differents Caracteres qui servent le plus ordinariement dans L'art de L'imprimerie. Nous avons cherché dans les plus belles impressions que nous avons pû trouver, tant dans celles de France, que dans celles des pays estrangers, toutes les differentes sortes de caracteres dont on se sert le plus communements; pour les renger dans les differentes classes ou noms que les imprimeurs Leur ont donné. Pour les mesurer et comparer ensemble on s'est servi du pied de Roy, qui a douze pouces et chaque pouce douze lignes et on a divisé chaque ligne en douze parties, ou lig. secondes. ... Nous nous sommes servis d'un bon microscope pour faire nos divisions de lignes, en lig. secondes, et nous avons apporté toutte l'exactitude possible pour mesurer les caracteres, comme on pourra voir dans la table suivante.' (Archives Nationales, Paris, M. 850, *liasse* 8)

28. Jammes, *La réforme de la typographie royale sous Louis XIV*, p. 22.

29. James Mosley, 'Illustrations of typefounding', etc. (1991).

30. MS. 2741, p. 231. There is an error in this table as it appears in Jaugeon's MS., where one line giving the height of the capitals of the '4th' body is omitted, so that the subsequent measurements are misplaced. The table was engraved by Rochefort in 1719 (B.N. MS. fr. 9181, p. 413).

31. Grandjean requested payment in October 1696, 'pour avoir donné l'invention d'un nouveau compas propre a diviser la ligne a l'infini qui sert a verifier les corps des lettres de l'Imprimerie Roialle'. (Archives Nationales, Paris, AJ 17/8)

32. *Manuel typographique*, vol. 1, p. xvi. It is clear from this statement and other references in his book that, by the date of its compilation, Fournier had seen many of the plates engraved for the *Description des Arts et Métiers*, and he was probably aware that this unit was the basis of the academicians' system of type bodies.

help to visualise the series if the sizes are converted into Didot points. This is simple, since the later Didot point would be one-sixth of a *ligne* of the *pied de roi*, equivalent to two of Truchet's original *lignes secondes*, or 34 of the new units. If the proposed new units are expressed in Didot points, it can be seen that the scale comprised a sequence of precisely expressed body sizes, on a duodecimal basis, ascending in groups of four, with each group twice the size of the one which preceded it. The three schemes are compared in table 2. Note that the smallest size of the scale of 1694, equivalent to 3.75 point, was dropped, Truchet having remarked on one of his drafts that he doubted its practical use.

Fournier would later claim that he had made order out of chaos and introduced a system 'where previously it had never prevailed'. But at the same time, he was unwilling to tie his notional 'point', or subdivision of the *ligne*, unequivocally to any prevailing unit of measurement.[33] François-Ambroise Didot, Didot *l'aîné*, did just this, by making his *point* one-sixth of the *ligne géometrique,* that is, an official standard unit. Truchet had anticipated both Fournier and Didot in certain respects: Fournier by relating his unit so far as practicable to bodies in current use, and Didot by using a precise and quantifiable unit of measurement. It is difficult to believe that either of them was wholly ignorant of the system in use at the Imprimerie Royale, one of the most prominent of Parisian printing houses. The advantage of the various units that became known as 'points'[34] is that they make quantities that are relatively easy to visualise. Truchet, having chosen a fine unit, opted for a simple ordinal list of bodies, from 1 to 20, to identify each size, leaving the relationship between sizes to be explained by diagrams such as the plate of the *Calibres*; hence the description of the first size of the *romain du roi*, which was cast on a 17-point Didot body (34 *lignes secondes* or 578/204 *ligne*), as 'the 9th alphabet'. The 'first' size on the scale (equivalent to 4¼ Didot points) was not made until long after the death of Grandjean, by Luce in 1737–9. The largest size to be completed, the Quadruple Canon or 16th size (56 point), was also made by Luce.[35]

The function of the new and smaller units was evidently to meet Truchet's wish to define not only the size of bodies but of all possible dimensions of the types. The dimensions of the x-height (*œil*), the capitals (or ascenders, since they are the same height), the descenders and also the small gap (*vide*) above and below each type which accommodates the tapering of the type below the face that is produced by the slope (*talus*) of the punch, and which serves to obviate the meeting of ascenders with the descenders of the line above, are all fully specified for each body. The need to specify small measurements had compelled Truchet to employ fractions in his early tables, and this was an inconvenience that was eliminated by the microscopic unit of 1/204 *ligne*. Later writers on the practical and theoretical business of making type

33. Fournier nowhere stated the relationship of his scale to the *pied de roi*, the unit which formed the official basis for all precise linear measurement, but in the large printed table that accompanies his *Modèles des caractères de l'imprimerie* (1742), which there is good reason to believe to be his original scheme of 1737, he gave a formula from which a value of his point can be calculated. An unobtrusive note at the foot stated that the officially approved height-to-paper for type of 10½ *lignes* was equivalent to 11 *lignes* and 3 *points* on his scale: by that formula the inch on his scale would be 0.913 of the legal measure and 1 Fournier point 0.3432 mm. This value closely matches the point size of Fournier's own types measured from the pages of the specimen provided in volume 2 of his *Manuel typographique*. Another formula for Fournier's point was provided in the *Encyclopédie* (1751, etc), under 'caractere', where 40 *lignes Fournier* are stated to be equivalent to 37 *lignes géometriques*. Since Fournier was acknowledged to have provided much of the information in this article, this statement has authority. However, it produces a variant size for his point of 0.3477 mm, which is closer to the traditional 'Fournier point' of 0.349 mm that continued in use in Belgium, N. France and Austria in the early 20th century (Legros and Grant, *Typographical printing surfaces* (1916), pp. 66, 70). Some allowance for shrinkage of the damp paper after printing must be made when measuring from the page, although it is difficult to say how much (between one and three per cent has been suggested). Measurement of the scales of 144 and 240 points given in the *Manuel typographique* (vol. 1, p. 133 and plate 8) has produced values varying from 0.3482 to 0.3492 mm (Harry Carter, *Fournier on typefounding* (London, 1930), p. xxxv; G. W. Ovink, 'From Fournier to metric, and from lead to film', *Quaerendo*, vol. 9 (1979), p. 102).

34. Point was not a term invented by Fournier: it was in current use in France for a fraction of the *ligne*, the smallest fixed legal measure. Its value varied, being one-sixth, one-twelfth or occasionally one-tenth or one- eighth. See the note in Fournier, *Manuel typographique* (Darmstadt, 1995), vol. 3, pp. 351–2, and also Chambers, *Cyclopaedia*, 2nd edn (London, 1738), under *line*: 'Line also denotes a small French measure, containing the 12th part of an inch, or 144th part of a foot ... The geometricians, notwithstanding its smallness, conceive the *line* subdivided into six points.'

35. A separate series of two-line titling capitals was also created on related bodies, and are included in the plate headed *Calibres de toutes les sortes et grandeurs de lettres*.The bodies of these types were designed to extend in theory from 8.5 Didot points (twice the first size) to 224 points. The largest size actually cut, in roman and italic, was the magnificent 112 point (shown in the specimen of 1760), which worked with two lines of the 56 point roman.

showed that proportions needed to vary according to the size of body, with a broader proportion and larger x-height being prescribed for small bodies. The adjustments required by 'optical scale' that were applied in practice by skilled punchcutters, long remained one of their professional secrets.[36] In the event the academicians did indeed discover that their original proportions did not work in practice for all sizes, and, learning from their experience, varied the 'module' on which the letters for the smaller composition sizes – especially those below one and a half *lignes*[37] – were based. Their initial proportion of one to eight for the capital letters and one to six for the *œil* of the lower case, or x-height, was found from their first punches to be too thin, and the module was altered to one of one to seven for the capitals and one to five for the *œil* of the lower case roman letters.[38] The true italic letters called for yet more experiment. Their original proportion was maintained, giving an *œil* of six modules: when ascenders and descenders of five modules were added, and a space or *vide* of half a module allowed above and below the face, the result was a body made up of 17 modules, thus matching one of the factors of Truchet's subdivision of the *ligne* ($17 \times 12 = 204$). It is one of the surprises of reading Jaugeon's text to find that the rigid academic of legend often appears in the rôle of an open-minded and appreciative experimenter: 'Experience has shown us that it is in the harmony of parts that an agreeable letter consists, and that often enough it depends on an indefinable quality – *un je ne sais quoi* – that can be felt rather than defined'.[39]

Measurements made from works printed at the Imprimerie Royale during the eighteenth century, and from the first complete specimen of the *romain du roi,* dated 1760,[40] suggest that the bodies devised by Truchet were adopted for casting the new types, and that they set the standard for its foundry. However, the theoretical basis for these bodies was soon obscured. Not only did the use of 'ordinal' names give in themselves little idea of the true relationship between the bodies, but the old names – Cicéro, St Augustin, Gros Romain – came back into use, and 'intermediate' bodies were created – the 5½, 6½, 7½, and so on – of which the exact size was not defined.[41] Nonetheless the system developed by Truchet and recorded in the plate of *Calibres* engraved by Quineau can reasonably be claimed as the first system of related type bodies to be invented and put into use, and the remarks by the academicians that are cited by Jammes[42] indicate the reform was

36. Harry Carter, 'Optical scale in type-founding', *Typography* no. 4 (Autumn 1937), pp. 2–6.

37. About 3.4 mm, Petit Romain or Long Primer.

38. 'C'est pourquoy voyant que les plus beaux sujets ne sont pas faits pour servir de models a tout, et que ce qui doit estre original doit trouver en soy mesme le fond de la singularité et de son agrement, nous avons fait des lettres de toutes les grandeurs et de toutes sortes de proportions dont nous avons pris les yeux pour juges, et celles quils ont trouvées le plus a leur goust ont esté celles a quoy nous nous sommes arrestés; nous avons cru avec une infinité de scavans et d'ignorans mesmes que nous avons consulté (car le goust general et naturel est de tout le monde) qu'un sur huict pour les capitales estoit l'epaisseur qui paroissoit la plus gracieuse, et qu'un sur six pour les courantes, estoit la plus plaisante proportion. Mais comme les grandes choses reduites en plus petites changent souvent d'agrement en mesme temps que l'estendüe, nous avons remarqué, apres des epreuves faites sur des poinçons et l'impression de leurs lettres, quelles paroissoient a beaucoup de personnes encore trop maigres et qu'en donnant un sur sept pour les premieres et un sur cinq pour les secondes nous pourrions parvenir au poinct que nous cherchions, cequi a parut au sentiment du plus grand nombre et a quoy nous avons cru devoir fixer; sependant comme les caracteres qui ont esté gravés sur les proportions d'un sur huict et d'un sur six, paroissent aux yeux de tous ceux qui les voyent avoir tout l'agrement et toute la grace qu'on leur peut donner, nous n'avons pas cru les devoir suprimer, nous imaginant bien que ce seroit asses d'avertir de cette proportion qui peut estre convertie par ceux qui ne veulent pas les lettres espaisses, outre quelles paroissent en grand, avoir autant d'agrement et plus mesmes a quelques uns que la derniere. Cequi nous montre quil ne faut pas juger de la beauté et de la laideur des choses que quand elles sont representées dans l'estat naturel ou il faut quelles soient, et que cet estat mesme n'est pas unique pour tous.' (MS. 2741, p. 103–4) A part of this passage was cited by Jammes, *La réforme de la typographie royale sous Louis XIV*, p. 12.

39. 'En effect, l'experiance nous a fait voir que ce n'est pas tant dans l'agrement de chaque partie separée que consiste l'excellence des caracteres que dans le rapport de ces parties a luy mesme, c'est a dire auquelles doivent faire qui ne depent le plus souvent que d'un je ne scay quoy que l'on sent et qu'on ne scauroit dire quil fait sependant qu'on attrape sans le connoistre et que l'on ne trouve quasy jamais que dans un poinct.' (MS. 2741, p. 135) There is an echo here of the more familiar published account of the project: 'Aprés avoir consulté tous les Auteurs qui en ont écrit, car cette matiere a paru depuis long-temps digne d'être traitée, on a été reduit à consulter principalement les yeux, juges souverains, mais un peu incertains dans leurs décisions.' (*Histoire de l'Académie Royale des Sciences, année 1699*. Paris, 1702.)

40. *Épreuve des caractéres de l'Imprimerie Royale, gravés par Mrs. Grandjean, Alexandre & Luce*, 1760.

41. See table 4. In 1732 the punchcutter Alexandre made supplied a mould 'called the 2½' in order to cast Grandjean's nompareille or '3rd' type with short descenders. 'Irregular' bodies like 'Small Pica', which were far too easy to confuse with their nearest 'canonical' sizes, continued to plague type-founders until more exact standards for type bodies were agreed. (See Moxon, *Mechanick exercises*, ed. Davis and Carter, p. 19; John Smith, *Printer's grammar*, London, 1755, pp. 20–3.) The adoption of the Didot point did not do away with the 'intermediate' body. Being a relatively coarse unit, it actually encouraged the reintroduction of 'half' sizes. Pierre Didot, in his specimen of 1819, made a virtue of including six intermediate bodies after those for 6 to 12 point. 'A ces dimensions établies j'ai ajouté des corps intermédiaires, ou demi-points, afin d'obtenir et de présenter plus de richesse et de variété dans les proportions des différents corps; et par là, du six au douze, j'ai augmenté de six le nombre de mes caractères. Leur progression graduelle est ainsi d'un demi-point seulement, ou d'un douzième de ligne'. This 'half-point' or one-twelfth of the *ligne* is, of course, precisely equivalent to the *ligne seconde* devised by Truchet.

42. In the résumé of the work of the committee drawn up in 1695 (Jammes, *La réforme de la typographie royale sous Louis XIV*, p. 21).

intended, at least in principle, for the general benefit of the printing trade.

The scale of bodies created by Truchet ascends in a series of five groups of four, of which only four groups were eventually made as type. The body in each group of four is exactly twice that of the equivalent in the preceding group. Within the groups, each body ascends by a proportion of approximately twenty per cent. Truchet has debated (on one of his scraps of paper or *brouillons*) whether an arithmetic, geometric or harmonic proportion should govern the relationship between the sizes. It is possible that the slightly irregular relationship of sizes within the groups was dictated by the need to specify so many component dimensions of the letter. The increments of the smaller bodies of Fournier's and later point systems were crudely arithmetical from 5 to 12 points, and no better than Truchet's scheme at accommodating the traditional bodies. Long custom has made the units of the point system familiar, and they were probably simpler to understand than Truchet's, and to employ in the printing office as building blocks of metal type, especially when it was a matter of assembling different bodies to work together. However, no such considerations need now govern the conventional sizes of type, and perhaps it is time to re-examine the merits of the proportions proposed by the academicians.

As we have suggested, it strains belief that these three similar systems for related type bodies were conceived wholly independently, yet neither Fournier nor any member of the Didot family made any reference to the pioneering work of the Imprimerie Royale in establishing such a system. As an independent craftsman, Fournier had his own reasons for being ungenerous to the 'academicians', and he confused the issue – perhaps deliberately – by insisting that the fine measurement of 1/204 *ligne* specified in the plate of *Calibres* was merely for the guidance of the punchcutter, when it quite clearly set out a system for type bodies as well as parts of the type. As for Didot *l'aîné*, his relationship with the current director of the Imprimerie Royale was not at all cordial.[43] There is not quite enough evidence to convict either Fournier or Didot *l'aîné* of deliberate disingenuousness in their separate claims, by the first to the 'invention' of a system of related type bodies and by the second to its establishment on a sound basis by tying it to the *ligne du pied de roi*, even though, as can now be shown, these principles had been described and put into practice before either of them was born.[44] The academicians in their turn can possibly be charged with some lack of appreciation of the practical realities of the crafts that they attempted to explore and codify. But the reform of the royal types went beyond an exercise in amateur aesthetics. Jaugeon's account of the project demonstrates willingness on the part of the committee to learn by experiment, following the the tradition of Pascal and Descartes. Their attempt to base a work of design on applied reason has been mocked, but one of the reasons for the continuing fascination of the episode, in addition to the undoubted aesthetic impact of the types that were produced, is that it can be seen as one of the rare moments in the history of Western typography when the traditional practice of the trade was fundamentally questioned and new departures were possible.

43. Etienne Anisson-Duperron delivered a scathing anonymous attack on the new types of Didot *l'aîné* in 1783, and the two men had rival projects for improving the printing press. See Veyrin-Forrer, 'Les premiers caractères de François-Ambroise Didot', in *La lettre et le texte*, pp. 128–9.

44. At the end of his section on typefounding (MS. 2714, p. 340) Jaugeon acknowledged that he had been helped in its preparation by four typefounders with long experience at the Le Bé foundry: Faure, Sedilot, Gaudefroy and Estié. The recent publication of Philippe Renouard's notes on members of the Parisian book trade of this period has given us more information about two of these names, and helps to reinforce the probability that Fournier may have had access to information about the academicians and their project through his family connections. 'Faure' was probably Charles Faure, who had been apprenticed to the Le Bé foundry on 11 November 1655, and in 1691 became its manager on behalf of the Widow Le Bé, who died in 1707 (Philippe Renouard, *Répertoire des imprimeurs parisiens, libraires et fondeurs de caractères en exercice à Paris au XVIIe siècle*, Nogent-le-Roi, 1995, pp. 152, 177). Faure's successor as manager of the Le Bé foundry was Jean-Claude Fournier, father of Jean-Pierre, who was able to acquire the business, and also of Pierre-Simon, Fournier *le jeune*. 'Gaudefroy', one of the names cited by Jaugeon, may be the Michel Godefroy who was apprenticed to the Le Bé foundry in 1696.

Note: the 'typographie millimétrique' of Firmin Didot

It is one of the ironies of typographic history that a great deal has been made of the 'reform' of Fournier's system by Didot *l'aîné*, who based his type bodies on the official French system of measurement of the *ancien régime*, the *pied de roi*, since this unit was made obsolete not much more than a decade later by the reformed system of weights and measures, which (unlike the contemporary reformed calendar) survived the Revolution to be adopted permanently, not only in France but worldwide. There have been many proposals to align type measurement with the metric system, and the example of the 'typographie millimétrique' created by Firmin Didot for the Imprimerie Impériale is commonly cited as an early forerunner.[45]

There are very few published details of this type. The first account of its making appears to be that given by F. A. Duprat, a member of the administrative staff of the national printing office, in 1845, who said that a project for 'renewing' the material of the printing office was adopted in 1811, and that Firmin Didot cut 13 bodies of his 'typographie millimétrique' between 1812 and 1815.[46] However, there is evidence that these types satisfied no one completely, and that the project was complicated both by national politics and by the internal problems of the national printing office.[47] There were further attempts to create a new standard type, ending with the choice of Marcellin-Legrand who made the so-called 'types de Charles X' that were cut between 1825 and 1832, and which became the standard type for official printing during the nineteenth century.

Duprat did not attempt to define the relationship of the new 'millimetric' bodies with the metric system. Auguste Bernard, in his study of the Imprimerie Royale (1867), stated that the 'typographic point' was used at a very early date by the national printing office, and that two and a half of the current 'points' in use there were equivalent to one millimetre: in other words, the 'point' of the Imprimerie Impériale was 0.4 mm. This is still, approximately, the size of the 'point I.N.', the point used at the Imprimerie Nationale, Paris.[48] A nominal value of 0.4 mm has been accepted by other writers as the dimension of the 'millimetric point'.[49]

45. For references see Andrew Boag, 'Typographic measurement: a chronology', *Typography papers*, 1 (1996), pp. 105–21.

46. F. A. Duprat, *Précis historique sur l'Imprimerie Nationale* (Paris, 1848), pp. 34–5; *L'Histoire de l'Imprimerie impériale de France* (Paris, 1861), pp. 256–8.

47. There is a quarto specimen showing one (undefined) size, with no explanatory text: *Épreuve d'un nouveau caractère pour l'Imprimerie Impériale. A Paris, gravé par Firmin Didot, Chef de la Gravure de la Fonderie de l'Imprimerie Impériale. Février 1812* (copies at Bibliothèque nationale de France, Paris, and St Bride Printing Library, London). The type is not included in later specimens of the national printing office, with the exception of an alphabet included in the synoptic table of historic roman and italic types in *Notice sur les types étrangers de l'Imprimerie Royale* (1847), which bears the uninformative note: 'Les forces de corps des types de Didot avaient pour base le système métrique, qu'on substitua aux points typographiques, ou fractions du pied de roi.' The fact that the projected second part of the great specimen book of 1819, which would have shown 'modern types', failed to appear helps to confirm the dissatisfaction that was felt with the Didot types and others cut more recently.

48. The point in current use at the Imprimerie Nationale measures 0.39877 mm. This appears to be the result of a 'recalibration', for which no date can be given, of the point of 0.4 mm. Bernard's statement is as follows: 'Le point typographique, servant à désigner d'une manière plus précise que les anciennes denominations la force des caractères, fut en usage de fort bonne heure à l'Imprimerie royale. Il formait la 6e partie d'une ligne du pied de roi; il est conservé à l'Imprimerie impériale, où deux points et demie répondent à un millimètre' (Auguste Bernard, *Histoire de l'Imprimerie Royale du Louvre* (1867), p. 82, note). The point 'based on one sixth part of the ligne of the pied de roi' is the Didot point of about 0.376 mm. There is no evidence that this unit was ever used at the national printing office, though no doubt it was employed by Firmin Didot in casting types for use by his brother Pierre in the so-called *éditions du Louvre* that were printed by them at the former premises of the Imprimerie Royale for a brief period in and after 1798. The second part of Bernard's statement – that at the Imprimerie Impériale 'two and a half points equal one millimetre' – establishes the existence at that date of the point of 0.4 mm.

49. Friedrich Bauer, *Die Normung der Buchdrucklettern* (Leipzig, 1929), pp. 43–4; G. W. Ovink, 'From Fournier to metric, and from lead to film', *Quaerendo*, vol. 9 (1979), pp. 106–7. In 1974, when some sizes of the 'Didot millimétrique' were recast at the Imprimerie Nationale, it was stated in an anonymous sheet relating to the type that the value of the point introduced by Firmin Didot was 0.25 mm. Coming as it does from an institution with long traditions, this is not a statement to dismiss lightly. All the same, since no documentary evidence appears to support it and the institution of the 'point I.N.' of 0.4 mm appears even to antedate the making of this type, it seems possible that this measurement may be the result of confusing a unit of which there are 2.5 to the millimetre with one of 0.25 mm.

There is evidence that the national printing office did indeed, as Bernard suggested, turn at a very early period to the use of bodies defined in 'points'.[50] The surviving original punches and matrices of the 'Grandjean' or *romain du roi*, the type which continued in use for printing official documents until well into the 1820s, are all stamped with a figure giving their 'ordinal' identity: 8, 9, 10, and so on. However, these ordinal figures are struck through with a bar, and another figure is added giving the point body. The style of these later figures is consistent with a date in the early nineteenth century, and the first type specimen of the national printing office in which values are given for each body in 'points' is dated 1810.[51] Measurement from the type page of this specimen indicates that the value of the unit employed for the types that are shown must have been larger than the Didot point of 0.376 mm. It is consistent with a point of 0.4 mm, and thus suggests that the 'point millimétrique' of this size was employed for this casting of the *romain du roi* two years before the first size of Firmin Didot's new types was made, although it is perfectly possible that – if his connection with the Imprimerie Impériale was already established – Didot may himself have been responsible for introducing the unit.[52] More investigation of the surviving sources is needed.

50. It took time for point sizes to be routinely given in the specimens of French foundries, where the old body names survived well into the 19th century. The bodies shown in specimens issued by Firmin Didot and by Pierre, his brother, were naturally designated by naming the value in points, though without employing the word, so that 12-point type was called 'corps 12' or 'le douze'. The unit employed by Didot *l'aîné* appears to have initially been called a *mètre*, but the adoption of the 'metric system' for weights and measures must have discouraged the use of this term. The foundry of Henri Didot, nephew of Didot *l'aîné* (Didot, Legrand et Cie, also known as the Fonderie Polyamatype) employed only the old body names in its specimen of 1828, in which there is no reference at all to the point system. A serious problem, which caused confusion well into the century, was the value of the body known as *Cicéro*, which like Pica was employed as a unit for measuring the length of a line. The nearest value to the old *Cicéro* in the Didot system was 11 pt, and many founders, beginning with Firmin Didot in about 1790, attached the name *Cicéro* to this size, but they were then no longer able to cast rules and leads in point sizes, '3 to *Cicéro*' for 4 pt, etc. Later, the term *Cicéro* was applied to the 12 pt Didot body, as it is today.

51. *Épreuves des caractères français employés à l'Imprimerie Impériale, à l'usage des protes et correcteurs*, 92 pp. The only known copies of this specimen are in the Newberry Library, Chicago, and Columbia University Library, New York. A photocopy made from the latter copy has been placed, with permission, in the St Bride Printing Library, London and the library of the Imprimerie Nationale, Paris.

52. For example, the '9th' body of the Grandjean types, or Gros Romain (the first size to be made), was designed by Truchet for a body equivalent to 17 Didot points. The impression of this type on the page in the specimen of 1760 is 6.3 mm, or nearly 17 Didot points (which are 6.392 mm). The body for this type is given in the specimens of 1810 and 1819 (and 1990) as '16 points'. If the point is 0.4 mm, a 16 point body is 6.4 mm, and – allowing for paper shrinkage – the '9th' size of the Grandjean type fits it neatly, but it would be too big for a 16 Didot point body of 6.016 mm.

Document 1

Jaugeon MS. (Bibliothèque de l'Institut de France, MS. 2741), pp. 105–6. The orthography of these transcriptions, but not the capitalization, reproduces that of the original.

L'experiance nous ayant fait remarquer que les lettres d'une grandeur au dela de l'usage ordinaire demanderoit a estre construites dans la precision de ces regles, que le plus de grosseur dans leurs deliées rendoient leurs parties trop uniformes et le moins trop de pesanteur dans leurs plains. Le mesme experiance nous a convincu aussy que dans les caracteres des impressions courantes au moins de ceux qui sont audessou dune ligne et demye de hault, il falloit se reduire precisement au quart dans les proportions des grasses et des maigres, ou pour mieux des lettres capitales, d'un sur sept, et d'un sur huict et des courantes d'un sur cinq et d'un sur six; et nullement selon l'idée de quelques ouvriers qui pour se delivrer d'une contrainte a quoy l'assujetissement de ces regles les retient forment des deliés outrés, et pour ainsy dire a porte de veue, qui paroissent s'affaiser soub le fardeau de leurs plains, et des plains si fort espais quils rendent les caracteres d'un court, quils en perdent toutes leur grace et leur majesté: il est vray quil est difficile dans la construction des poinçons, au moins des petites sortes de lettres, d'attraper ces justes precisions; aussy faut il que l'oeil de l'ouvrier en determine; mais il faut pour le faire juste, qu'il s'imprime si bien, dans le travail des grandes sortes, l'habitude de ces regles quil sente dans les petites quand il y est parvenu, ou quand il s'en est escarté, soit par le plus soit par le moins; quil prenne bien garde si sa veüe voit fidelement les objets comme ils sont, nous estant arrivé lors que nous commencions a faire travailler a la fabrique des poinçons des lettres, que celuy que nous dressions a cet ouvrage renversoit dabord tous ses caracteres en arriere, les croiant parfaitement droits, parcequil les voioit ainsy, et quil ne fit jamais droits qu'en les voyant tomber en devant de quelques degres qu'on luy prescrivit; erreur que l'habitude luy a fait reconnoistre.

Il faut aussy que l'envie de se distinguer et de paroistre plus habile que ses maistres, ne le porte pas a imaginer des changemens qui defigurent le caractere, comme pouroient estre le retranchement de la longueur des empatemens des lettre, le peu d'assujetissement a les contourner a leur naissance et a les couper quarrement a leurs fins, qui font paroistre des caracteres usés des la premiere fois quils sortent de leur matrice et une ligne epaisse plantee sur une deliée a angles droits. Le trop de vuide, ou de blanc depuis la pence d'un ,a, du bas de casse jusqu'a sa teste qui luy donne une forme canine qui porte au vent, de grave et de solide quelle prend quand elle est construite dans la rigeur de nos regles, d'un ,o, trop poinctu et trop inegale dans la distribution de ses deliés et de ses plains qui laisse un reste de gothique a quoy le bon goust et le parfait equarissement de ces lettres ne s'accommodent pas, non plus que d'un contour du bas de l',j, consonne qui n'aist par un angle au lieu d'un cercle, de ces testes de l',f, et de l',f, qui jettent leurs larmes au vent, au lieu de tomber en bas en arrondissant, et de toutes les autres lettres tant grandes que petites qui sont toutes visiblement tres imparfaites quand elles se font sur d'autres idées que celles que nous fournissent nos constructions. C'est a dire par celles que l'amour de l'expedition et la vanité de l'independance pourroit enfanter.

Document 2

Extracts from the accounts (*Mémoires*) submitted by Philippe Grandjean for the cutting of the '9th' size of the *romain du roi* (Archives Nationales, Paris, AJ 17/8).

Du 7 8bre 1697

Pour auoir graué 84 poinçons du 9^{e} alphabet des lettres droites, et justifié une matrice de chacun scauoir 50 pour les lettres courantes a b c d e f g h i j k l m n o p q r s ſ t u v x y z & à é œ ç ff ffi fi ff ft fl fi ct : , ; ! - — – ‘ ( ] et 26 pour les cap. A B C D E F G H I J K L M N O P Q R S T U V X Y Z et 8 pour les lettres de 2 points G J I L P S T V, lesd. poinçons et matrices quoique finis et deüemt justifies ayant serui dessous pour lesd. nouueaux caracteres et ayant ensuite eté par ordre de mond.

seigneur de Pontchartrain casses pour en etre refaits d'autres d'une perfection plus exquise encore reuiennent neant moins suiuant le marché fait a 9ff pour chaque poinçon et matrice marché signe par mond. seig. le 13 juin 1694 a 756ff

Plus pour auoir donné l'invention dune machine propre a fraper les matrices 100ff

Plus pour 6 mois de logemt escheu au 1er Juillet 1696 75ff

931ff

Du 31 xbre 1697

Pour auoir graué 48 poinçons des lettres courantes droites du 9e alphabet scauoir 2 de a. 5 du b. 1 du c, 5 du d, 2 d e, un de f, 2 de g, un de chacun h, k, l, m, n, ſ, u, x, y, z 4 de p, 4 de q, 2 de s, 2 de v, 2 de st un de chacun des cap. K, P, V, lesd. poinçons quoique finis, et bien justifies ayant eté faits suiuant les modelles donnes aud. Grandjean ces modelles ayant eté reformes lesd. poinçons nont seruis que dessous et ont eté ensuite casses par ordre exprés de mond. seig. pour en etre refaits de nouueau dune perfection plus exquise encore, neantmoins lesd. 48 poinçons a 9ff chacun reniennent suiuant le marché fait et signé par mond. seigneur le 13 Juin 1694 a la sõe de 432ff

Plus pour les soins et prés de 3 mois de tems emploié a refraper et justifier a plusieur reprises les matrices et le moule pour atteindre a une distance proportionnee des lignes et des lettres entre elles, cequi seruira de reigle pour tous les corps de l'Imprimerie

Plus pour auoir donné une methode de 30 pages il fol descriture pour la composition des poinçons, et matrices des caracteres seruant a la musique auec les desseins desd. caracteres laquelle methode doit etre inserée dans l'histoire des arts.

Plus pour six mois de logemt escheu a la fin de xbre 1697 907ff

8 Du 27 Mars 1699

Pour auoir graué 240 poinçons des lettres droites du 9 alphabet en auoir frapé et justifié une matrice de chacun marché fait et signé par mond. seign. le 13 Juin 1694 a 9ff pour chaque poinçon et matrice 2160ff

Plus pour auoir fait et graué 135 poinçons dud. alphabet dont les modelles ont eté reformes pour atteindre a une plus grande perfection a raison de 9ff par poinçon et matrice 1215ff

Plus pour auoir fait 15 fontes differentes pour paruenir au parfait espacemt alignemt des lettres et eloignemt des lignes cequil seruira de reigle pour la suitte de tout l'ouurage auoir payé le fondeur fourni le bois pour le fourneau et justifier lesd. fontes 600ff

Plus pour auoir donné plus de trois mois de son tems a faire faire les differentes epreuues qui ont eté faites desd. fontes a lImprimerie Roialle 300ff

Plus pour auoir donné lInvention d'une piece qui etant ajoutée au moule contribue a legalité proportionnée des lettres entre elles 100ff

Plus pour auoir inuenté une machine qui sert a la justification des matrices et droiture des lettres auec une grande precision 100ff

Plus pour auoir inuenté une machine qui sert de preuue pour scauoir si les fontes et matrices sont dans la derniere regularité 100ff

Plus pour auoir donné l'inuention d'un nouueau chassi pour serrer les formes de lImprimerie auec une grande regularité 100ff

Plus pour une année de logemt dud. Grandjean escheüe le 31 xbre 1698 150ff

Je reconnois que quoique monsieur Anisson ait donné son recepissé au bas du pñt compte presenté a Monsgr de Pontchartrain de 240 poinçons et matrices mentionees au 1er article dud. compte je reconnois disje que lesd. 240 poinçons et matrices me sont restées entre les mains pour les entretenir par ordre verbal de monsieur l'abbé Bignon. a Paris le 27 Mars 1699. Grandjean.

Figure 1. Observations made by Sébastien Truchet of existing type bodies, *c.* 1694, and a proposed new scale of sizes. (Archives Nationales, Paris, M.850, *liasse* 8). [Reduced to 85 per cent linear.]

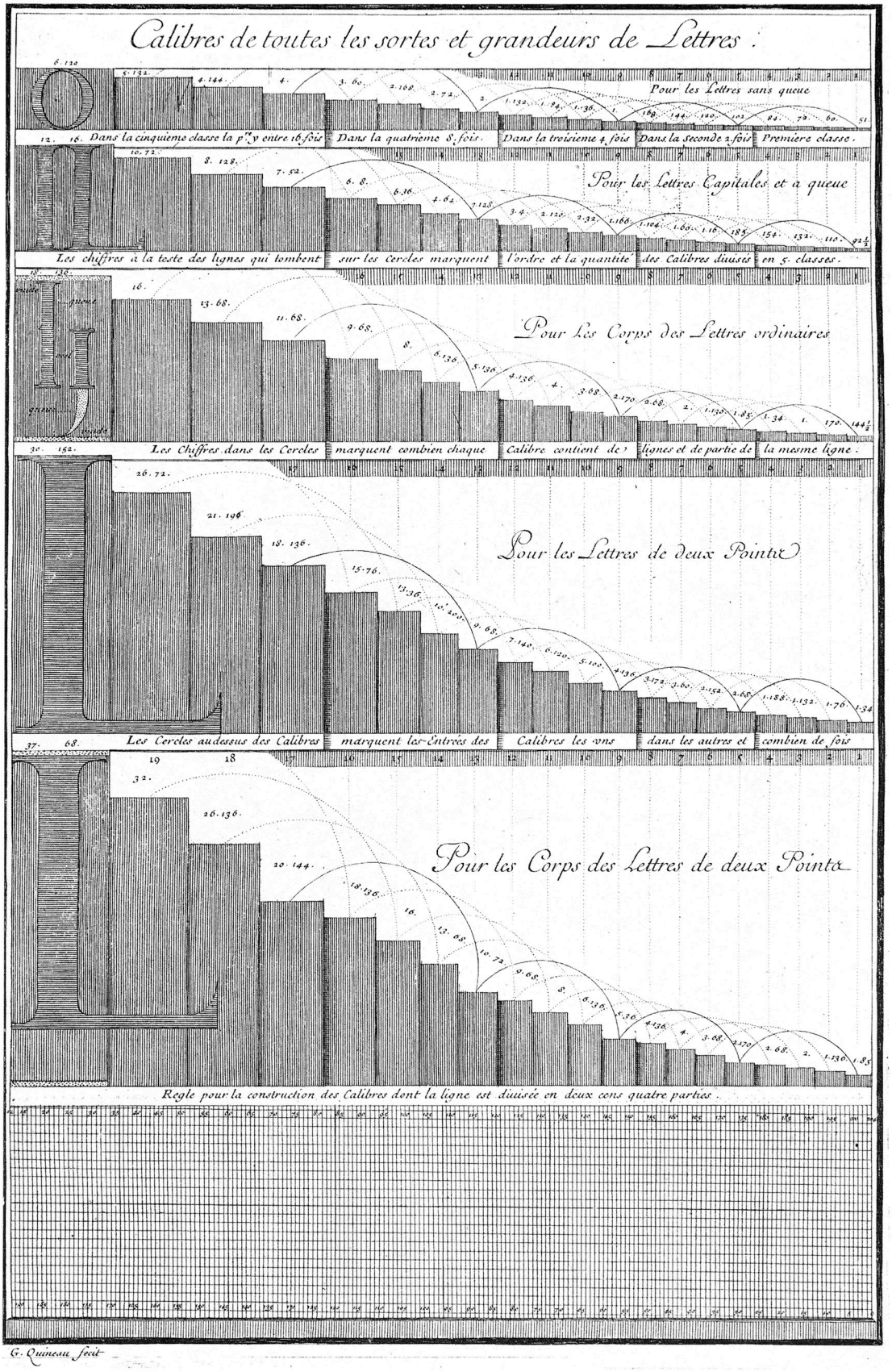


Figure 2. Plate engraved by G. Quineau for the Description des Arts et Métiers, showing the final scheme for the type bodies planned for the *romain du roi*. From the album, 'Les Arts et Métiers de l'Académie des Sciences', St Bride Printing Library 5825. [Reduced to 65 per cent linear.]

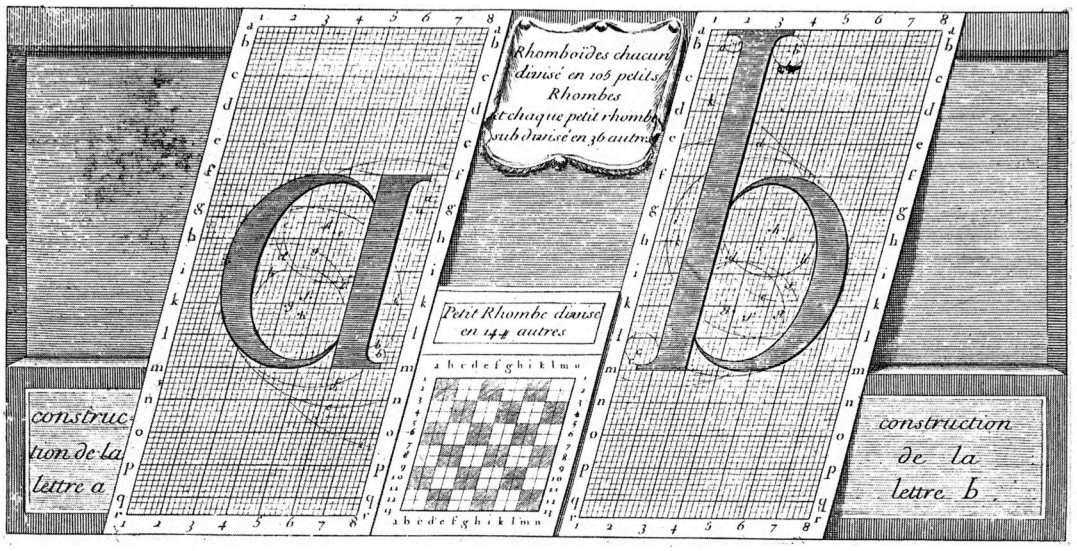
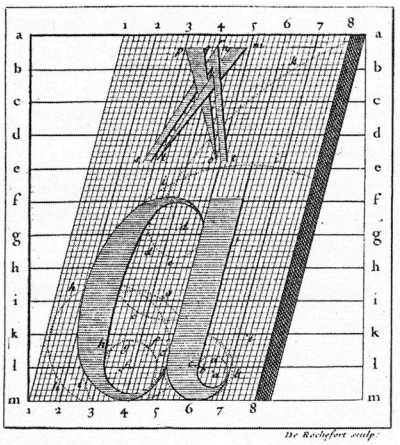
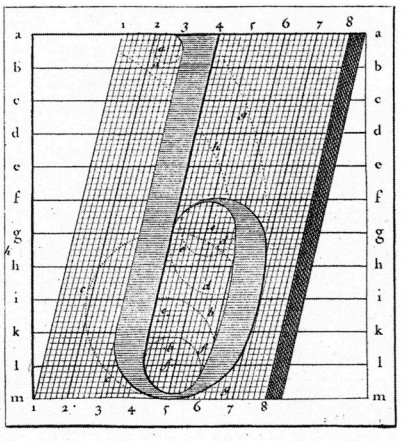
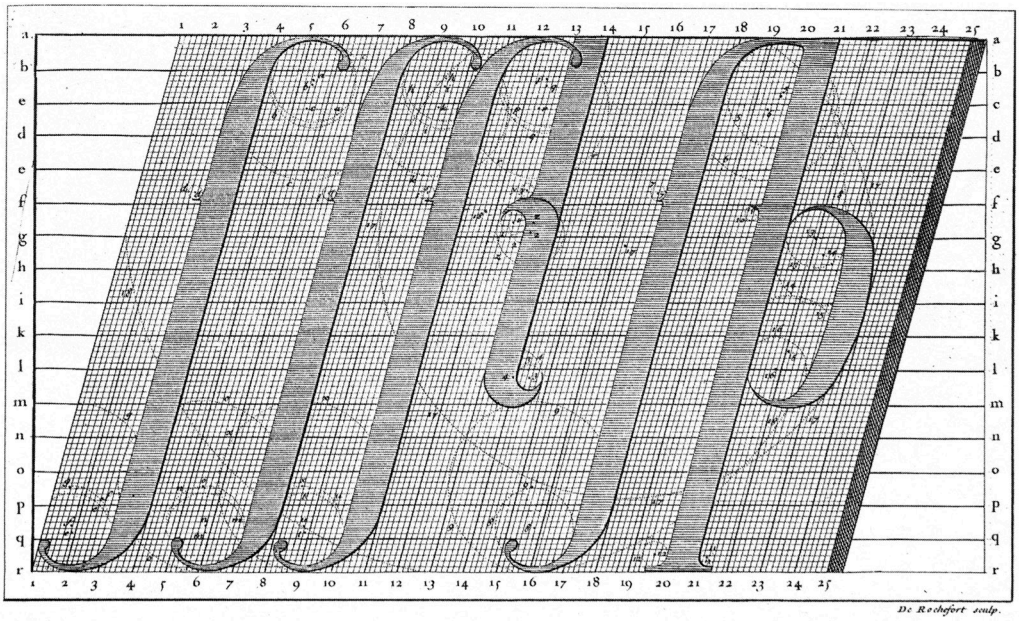


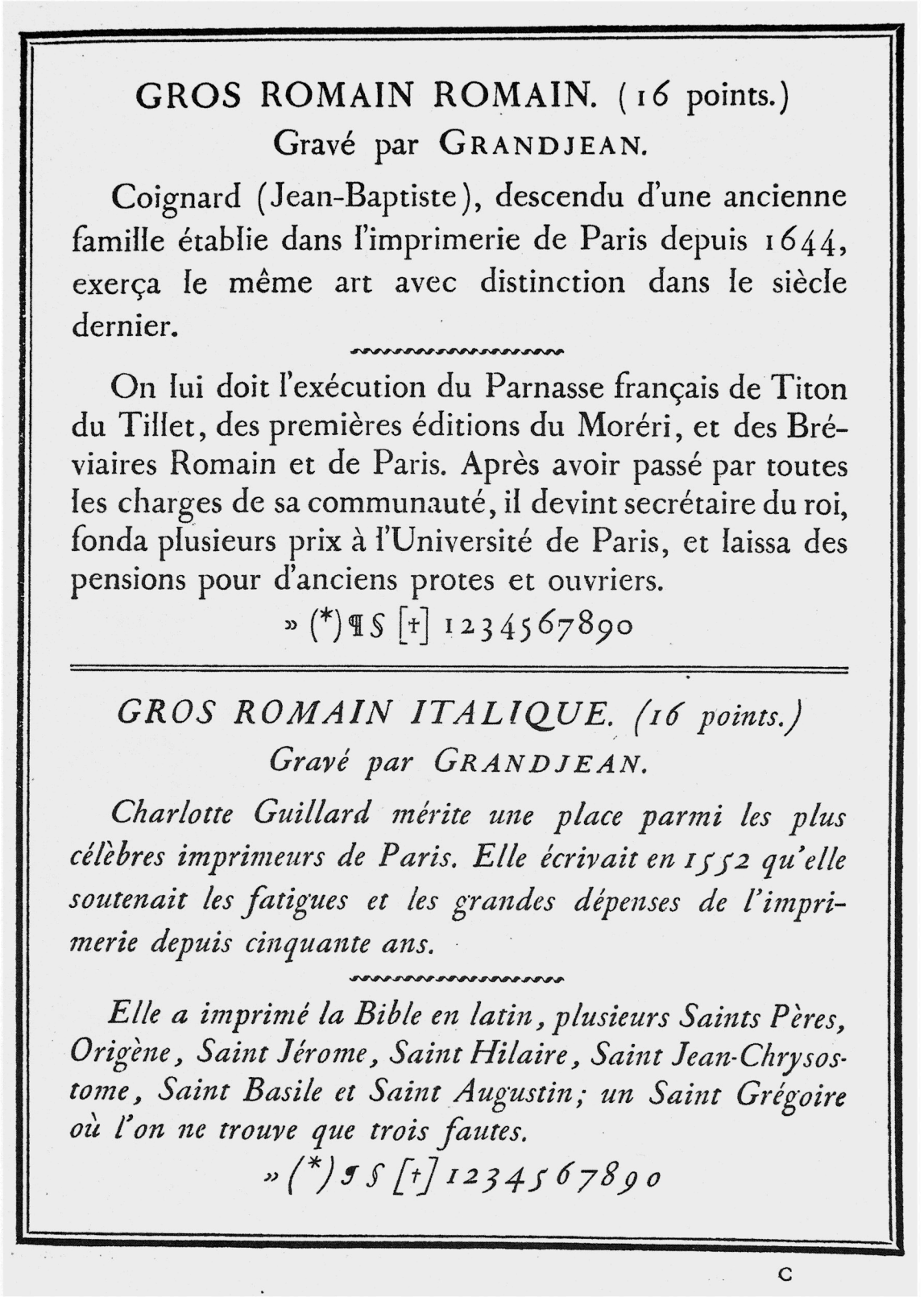
Figure 3, a. Two lower-case characters for the *lettres courantes pencheés*. This appears to have been the only engraving for this letter to be made on the larger scale. From album, 'Les Arts et Métiers de l'Académie des Sciences', St Bride Printing Library 5825. [Reduced to 65 per cent linear.]

Figure 3, b–d. Characters engraved by De Rochefort after the drawings for the *lettres italiques courantes* made for Jaugeon's manuscript (MS. 2741, pages 177, 178). From proofs made from original plates in A. Jammes, *Le Grandjean* (1961). [Reduced to 65 per cent linear.]








GROS ROMAIN ROMAIN. (16 points.)
Gravé par GRANDJEAN.

Coignard (Jean-Baptiste), descendu d'une ancienne famille établie dans l'imprimerie de Paris depuis 1644, exerça le même art avec distinction dans le siècle dernier.

On lui doit l'exécution du Parnasse français de Titon du Tillet, des premières éditions du Moréri, et des Bréviaires Romain et de Paris. Après avoir passé par toutes les charges de sa communauté, il devint secrétaire du roi, fonda plusieurs prix à l'Université de Paris, et laissa des pensions pour d'anciens protes et ouvriers.

» (*) ¶ § [†] 1234567890

GROS ROMAIN ITALIQUE. (16 points.)
Gravé par GRANDJEAN.

Charlotte Guillard mérite une place parmi les plus célèbres imprimeurs de Paris. Elle écrivait en 1552 qu'elle soutenait les fatigues et les grandes dépenses de l'imprimerie depuis cinquante ans.

Elle a imprimé la Bible en latin, plusieurs Saints Pères, Origène, Saint Jérome, Saint Hilaire, Saint Jean-Chrysostome, Saint Basile et Saint Augustin; un Saint Grégoire où l'on ne trouve que trois fautes.

» (*) ¶ § [†] 1234567890

C

Figure 4. The 'first' size of the *romain du roi*, cut by Philippe Grandjean 1696–9. From *Spécimen des caractères, vignettes, armes, trophées et fleurons de l'Imprimerie Royale. 1re partie. Ancienne typographie* (Paris, 1819). St Bride Printing Library 5771.

Table 1. Observations made by Sébastien Truchet of existing type bodies, *c.* 1694, and a proposed new scale of sizes

Suitte des caracteres qui sont en usage				*Nouvelle proportion a imiter*	
	1	2	3	4	5
–	–	3.75	1.41	7.5	
Petite Parisienne	9	4.5	1.69	9	[1.5]
Petite Nompareille	10	5	1.88		
Petite Nompareille	10.5	5.25	1.97	10.5	[1.5]
Petite Nompareille	11	5.5	2.07		
Mignone	12	6	2.25	12	[1.5]
Petit Texte	14	7	2.63		
Petit Texte	15	7.5	2.82	15	3
Petit Romain	16	8	3.01		
Petit Romain	18	9	3.38	18	3
Petit Romain	19	9.5	3.57		
Petit Romain	20	10	3.76		
Cicero	21	10.5	3.95	21	3
Cicero	22	11	4.13		
St Augustin	24	12	4.51	24	3
St Augustin	25	12.5	4.70		
St Augustin	26	13	4.89		
Gros Romain	30	15	5.64	30	6
Gros Romain	31	15.5	5.83		
Gros Romain	32	16	6.01		
Petit Parangon	32	16	6.01		
Petit Parangon	34	17	6.39		
Petit Parangon	36	18	6.77	36	6
Gros Parangon	40	20	7.52		
–	–	21	7.89	42	6
–	–	24	9.02	48	6
Petit Canon	50	25	9.40		
Petit Canon	51	25.5	9.59		
Petit Canon	52	26	9.77		
Moyen Canon	–	30	11.28	60	12
Gros Canon	72	36	13.53	72	12
Gros Canon	78	39	14.66		
Canon Gras	81	40.5	15.22		
Canon Gras	–	42	15.79	84	12
Double Canon	96	48	18.04	96	12
–	–	60	22.55	120	24
–	–	72	27.07	144	24
–	–	84	31.58	168	24
Grosse Nompareille	192	96	36.09	192	24

Columns 1, 4 and 5 are adapted from the draft in Truchet's hand, reproduced as figure 1 (Archives Nationales, Paris, M.850, *liasse* 8).
1. Range of sizes of contemporary type bodies measured by Truchet in *lignes secondes*, a unit measuring 1/12 *ligne du pouce du pied de roi* (i.e. 1/144 *pouce* or 0.1879583 mm).
2. Equivalent of all bodies in Didot points (1 *point* = 1/6 *ligne*).
3. Equivalent of all bodies in millimetres.
4. Recommended scale of new type bodies in *lignes secondes*.
5. Increments of the new bodies in *lignes secondes*.

Table 2. The three scales of bodies devised for the types of the Imprimerie Royale

This comparative table shows three systems devised by Sébastien Truchet for the series of related bodies planned for the *romain du roi* before the cutting of the type was begun in 1695–6. The original unit employed by Truchet was the so-called *ligne seconde* of 1/12 *ligne du pied de roi* or 0.1879 mm. The *pied de roi* measured 0.3248 mm. 1 *ligne* = 1/12 *pouce* = 1/144 *pied de roi*. For comparison with each other the bodies in all three schemes are converted to Didot points, which are exactly twice the size of Truchet's original *ligne seconde* (1 Didot point = 1/6 *ligne du pied de roi* or 0.376 mm) in columns 4, 5 and 6, and also in millimetres in column 3.

1	2	3	4	5	6	7	8
					3.75	7.5	La petite Académie
1	**144.5**	**1.60**	**4.25**	4	4.5	9	La petite Françoise
2	**170**	**1.88**	**5**	5	5.25	10.5	La petite Dauphine
3	**204**	**2.26**	**6**	6	6	12	La petite Royalle
4	**238**	**2.63**	**7**	8	7.5	15	Le Louvre
5	289	3.19	8.5	9	9	18	Le Bignon
6	340	3.76	10	10.5	10.5	21	Le Phelippeaux
7	408	4.51	12	12	12	24	Le Pontchartrain
8	476	5.26	14	13.5	15	30	Le Louis
9	**578**	**6.39**	**17**	15	18	36	Le Bourbon
10	**680**	**7.52**	**20**	18	21	42	Le grand Louis
11	**816**	**9.02**	**24**	21	24	48	Le grand Bourbon
12	**952**	**10.53**	**28**	24	30	60	Le grand Louvre
13	1156	12.78	34		36	72	Le grand Bignon
14	1360	15.04	40		42	84	Le grand Phelippeaux
15	1632	18.04	48		48	96	La grande Pontchartrain
16	1904	21.05	56		60	120	La grande Académie
17	**2312**	**5.56**	**68**		72	144	La grande Françoise
18	**2720**	**30.07**	**80**		84	168	La grande Dauphine
19	**3264**	**36.09**	**96**		96	192	La grande Royalle
20	**3808**	**42.10**	**112**				

1. Although new names were planned (see column 8) these were not used, and the sizes were generally known by their place in this sequence of 20 bodies: the first size to be completed was the 'Ninth'. A specimen was printed entitled *Epreuve du neuviéme alphabet droit et penché, gravé par Philippe Grandjean pour l'Imprimerie Royale en 1699*. The 'First' size, measuring 4.25 Didot points, was one of the last to be cut, by Luce, in 1740.
2. **Third and final system** of 20 related type bodies, expressed in units of 1/204 *ligne* (0.01106 mm), from an undated plate engraved by Quineau, headed *Calibres de toutes les sortes et grandeurs de lettres* (James Mosley, 'Illustrations of typefounding engraved for the Description des Arts et Métiers of the Académie Royale des Sciences, 1694 to c. 1700', *Matrix*, no. 11 (1991), plate 1). The same values appear in a table, 'Valeurs des lettres en tout et en partie', in Jaugeon's MS. of 1704 (Bibliothèque de l'Institut de France, MS. 2741, p. 231), of which there is an engraving by De Rochefort dated 1719 (Bib. nat., Paris, MS. fr. 9158, f. 42). This system of type bodies appears to have been adopted for casting the new *romain du roi*. The unit of 1/204 *ligne* was probably chosen to relate to the module of 17 units used for the construction of some of the characters drawn by the Commission Bignon (204 = 12 × 17). See Jaugeon's MS, pp. 111 ff.
3. Values in millimetres for column 2.
4. Values in Didot points for column 2.
5. **Second system**: *Proportion des 12 sortes de poincons pour frapper les lettres des medailles du Roi données les 6 aoust 1695. La ligne, 12e partie du pouce, divisée en 24" lignes secondes* (Jammes, *Le Grandjean*, p. 28). The values of this incomplete scheme have been converted to Didot points.
6. Values in Didot points for column 7.
7. **First system**: scale of type bodies given in *Estat et proportions des differents corps pour les nouveaux caracteres de l'Imprimerie Royalle*, dated 16 June 1694, a draft in the hand of Sébastien Truchet (Archives Nationales, Paris, M.850, liasse 8; reproduced in A. Jammes, *La réforme de la Typographie Royale sous Louis XIV*, 1961, p. 27).
The unit of measurement is a *ligne seconde* of 1/12 *ligne*, or 0.5 Didot point.
8. New names proposed for the type bodies in column 7.

Table 3

noms	*corps*	*œil*	*capit[ales]*	*vuides*		
1	**144.5**	**51**	**92.5**	**8.5**	**4.25**	
2	170	60	110	10	5	0.75
3	204	72	132	12	6	1
4	238	84	154	14	7	1
5	**289**	**102**	**185**	**17**	**8.5**	1.5
6	340	120	220	20	10	1.5
7	408	144	264	24	12	2
8	476	168	308	28	14	2
9	**578**	**204**	**370**	**34**	**17**	3
10	680	240	440	40	20	3
11	816	212	528	48	24	4
12	952	336	616	56	28	4
13	**1156**	**408**	**740**	**68**	**34**	6
14	1360	480	880	80	40	6
15	1632	576	1056	96	48	8
16	1904	672	1232	112	56	8
17	**2312**	**816**	**1480**	**136**	**68**	12
18	2720	960	1760	160	80	12
19	3264	1152	2112	192	96	16
20	3808	1344	2464	224	112	16

These figures are derived from the table 'Valeurs des lettres en tout et en partie', in Jaugeon's manuscript, p. 231, which repeats the figures shown in the plate engraved by Quineau, *Calibres de toutes les sortes et grandeurs de lettres*, and adds other values. The figures for the column for 'capitals', where one line is omitted from the manuscript, have been corrected. The units have been converted to total units of 1/204 *ligne* from the measurements in whole *lignes* and 'fractions' of 1/204 *ligne* given in the original.

The headings for the columns are as follows: *noms*, the ordinal 'name' of each size; *corps*, the type body; *œil*, the x-height (dimension of a lower-case letter with neither ascender nor descender); *capitales*, the dimension of capital letters and of ascenders; *vuides*, dimension of the vertical spaces between the full extent of the type face and the type body.

The two additional columns on the right show the type bodies (*corps*) expressed in Didot points (1/6 *ligne* or 34 of Truchet's units of 1/204 *ligne*), with the increment from the preceding size, also given in Didot points.

Table 4. The *romain du roi*: punchcutters and dates
This table is intended as an outline of the making of the different sizes of the *romain du roi*

1	2	3	4	5	6	7	8	9
1	4.25	4.2	4.1	4 (4.25)	Perle	Luce[a]	1737–9	1740
2	5	4.9	5.3	5 (5.3)	Sédanoise	Alexandre	1726–8	1728[b]
3	6	6.0	6.25	6 (6.4)	Nompareille	Grandjean	1709–10	
4	7	6.9	7.45	7 (7.45)	Mignonne	Grandjean	1707–8	
5		8.5	8.2	8 (8.5)	Petit Texte	Grandjean	1706–7	1707
5½		9.6	9.3	9 (9.6)	Petit Romain Alexandre	Alexandre		
6	10	10.0	10.5	10 (10.6)	Petit Romain Grandjean	Grandjean	1705–6	1705
6½		10.6	11.4	11 (11.7)	Cicero Alexandre	Alexandre[c]	1712–16	
7	12	12.0	12.45	12 (12.8)	Cicero Grandjean	Grandjean	1699–1703	
7½		12.8	13.6	13 (13.8)	St Augustin de l'Académie	Grandjean	1712	
8	14	13.8	14.6	14 (14.9)	St Augustin Tournefort	Grandjean	1700–2	
8½		15.2	15.7	15 (15.7)	Gros Romain	Alexandre[d]	1729	
9	17	16.7	16.75	16 (17.0)	Gros Romain	Grandjean	1696–1701	1699
9½		18.6	18.9	18 (19.15)	Petit Parangon	Alexandre		
10	20	19.6	20.7	20 (21.3)	Petit Parangon	Grandjean	1701–2	
11	24	23.9	25.3	24 (25.5)	Gros Parangon	Grandjean	1704	1704
12	28	27.3	30.8	28 (29.8)	Petit Canon	Grandjean	1704–5	
13	34	33.7	33.9	32 (34.0)	Gros Canon	Grandjean	1705–6	
14	40	38.9	41.2	38 (40.4)	Double Canon	Grandjean	1710–11	
15	48	48.5	49.5	48 (51.1)	Triple Canon	Grandjean[e]		
16	56	55.8	57.6	56 (59.6)	Quadruple Canon	Luce	*c.* 1745[f]	

1 Ordinal names for type bodies established in *c.* 1694–5 and employed to identify types in accounts for payment and printed specimens from 1699 to 1760. The intermediate bodies (5½, 6½, 7½, 8½ and 9½) appear in the specimen of 1760. They are designated on some surviving matrices and in financial records by the two ordinal sizes between which they are inserted: for example the '8½' is also called '8–9'.

2 Exact values in Didot points (1/6 *ligne du pouce du pied de roi* or 0.376 mm) of the final scheme planned for the bodies of this type in about 1694 by Sébastien Truchet, as shown in the plate headed *Calibres de toutes les sortes et grandeurs de lettres* and in the table 'Valeurs des lettres en tout et en partie' in Jaugeon's manuscript of 1704 (Bib. de l'Institut de France, MS. 2741), p. 239. The unit for this scheme was 1/204 *ligne.*

3 Size in Didot points, measured from *Épreuve des caractéres de l'Imprimerie Royale*, 1760 (BN Rés. m. Q. 207). Allowance should be made for shrinkage of the damped paper.

4 Size in Didot points, measured from *Épreuves des caractères français*, 1810 (Columbia University Library, New York 017.82 Fr/Imp 1810).

5 Point bodies as recorded in specimens of 1810 and 1819, employing a unit that was nominally 0.4 mm. The Didot point equivalent of each body is given in parentheses (calculated from a unit of 0.4 mm: the 'point I.N.' now used is 0.39877 mm). Today, as shown in *Les Caractères de l'Imprimerie Nationale*, 1990, the 38 point type (1810 and 1819) is cast on a 40 I.N. point body (about 42.5 Didot points).

6 Names of bodies given in *Épreuve des caractéres de l'Imprimerie Royale*, 1760.

7 Punchcutter, as recorded in the accounts of the *graveurs du roi* (Archives Nationales, Paris, AJ/17/8) and the *Épreuve des caractéres de l'Imprimerie Royale*, 1760.

8 Dates of accounts for each type submitted by the *graveurs du roi*. Accounts were submitted from six months to a year after the execution of the work.

9 Date of the type as given in a printed specimen.

a The type is attributed to Luce in printed specimens, but the early accounts are in the name of Alexandre.

b The introduction to the *Épreuve du premier alphabeth*, 1740, indicates that an *épreuve du caractere du second alphabeth, appellé la Sédanoise* was issued in 1728. No copy of this specimen is known. The type is attributed to Alexandre in the specimen of 1760 and to Grandjean in those of 1810 and 1819. Alexandre's accounts for 1726–8 include payment for the roman and italic of the Sédanoise.

c 'Nouuel alphabet apellé le .6.½ autrement le nouueau cicero commencé en 1712 et achevé en l'an 1716: sur les ebauches et les dessins du deffunt S.r Grand Jean.' (Accounts of *Veuve* Grandjean, AN, AJ/17/8.)

d Alexandre's accounts for 1729 include a 'Memoire des poinçons droits du 8–9 qui est le gros romain, oeil de l'université, qui ont esté faits et justifiez par Alexandre', and also for the 'penchez du 8–9'. In the *Épreuves des caractères français employés à l'Imprimerie Impériale*, 1810, the roman is credited to Alexandre, the italic to Grandjean.

e So attributed in the specimen of 1760, but the type does not figure in Grandjean's accounts. Those of Alexandre for 1730 include payment for *poinçons droits* and *penchéz* 'du quinzieme Alphabet qui ont esté faits par Alexandre'.

f This date is given by Bernard, *Hist. de l'Imprimerie Royale*, p. 93. The accounts of Luce for 1760 include payment for the 'gros caractere italique du 16e'.

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